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<sup>P. Med</sup>  
NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
PHILADELPHIA MEDICAL JOURNAL

AND THE  
MEDICAL NEWS

*A WEEKLY REVIEW OF MEDICINE*

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NEW YORK

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# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 1.

NEW YORK, SATURDAY JANUARY 6, 1917.

WHOLE No. 1988.

## Original Communications

### BRONCHIAL ASTHMA.

By WOLFF FREUDENTHAL, M. D.,  
New York.

#### I. HISTORICAL DATA.

It was in that wonderful little town of Saekkingen, on the border line of Switzerland and Germany, where, many years ago, I saw my first case of asthma. Every morning on my visit to the wards the Sister in the small hospital narrated the same story of the previous night's dreadful sufferings of a young man which my predecessor had been unable to alleviate, and asked whether I could not give some relief. But whatever was tried therapeutically proved absolutely of no avail. That case made such an impression on me that ever since I have been on the watch for something that would help these poor sufferers. It would seem that only in the last few years have we begun to work in the right direction. But before entering into the details, it may be of interest to follow up the conception of asthma as outlined by the different authorities in various centuries. This is by no means unprofitable or tiresome, for it gives us an insight into the thoughts of great men, who were keen observers, but lacked the facilities of modern research and modern instrumentation.

Undoubtedly asthma is as old as any civilization of which we have knowledge. In studying the literature of asthma, from the earliest observation up to the present time, much is found that is obscure, a great deal that the writers themselves were not clear about, and a mass of theoretical deductions which were unproved and empirical. On the other hand, we encounter even among the earlier writers men who had a clear view of the disease, often mixed, however, with certain prevailing ideas or medical superstitions. We find asthma mentioned in the Bible and in Homer. Hippocrates describes it as a disorder incident to children. With him originated the idea that it is occasioned by cold and moisture, and he hints at its being confounded with epilepsy.

The first good description of asthma was left to the world in the writings of Aretæus of Cappadocia—works which are described as perfect masterpieces and exact descriptions true to nature. Aretæus was the only one among the ancients who recognized asthma as a disease in itself, and described

its characteristics. According to Aretæus its seat is in the lungs, but he also knew that the auxiliary muscles of respiration are called into action as well as the diaphragm. The cause of the disease is cold or a great deal of humidity in the air (*ὁ ὑγρὸς αἰὲρ τοῦ πνεύματος*), factors which even nowadays are made responsible for many an ailment—mostly, of course, without any scientific basis. Aretæus describes two forms of asthma: First, one in which there is a difficulty of breathing, as in running, climbing, wrestling, and every kind of hard labor. In order to breathe easier the nose becomes pouted (*σισδ'εῖν*)! The description of an attack is very accurate.

Second, a form called by him "pneumodes or dyspnodes." The differential diagnosis between the two varieties consists in the duration (the latter being more prolonged), in the age of the patient, the free intervals, etc. The chest is round, barrel shaped, but otherwise normal. These symptoms, as Bergson remarks, remind us of the barrel shaped conformation of the chest due to the *catarrhe sec* of Laennec.

A third form of asthma is mentioned by Aretæus but not recognized as such, i. e., "orthopnoe." It seems to us that he mentions this form only to place himself in opposition to Celsus, who, as is well known, had made three divisions, viz., dyspnoe, asthma, and orthopnoe.

A very clear description of asthma was given later by the philosopher Seneca. He suggested calling the disease *suspirium* instead of *ἀσθμα*, and *suspiriosi* or *anhelosi* (*anhelatio*) instead of *ἀσθματικὸν*.

The man who later, we may say, dominated the whole medical world by his genius was Galen. In reference to asthma the main merit of his contribution lies in his physiological demonstrations. By severing the medulla spinalis he showed his pupils how to produce asthma artificially. Galen mentions two causes of this disorder, each distinguished by a material producing irritation, thick and pituitous humors, and a crude tubercle in the lung. His doctrines on this subject were copied by writers during the fifteenth, sixteenth, and seventeenth centuries, in spite of the fact that this great man had not added anything of importance to the knowledge of the true nature of asthma.

Galen's influence was noticed also in the Arabic school. A product of Arabic medicine to be

mentioned is that extraordinary genius, Moses ben Maimon, Maimuni, or Maimonides. He was not only a great philosopher, but also a great physician. But it is to be regretted that we do not possess any exact knowledge of his influence on medicine in general. As to the subject of asthma, it is stated that there is an unprinted manuscript at Madrid, Spain, *Tractatus contra passionem asthmatis*, but no further details of it could be obtained. But since Maimuni was by no means a blind follower of Galen and his other predecessors, it may be worth while for some one to undertake the study of this manuscript (and parenthetically I would say of many other Arabic manuscripts which are known to the world only by their Latin "perversions," as Pagel calls them).

It seems that in the seventeenth century the idea of asthma as an idiopathic disease was entirely overlooked. *Neque enim asthma, anhelatio ipsa morbus est, sed morbi symptoma*. These words—repeated so very often in our times—gave evidence that the physicians in those days considered asthma only as a symptom, nothing being heard of a nervous or spasmodic asthma. The first one to give an exact description of the latter, i. e., spasmodic asthma, was the English neurologist Thomas Willisius (1682).

History then takes a wide leap, since nothing of any consequence is mentioned up to the middle of the eighteenth century, when J. Floyer's book became known to the medical world. Floyer was an Englishman, but his publications were translated into French, and hence, as his name might suggest, he was taken for a Frenchman. He considers asthma to be dependent on a primary disease, which must be removed before it will subside. He also speaks of a continuous asthma and a periodic one. The latter "depends on the constriction of the bronchi and *bladders* of the lungs by windy spirits."

The great discoveries and ideas in medicine make themselves felt from now on in the domain of asthma. And among them have to be mentioned Harvey's discovery of the circulation of the blood, AUVENBRUGGER'S auscultation and percussion, the humoral pathology, etc. Thus John Millar says in 1769 that Harvey's discovery was of the greatest use in "explaining animal economy and pointing out a rational theory and practice of physic." How confused the conceptions of asthma were at that time is plainly seen by his remarks: "Most authors who have written on this subject (asthma) treat under the denomination of the peripneumony, vomica Pulmonum, flatus, hypochondriac and hysteric diseases, and indeed of almost every other disorder accompanied with difficult respiration, excepting the least complicated state of that which they undertake to describe." His sentiments will be appreciated if the title of his book is mentioned, which reads, *Observations on the Asthma and on the Hooping Cough*, London, 1769. It is also of interest to learn what he himself thinks of the disease. He divides it into an acute and a chronic variety, the first one of which he saw mostly in children who had been lately weaned! It affects the lower class of the people,

and those who had a voracious appetite. If the patient was neglected he gradually went into the second stage. We see here some truth mixed with a good deal of imagination.

Quite a different writer was Robert Bree, whose work, *A Practical Inquiry into disordered Respiration; distinguishing the species of convulsive Asthma, etc.*, appeared at Birmingham, in 1800, and later on in London, in 1807.

Bree was a man of great knowledge, who had tried conscientiously to give full evidence in support of his theories; and he does that because he is aware that asthma had been more subjected to the "caprice of hypothesis and prevailing theories than any others whose appearances could be as distinctly traced to a material exciting cause." The primary cause of asthma, he believed, was an exudation in the bronchial tubes. This caused a contraction of the lungs (muscles of respiration, or, as we now know, the circulatory bronchial muscles) in order to expel the mucus therein. The irritating causes are found in the lungs, but they may also exist in some of the abdominal viscera. Later on, he even mentions a form of the disease which he calls asthma plethoricum, which arises from a "suppression of usual evacuations of blood, or from a spontaneous plethora." That he is the forerunner of Adams and other modern English writers is evidenced by his remark that the attack is preceded very generally by dyspepsia and the circumstances incident to a relaxed habit. This is nothing else than the dyspeptic asthma which Adams and others nowadays proclaim as the only cause of the disease.

That Bree recognizes a *humoral* asthma as well, and mentions among the remote factors the influence of air, dust, metallic fumes, tobacco, hysterics, changes of the moon, etc., shows only that in spite of much wisdom he did not rid himself of the wrong conceptions of the medicine of those days. But to his credit it must be added that he also speaks of a species of asthma *sine causa manifesta vel alio morbo comitante*, or, in other words, of an idiopathic disease. His therapy consisted in cathartics, emetics, diaphoretics, bleedings, diuretics, blisters, inhalations, baths, etc., but he adds that no agent has been discovered which can remove asthma entirely.

Let us mention one more writer before we approach the era of auscultation and percussion, i. e., Williams. In 1841, Doctor Williams, in Tweedie's *Dissertations of Diseases of the Organs of Respiration*, describes two forms of asthma—a spasmodic and an atonic or paralytic form. He found "that defect of these properties (excessive contractibility of the bronchial tubes) would disorder the process of breathing, and is led to believe that there may perhaps be a nervous asthma or dyspnea "from weakness or paralysis of the circular fibres, or of the nerves which regulate their contractions."

For some time afterward another form of asthma was discussed under the name of thymic asthma. The names of Doctor Kopp and Doctor Hirsch, of Germany, are connected herewith. They describe the now well known form of hypertrophy of the thymus, and the symptoms are clearly those of pressure on the trachea. There was no sign of asthma

in the cases reported, but only dyspnea and the characteristic breathing of partial occlusion of the trachea.

A great many other varieties of dyspnea arising from various organic diseases had been previously described, and this so called thymic asthma of Kopp and Hirsch is the last one of its kind. At that time the difference between dyspnea and asthma was gradually being cleared up, and this was mostly due to the introduction of auscultation and percussion.

But now another symptom was pushed more to the foreground, viz., disorders more or less properly called the nervous affections. Thus the great French physician, Laennec, writes of asthma under the heading of "nervous affections of the lungs."

Even Laennec calls dyspnea, "when of sufficient severity," asthma, and this is nothing but a dry catarrh (his famous *catarrhe sec*) plus emphysema of the lungs. Yet it is easily seen that dyspnea is only a symptom of the disease, but to merit the name of asthma "it must be of sufficient severity and permanence." Laennec frequently found no sign whatever of vascular congestion, or of any other organic lesion; hence his belief in its "nervous" character. He also considered it very probable that the dyspnea originated in an imperfect paralysis of the diaphragm, a question much discussed many years afterward by Wintrich, and others to be named later on.

Laennec divides the affection into asthma associated with puerile respiration and spasmodic asthma. It is of interest to read the remarks appended by Andral and by the translator of the French edition, John Forbes. But as these belong mostly to the pathology, they will be mentioned at another time. We may add, however, that the supposition of puerile breathing does not account for contraction of the bronchi, and that this probably was attributed to a paralysis of the muscle fibres in a similar way to paralysis of the diaphragm. In reference to that point many believers in the humoral pathology followed Laennec. They believed in some specific humoral disturbance without which we cannot have asthma. Even Salter does not deny that in some cases the exciting cause of the attack is humoral (p. 8); but what he does deny is, that the humoral derangement has any greater prominence than that of an exciting cause.

We now come to that interesting epoch in the history of asthma, which must be considered of much importance, i. e., the middle of the last century. In this period a great impetus to the study of the disease was given by the Prize Essay of J. Bergson (*Das Krampfartige Asthma der Erwachsenen*), which was completed on the day of the one hundredth anniversary of Goethe's birth, i. e., August 28, 1849, but published at Nordhausen a year or two later; and by another book written in 1860, a work from which many authors have drawn their knowledge, one that even today is to be considered a classic—I mean that written by Henry Hyde Salter, of London, whose name has been mentioned briefly before.

Bergson in his essay states that the seat of spasmodic asthma is in the bronchi and alveoli of the lungs, and that the disease is characterized by a spasm produced by some irritation of the vagus. He,

too, classifies asthma among the neuroses of the respiratory organs, and divides it into cerebral and spinal asthma. The explanation of the former variety (cerebral) is based mainly upon a few illustrative cases which have nothing whatever in common with asthma, and it is surprising that even a man of such wide knowledge still mixed up cases of dyspnea with asthma. To give only one example: A drunken man fell into a coma; breathing was most difficult and the patient was on the verge of suffocation when a tracheotomy restored him almost immediately! The laryngeal mirror had not been invented at that time, or else another diagnosis would probably have been made. Spinal asthma is subdivided by Bergson into, 1, centric spinal asthma (here again all the cases included do not belong to asthma), and, 2, excentric asthma. While in the first mentioned form the brain and medulla oblongata, the two principal regulators of the respiratory functions, are thought to be the seat of an affection causing asthma, in the following forms the nerve centres are considered perfectly free from any structural disorder, and the cause of the abnormal breathing is assumed to lie outside of these centres which are only conductors transmitting the irritation from without. Consequently this class is subdivided again into:

a. Reflex asthma, *aa*: Originating from the digestive tract; *bb*, through irritation of the mucous membrane of the respiratory organs (inhaling of dust, pungent gases, certain odors, etc.); *cc*, through compression or irritation of the peripheral portions of the vagus (tumors, aneurysms, etc.); *dd*, through psychical disturbances.

b. Ganglionic asthma: The diagnosis of this form is made by exclusion of the others.

c. Motoric asthma, from affections of the vertebra or of the muscles of the chest.

The principal fact brought out by Bergson is that there is no such thing as a pure asthma paralyticum, but that it is *eo ipso* a spasmodic disorder as soon as it makes its appearance.

The work of Salter, which was written in 1860, is so well known and so often quoted even nowadays that we mention it only for the sake of historical exactness. We would remind the reader that in that period humoral pathology was in its last stages, the cellular pathology of Virchow not having spread all over the world as yet, and that auscultation and percussion were already part of the armamentarium of every practitioner.

These two stages in medicine are plainly noticeable in Salter's deductions. While he concedes that the irritant in asthma is sometimes humoral, he at the same time examined the chest during the attack and at intervals, and found, 1, that asthma is essentially a nervous disease; 2, that its phenomena—the distressing sensation and the demand for extraordinary respiratory efforts—immediately depend upon a spastic contraction of the fibre cells of organic or unstripped muscles; 3, that these phenomena are those of excitomotor or reflex action; 4, that in a large number of cases the pneumogastric nerve, both in its gastric and pulmonary portions, is the seat of the disease.

With the exception of the theory of humoral irri-



tants, these are the problems that are still under discussion; questions that have not yet disappeared from medical literature.

Certain theories aroused very strenuous opposition. Thus Wintrich did not believe in a bronchial spasm. He had suggested, in 1854, a tonic spasm of the diaphragm (alone or in combination with bronchial spasm), a theory proclaimed before by Willis and later on by Neumann, but not in that precise form. Wintrich's idea was then taken up by such men as Bamberger, Germain Sée, and others, but opposed by Biermer, who held that the low (deep) position of the diaphragm was due not to a spasm of that muscle, but to a spasm of the bronchial tubes, which thus caused an expansion of the lungs (*Lungenblähung*); and soon the influence played by the vagus came more and more in evidence. But the opinions expressed by the many German writers on that subject varied greatly. Riegel, Lebert, Weber, and Stoerck, are some of the men who sided either with Wintrich or Biermer.

A well known contribution is that of von Leyden, in 1871, who found small oblong octohedral crystals in the sputum of asthmatics, and attributed asthma to their presence. Charcot also saw them, and they were exhibited for many years as the Charcot-Leyden crystals. Very soon, however, Unger and others declared that these findings in the sputum were merely accidental, and later the theory was given up entirely. The theory brought forward by Curschmann, in 1883, had about the same fate, says Schmiegelow in his book on asthma. "Curschmann considers a great many forms of reflex asthma to be caused by a catarrhal affection in the finer bronchial tubes, which he named bronchiolitis exudativa. A characteristic of this disease is the presence of peculiar spiral threads in the sputum. The threads are casts of the bronchioles, and are in direct relation to the asthma, which is caused by them through a secondary bronchial spasm. These spirals of Curschmann's are meanwhile no more pathognomonic than the crystals of Charcot and Leyden, as they are also found in cases of fibrinous pneumonia" (Schmiegelow).

Salter's theory of a reflex action was the one that from now on came into prominence. Indeed, the reflex neuroses from the nose played a dominant part for more than twenty-five years, and were discussed by physicians and laymen all over the world. The man responsible for this was Hack, of Freiburg. It was known that cases of asthma had been cured by Voltolini, of Breslau, B. Fraenkel, and Haenisch, after the removal of nasal polypi, but it was left for Hack to arouse the medical world by his theory (1882) that the swollen cavernous mucous membrane at the foremost end of the inferior turbinated body of the nose was the cause of reflexes which disappeared as soon as this tissue was removed (cauterized). In this country Daly, Seiler, Bosworth, Roe, Jarvis, and J. N. Mackenzie, were among the earliest writers on this topic.

Hack's forceful theory was attacked very soon afterward, i. e., at the Copenhagen Congress in 1884, by B. Fraenkel, who asserted that reflexes could be produced from every part of the nose, and not only from the cavernous tissue of the inferior turbinated

and by Gottstein, who maintained that asthma of nasal origin was a *very rare occurrence*. In spite of this, Hack's *Schwellkörpertheorie* prevailed for many years, and nasal reflex neuroses were part of the permanent menu of every meeting and every congress.

It is not possible to present here with the slightest degree of exactness a review of the enormous literature on this topic. Most of it is forgotten and will probably remain so forever. To gain an idea of the marked changes in the views of laryngologists, it may be profitable to look over some of the laryngological textbooks which the writer took up by chance.

J. Solis Cohen, in his work, *Diseases of the Throat and Nasal Passages*, published in 1879, does not mention bronchial asthma at all. But a few years later, already under the influence of Hack's theory, viz., in 1884, Mackenzie discusses asthma in connection with hypertrophic rhinitis, polypi, etc. The translator of Mackenzie's work, Felix Semon, even at that time deemed it proper to caution against being overenthusiastic on that subject. Again, a few years later (1889), Bosworth devotes an entire chapter to the question of asthma. This may give an approximate idea of the growing importance of the diagnosis and treatment of this disease to the laryngologist. And so enthusiastic was Bosworth, for example, that he was led to remark (p. 243), "I have never known a case of hay fever or asthma to occur in other than an obstructive lesion of the nose or upper air passages. . . ."

Bosworth does not include nasopharyngeal catarrh among the causes of asthma. If present, he regards it "as a somewhat secondary cause," in that the vasomotor paresis which constitutes an asthmatic attack is more intimately associated with disturbances of circulation in the turbinated bodies. At that time Hack's theory had reached its zenith, and most laryngologists were under its influence. We must not, therefore, be surprised at Bosworth's remarks.

Let us leave the subject of nasal reflexes, the importance of which I have lived to see exalted and later belittled. Trousseau described asthma as epilepsy of the lungs, a view held in a similar way by Todd (in 1850), and after him by Goldschmidt, of Munich.

Ernest Kingscote, of London, found (1899) that every one of his patients had a dilated heart, and believed that asthma was brought about by pressure of the dilated heart upon the vagus. This is more evident in the prone position during sleep. All that is not in accord with the writer's experience, and is not convincing; but later on Kingscote broadens his views. He says: "Whether it be from the origin in the medulla, from Meckel's ganglion as in hay fever, from a superior laryngeal, from ear mischief through Arnold's nerve, through the pharyngeals, through the recurrent laryngeal, through pressure on the main trunk in the neck, through irritations of the heart, lungs, stomach, liver, spleen, or other

<sup>1</sup>Unfortunately, Mr. Treves is cited in which asthma was produced by pressure of cancerous glands in the neck. Salter cites "many cases on record," in which the asthma was due to organic disease of the pulmonary nervous system itself, such as, for instance, a tumor or exostosis pressing upon one of the pneumogastric nerves.

abdominal or pelvic viscera, or of the sympathetic system, it is difficult to evade *vagal origin*."

Finally, it should be stated that attempts have been made to attribute the asthmatic paroxysms to toxemia (Adams). This toxemia alters the asthmatic so that his condition becomes like a powder magazine; nasal disease is apt to supply the sparks which cause the explosion and precipitate an attack. This is the opinion of Adams, who pays more attention to the digestive tract than to anything else.

And now we have reached our present era, which is characterized by two innovations: bronchoscopy and anaphylaxis.

Although Novotny, of Cracow, had used the bronchoscope for endobronchial applications, the credit for having instituted its systematic use belongs actually to Ephraim, of Breslau, who through his many reports induced others to try the method. In this country H. Horn, of San Francisco, has worked in this field, as well as G. F. Keiper, of Lafayette, Indiana, and myself.

For more than six or seven years I have been engaged in bronchoscopic work, and have expressed my views repeatedly. I have been forced to try endobronchial therapy as an *ultimum refugium*. Many a patient presented himself with severe asthma of ten, or twenty years, and more, duration, who had undergone all sorts of surgical and dietetic treatment without obtaining permanent relief. Nay, patients on whom I myself had operated years ago for nasal polypi, spurs, etc., and who had been considered cured, were found to be suffering as much as ever. If, I reasoned, we make applications to the diseased mucosa of the nose, the larynx, etc., why not to that of the bronchi?

The pathological endobronchial findings, as well as the treatment, will have to be discussed at another time. Here I would only repeat what constitutes my conception of the nature of the disease. In considering this question I came to the conclusion that bronchial asthma in the adult is a similar or perhaps even the same condition as the laryngismus stridulus of children. While the secretion passing down from the nasopharynx into the larynx causes the trouble in children, the same secretion fails to irritate the more tolerant larynx of the adult, but, running down into the bronchi, becomes the source of asthma. The way in which that happens has been explained in my article in *American Medicine*, March, 1915. In this connection it may be well to mention that Avicenna and the Arabian physicians believed that the mucus flowing down from the head obstructed the air passages. Professor v. Rokitsky, of Innsbruck, the internist, considers this a naive conception. It seems to the writer that Avicenna and his followers were not far from right.

Every patient suffering from asthma has both varieties: a spasmodic and an atonic. It is spasmodic during the paroxysm, and atonic at the intervals. This is my own opinion, and accordingly local treatment has been advised by me.

How far we shall succeed with these topical applications, whether we shall reach the desired goal or not, cannot be predicted. Scientific progress in such an affection is slow, and judgment difficult: but

I am very optimistically inclined as to the future of this therapeutic measure.

*Anaphylaxis*: If a soluble protein is injected into an animal sensitized to it, a syndrome results which is called anaphylaxis. This syndrome consists of marked respiratory distress, analogous to an asthmatic paroxysm, cyanosis, vomiting, and asphyxia which may prove fatal (Kahn and Einsheimer). The investigations of S. J. Meltzer tend to prove that "the asthmatic individual is sensitized to a certain substance and that an asthmatic attack sets in every time this substance happens to enter into the circulation." How to counteract this foreign protein is a question of high importance. Two laryngologists have been interested in this study, viz., Alexander C. Howe, of Brooklyn, New York, and A. Goodale, of Boston. Both have done excellent work, and it is to be hoped that we shall hear more from them.

Asthma is a very big field, and it may safely be said today that some cases will be cured by endobronchial treatment, others by anaphylaxis, and a third class, which may prove the overwhelming majority, will probably be cured by a combination of both methods.

From what we have learned from the medical history of this disease it can be said that it is not only difficult to recognize its true nature, but also to effect a cure. Or, as an old writer, Baglivius, puts it: *O quantum difficile est curare morbos pulmonum! O quantum difficilium eosdem cognoscere, et de iis certum dare presagium!* (Baglivi's *Opera*, Lib. I, p. 34.)

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## THE TREATMENT OF HYPERTENSION AND COMPLICATING CONDITIONS\*.

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When we view the records of death and come in contact with the victims of hypertension in the advanced and advancing stages of arteriosclerosis, wrecks often at the time in life when there should be many years of useful and happy existence before them, we are brought face to face with the importance of discovering rational methods of treatment to prevent and relieve the condition.

Unfortunately there is now very little in medical literature that offers much for the relief of these sufferers or to encourage the physician in their management. Few who are authorities in medicine have shown a disposition to investigate the physical methods of managing these unfortunates, but have been disposed to criticize or condemn these methods. Others employing them without a correct knowledge of the technic required do not obtain favorable results, and, naturally, condemn them. It is often argued that the hypertension is compensatory. They do not view the condition as secondary only to a toxic cause, and as the actual cause of the resulting arteriosclerosis. *It is the heart that compensates against the resistance and not the resistance that is compensatory*; therefore, if the tension

\*Read at the Twenty-ninth Annual Meeting of the American Electro-Therapeutic Association, New York, September 12, 1916.

is relieved the labor of the heart is lessened and the arterial degeneration in a degree arrested; for the arterial muscles kept tense degenerate. After a persistence of hypertension a cardiac hypertrophy develops to meet the added resistance. This is physiological, not pathological. The important subject for investigation, therefore, is not the dimensions of the cardia, but the hypertension and its cause. It has been a serious error of clinicians in the past to have laid stress upon the cardiac hypertrophy and not to have considered well the cause of such hypertrophy.

The sphygmomanometer, a relatively modern means of diagnosis, is a more reliable guide than percussion of the chest as indicating the presence of ventricular enlargement. In the early stages of hypertension the findings by that instrument are the key to arterial degeneration that must follow if the cause is not corrected. In the later stages it is the guide to treatment and to control, marking from day to day the improvement, persistence, or the stubborn, unyielding condition of the hypertension. The physical condition of the heart is best studied by the pulse, blood pressure, and the findings of the electrocardiogram. Murmurs are of relative importance as indices of the heart's impediments and earmarks of present or previous toxemias. The management of cardiovascular conditions depends on the study and treatment of the hypertension and its causes.

*The causes* are to be found in the habits of life of the subject and the workings of the organs upon which the body's resistance to toxic poisons and the chemical processes, depend. The presence of hypertension in child or adult is an index of faulty metabolism arising usually from errors of diet, other irregularities of habit, or less frequently from incidental infection. It is rare to find a case of marked hypertension without an associated symptom complex—a train of irregularities which has contributed to the development of the condition.

The management of a case requires, first, a differential consideration of the associated conditions of functional or organic derangements present in order to establish the causal factors, which will determine the varied courses to be pursued in different cases.

*Regulation of diet* is, as a rule, the most important factor to be considered. It has been found in our cases by careful investigation of the histories of a large number of patients that a diet with excess in animal protein has contributed most frequently to hypertension, which should therefore be eliminated. This should not exclude, as is allowed by many clinicians, only red meats, but all animal foods, including fish and fowl. While the latter may be less rich in nitrogen, they are also subject, when taken in excess, to decomposition in the intestinal tract, constituting a nidus upon which the toxin producing bacteria feed. The toxins so produced are undoubtedly the sources of irritation in the circulating blood stream. Most clinicians now recognize the toxins present in the circulation, as the cause of hypertension, and relief obtained by their exclusion when the pressure has been once lowered verifies the theory. It is, therefore, in ad-

vanced cases a prerequisite that all animal food should be eliminated from the diet, and in all cases that it should be curtailed in quantity to the amount that can be both digested and assimilated, excess serving, as stated, as food for the disturbing bacteria. The plea of some clinicians and particularly of patients, that they cannot exist without animal food as part of their diet is disproved in the experience of those who have adopted that dietetic régime with their patients. It is more a question of distaste and individual insubordination than of fact. The dietary of each patient should be regulated to the individual idiosyncrasies, tastes, and physical demands. This will require careful investigation. It will be necessary in each also to study the conditions of the symptom complex. They may include one or many disturbing conditions—hypertension, chronic constipation, inactive liver, and in advanced cases varying degrees of arteriosclerosis with or without angina pectoris. There may be a complicating dilatation of the splanchnic area with the pathognomonic symptoms of higher pressure and pulse more marked when lying down than when sitting.

*Nephritis* will mark the later stages of the condition, and in the aged, peripheral gangrene may occur as well as other conditions arising from defective metabolism. The management of a case must include the careful survey of all of the elements in order that the conditions may be corrected, and the patient placed as far as possible upon a stable basis. There is no doubt, as demonstrated at the present time, that it is possible to prolong life for many years, even in the most advanced cases, if the patients implicitly follow a regulated plan of life, and no greater responsibility rests upon the physician than to prolong life and prevent apoplexy in these cases.

*Hypertension*, as previously stated, is but a symptom commonly indicating the presence of irritant bodies in the circulation, acting either upon the adrenals or vasomotor mechanism or directly upon the arterial walls. The latter is the most probable and most generally accepted view at present. The removal of these sources of irritation, as previously suggested, rests largely in the habit of diet, regulating the quantity and quality of intake to the physical demands of life or occupation. The sedentary subject requires a lower dietary than the laborer or the man who pursues an active physical life. It is relatively rare to find arteriosclerosis in the laboring man who may eat larger quantities of animal proteins to meet the body's physical demands. This is well exemplified in the longevity of the rural population, whose lives are the most laborious and whose habits are simple.

*The hypertension*, in addition to the regulation of the causes which have led to the condition, can be best controlled by the employment of the high frequency current, by the autocondensation, or autoconduction method. The French employ largely the autoconduction method, treating the patient within a large solenoid, but in this country the autocondensation method is found the most practical, convenient, and effective.

The management of a given case will depend



considerably upon its present status or condition. In childhood a tension above eighty-five mm. Hg. at twelve years of age is a condition of hypertension. Any degree of pressure at any age above 120 mm. Hg., with the full pulse or diastolic pressure, is too high, and indicates the presence of toxic processes. It is not uncommon to find men at forty-five and fifty years of age in health whose pressure is not over 110 mm. Hg. full pulse pressure; nor is it uncommon to find men at sixty or seventy years whose pressure is not over 140 mm. Hg. These will be found to have followed a moderate diet with exercise. An error made by many clinicians is to undertake to assume and state to their patients as a comforting assurance that different pressures are normal for different ages. The average of pressures at a certain age may be and is above normal. Normal pressure, as the normal of pulse or respiration, is the same at any age after maturity, or it is not normal. In children the pressure rises gradually as they approach maturity. A pressure above the normal range is always indicative, as previously stated, of toxic processes, and calls for a correction of diet and other disturbing conditions. If the young adult is taught in early life to observe the proper rules of diet, and no intervening infection occurs to cause a systemic toxicity, pressures will remain practically normal throughout adult life.

There is no condition which the clinician should investigate more frequently in all ages, including childhood, than the arterial tension. He will be thus warned of the presence of toxemias to be corrected. Greater attention given to the regulation of habits, together with an education in essentials of diet, will contribute most to longevity as a prophylactic measure, particularly after maturity.

*Treatment by the high frequency current* consists in the employment of the autocondensation method. It is our custom to treat the patient having hypertension daily until the pressure falls to normal or recurs to the same figure on the meter scale following each daily treatment. This will be the compensation point for the case; for it has been demonstrated clinically by this method of observation in the study of a large number of cases that cardiac sufficiency is in no sense impaired by this method of treatment, but that arterial relaxation can be carried only to a limited degree, varying with the advanced condition of the affection. At this point a fixed tension will persist despite treatment, and beyond this it will be impossible to lower the pressure. We have termed this the compensation point. It seems to be as relative and positive as the provisional regulation of the other functions of the vasomotor mechanism, as the automatic control of the respiratory and cardiac functions. There is no danger, then, of reducing the blood pressure below the point at which the heart's compensation is fixed relative to the extent of resistance of hypertension or the sclerotic process. Finding this point, therefore, the frequency of administration should be so regulated that administrations will be given with a frequency that maintains the pressure approximating this lowered point.

This, together with judicious attention to diet and other conditions of the alimentary tract, with dis-

engorgement or restoration of activity of the function of the liver, will shortly control the condition by very infrequent administrations of the current except in advanced cases or in indifferent patients. It is our custom, however, to keep these patients under observation, requiring their attendance at least once monthly in the advanced cases, and less frequently in the early cases. This is done for safety, and is usually acceptable to those who care to control the condition that their lives may be prolonged. In advanced cases of arteriosclerosis it may be necessary for the patients to continue to take treatment as often as two or three times weekly, rarely oftener.

*Constipation* naturally favors a greater degree of intestinal decomposition from retention of fecal matter in the colon. It is therefore imperative in all cases, even in the young, as a preventive measure to demand a daily evacuation of the colon content. Sedentary habits with physical inactivity and carelessness concerning diet and an established hour of evacuation, lead to this unfortunate habit. Its correction, therefore, must depend upon the establishment of a diet which will aid in overcoming and controlling the condition. In chronic cases it will be necessary, first, to overcome atony of the bowel resulting from long habits of neglect. This may usually be accomplished by employing some agent which will restore the functional activity of the neuromuscular mechanism of the intestinal tract. There is probably no agent more efficient for this purpose than the sinusoidal current, administered at first daily, and later with diminished frequency, until tone is restored with a routine habit, after which the patient should regulate the diet and exercise so as to maintain normal daily movements.

*An inactive liver* will fail to perform the important function of converting the toxins into innocuous bodies. According to the researches of Somerville, seventy-five per cent. of toxins are destroyed by the liver. When hypertension is discovered it is fair, therefore, to suppose that the liver function is not normal. There is no measure at our disposal so effective for restoring the liver to its normal function as the static wave current with a metal electrode approximately five by eight inches in size, placed over the lower margin of the liver and epigastrium, employing a spark gap four to eight inches for twenty minutes. Some physicians employ thermal penetration through the liver. In the writer's experience the former is far to be preferred. This constitutes a part of the routine treatment in all cases of hypertension that come under our observation, and probably contributes more, together with the regulation of diet, than other measures in controlling the toxin irritation.

*Advancing or advanced arteriosclerosis* is evidenced by the fact that pressure cannot be lowered to normal and varies with the different stages of the condition. This condition rarely occurs, according to our observation, before pressures have exceeded 160 to 170 mm. Hg. In the most advanced cases it may be impossible to lower the pressure, as may also be the case in conditions of cerebral pressure. The differential method for diagnosing the degree or extent of arterial degeneration will usually be

determined by observing the response to treatment. As already stated, the advanced case may not respond, whereas the degree of reduction in mm. Hg. will vary with the extent of the sclerotic process. The prognosis as to the frequency of treatments and the control of the condition will be governed by the resistance to treatment.

One class in which pressure may be very high and may respond very rapidly, and in which a diagnosis is imperative since the danger of lowering pressure is imminent, is parenchymatous nephritis. It becomes of the utmost importance, therefore, to the physician who employs the high frequency current for hypertension to be able to differentiate such cases. In these cases the lowering of the blood pressure must depend upon the removal of the inflammatory process in the kidney, and not upon the relaxation of the arterial circulation; and, furthermore, if the pressure is lowered under these conditions, uremia will intervene, with a diminution of solids in the urine.

A complication which is present in some cases of hypertension and may be found present with a moderate degree of hypertension is dilatation of the splanchnic area. This is a condition which Dr. Albert Abrams and Dr. Mary Arnold Snow have described as *splanchnic neurasthenia*. These cases are promptly relieved by the employment of mechanical vibration between the second and third, third and fourth, fourth and fifth dorsal vertebrae, for five minutes daily, followed by the application of the static wave current with a metal electrode over the lower margin of the liver and epigastrium. The pathognomonic symptom of this condition is a reverse relation of the pressure and pulse, the pressure and often the pulse also being higher, when the patient is lying down than when he is sitting.

*Interstitial nephritis* as a condition resulting from prolonged conditions of hypertension and associated with the advanced stages of arteriosclerosis is one of the grave sequelæ of the autotoxemia and the resulting hypertension. Its treatment in the early stages by the employment of the high frequency autocondensation current, together with the application over the kidneys and liver of the static wave current with a metal electrode large enough to cover both kidneys and the employment of a spark gap that will cause a distinct throbbing of the overlying muscles, or of thermal penetration, passing a tolerant direct d'Arsonval current through the kidneys, is followed frequently by a disappearance of albumin and casts. This is true in the early stages of interstitial nephritis.

Contrary to the statements of those who are not fully informed as to the results, there is a steady increase in the elimination of solids up to normal in the urine associated with this plan of treatment, showing conclusively that there is no interference with the compensatory functions and the elimination due to the lowering of blood pressure, but on the contrary a favorable increase. It becomes then a matter of the greatest importance with these advanced cases of nephritis that receive the autocondensation together with the static, or high frequency current, that a means of relieving them of impending uremia is afforded by increasing the elim-

ination of solids with a coincident lessening of the congestion in the kidney itself. The latter effect is derived from the electrical treatment, for which in our experience the static current is most efficient.

*Gangrene* is another one of the conditions of the late stages of arteriosclerosis in the aged. I refer to it here only in order to call attention to the fact that together with the other treatment of the general condition, the application of radiant light and heat, making one or several one hour applications daily will in most cases promptly create a reactive hyperemia, which will heal the part, and the gangrene disappears. This is rational treatment and has been used by the writer with success in several cases.

*Diabetes* in one or another form may be associated with hypertension rather as a result of the condition. We make this statement because in these cases, though the amount of sugar may be very great, after lowering of the pressure sugar will disappear from the urine. These cases are also liable to be complicated by albumin and casts in the urine, indicating that the diabetes is due to pressure coincident in some cases with nephritis. In the earlier stages these cases may be controlled by autocondensation alone, as has been verified in a number of cases that have come under our observation.

*Early senility* is one of the earlier indications of advancing arteriosclerosis. This is probably due largely to the impaired function of the secretions caused by disturbances in the circulation and also to a lowered production of important internal secretions, particularly of the thyroid gland. Kere-tosis and brown spots in the skin of the face may be abundant in these patients. We find that after fifty years of age, particularly in cases of arteriosclerosis, small doses of thyroid extract accomplish much to improve the vital resistance of the patient and may well constitute a part of the treatment in advancing cases.

Before concluding, I wish to refer to one principle in the employment of apparatus for the treatment of hypertension and arteriosclerosis. As reported by the committee of the American Electrotherapeutic Association in a report given two years ago, it has been our experience that to get the best effect upon the metabolism and to lower blood pressure, a true d'Arsonval current is necessary. It is a subject of regret that most of the manufacturers at the present time are putting out for high frequency treatments closed or open circuit transformers which produce only oscillating currents. With this type of apparatus the current passing to the condenser is always alternating and the quality of the current produced is likewise oscillatory and cannot be rendered directional or pulsatory as it can with the true type of d'Arsonval apparatus. A Ruhmkoff coil with a mechanical interrupter and a resonator is an ideal apparatus for the administration of autocondensation, when operated on a direct current circuit or high speed static machine. This with an autocondensation couch provided with a thick cushion and proper resonator is in accord with the physical law, as described in the *Report of the Committee of Physicists*, which gave us a most valuable key for the employment of electric current.

and in the presidential address of Dr. Edward C. Titus, delivered before the association in 1900. It was distinctly shown in the report and address that with the true d'Arsonval current administered with the patient seated upon the thick dielectric and his body capacity on one side of the dielectric and a fairly long spark gap in the circuit, the current becomes largely pulsatory, the inverse current being slight. If the apparatus is connected in such a manner that the positive phase of the current is administered to the patient, there is no doubt in my mind, and I have carefully investigated from both points of view, and as the Committee on Standard Therapeutic Measures reported in 1914, that the effects are far more beneficial. With this arrangement it is necessary to administer but 500 milliamperes for the conventional twelve minutes to obtain the maximum effects upon the pressure, and this without overheating or surcharging the patient, which in my opinion is objectionable.

2020 BROADWAY.

## THE PATHOLOGY OF POLIOMYELITIS AND ITS RELATION TO THE VIRUS.\*

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Acute poliomyelitis, so called, but in reality a meningoencephalomyelitis, is a general infection involving the entire cerebrospinal axis with its membranes. Certain other viscera may also be affected, as the lungs, heart, intestines, spleen, liver, and kidneys.

The process is at first one of inflammation, the cord and meninges in the paralytic stage becoming hyperemic, the bloodvessels of the cerebral cortex, basal ganglia, brain stem, and cord are congested, and edema is present to some extent throughout the entire central nervous system. In the cord all levels are affected, but the changes are most conspicuous in the cervical and lumbosacral regions.

The meninges bear the brunt of the invasion, the earliest changes being seen in the vessels of the pia as it extends into the anteromedian fissure of the cord. An acute interstitial meningitis occurs, which is not associated with the formation of fibrin or with exudation on the membranes. Along the sheaths of the vessels of the pia appears a cellular infiltration which extends into the anterior horns. The pericellular lymph spaces of the posterior root ganglia are also involved early, these changes occurring, according to Neustaedter (1), as soon as the third day after infection.

The gray matter of the cord shows, in addition to the congestion of the bloodvessels, edematous softening with here and there minute hemorrhages, cellular infiltration (chiefly lymphocytic) and later degeneration of the nerve cells, irregular in distribution and rarely affecting all the cells in a given level. Still later, if the destructive changes have been marked, the characteristic cells of the gray matter are replaced by neuroglia and connective tissue, and

the horns become shrunken and atrophic in appearance.

In the white matter are found edema, congestion, lymphocytic infiltration of the adventitial lymph spaces of the bloodvessels, and rarely degenerative changes have been found in the anterior roots.

The pons and medulla present similar but less extensive lesions, the ganglia cells as a rule not being affected to the same extent as corresponding cells of the cord. Changes in the brain are usually limited to congestion, edema, minute hemorrhages, and cellular infiltration, the latter chiefly in the vessel sheaths. The spinal ganglia present marked cellular infiltration without much change of the ganglia cells. Outside of the meninges and nervous tissue, the changes that have been found are such as are common to acute infectious diseases in general. Of these, the most frequent and conspicuous is a hyperplasia of the lymph nodes of the intestines, mesentery, and spleen. Similar changes have been found in the bronchi. Rarely, acute degeneration has been observed in the liver, kidneys, and myocardium.

As the cells of the anterior horns are trophic in function, it follows that when destroyed, their dependent fibres and muscles degenerate and atrophy with resulting permanent palsy and deformity. The cerebrospinal fluid in acute poliomyelitis shows an early lymphocytosis, the number of cells varying from thirty to several hundred per c. mm., the globulin content is increased, as is also the property of reducing Fehling's solution, owing to the presence of dextrose. A fibrin clot appears in the prodromal and early acute stage, but disappears later. Fraser has shown that comparatively mild or even abortive cases presented just as marked abnormalities of the cerebrospinal fluid as cases fatal during the acute stage, and moreover, that the cases presenting the most extensive changes in the cerebrospinal fluid did not always give characteristic clinical symptoms.

The blood in the paralytic stage does not show a total leucocytic count in excess of what might be considered normal, but as the infection progresses there is a constant and marked leucocytosis, with an increase of ten to fifteen per cent. of polymorphonuclears and a decrease of fifteen to twenty per cent. of the lymphocytes.

Whether the virus of poliomyelitis results from the activities of the ultramicroscopic, filterable microorganism described by Flexner and Noguchi (2), the peculiar streptococcus of Rosenow, Towne, and Wheeler (3), the Gram positive micrococcus of Nuzum and Herzog (4), the organism found by Dixon (5), or the germ of which reports are now emanating from Johns Hopkins, we do not know. We fail to become enthusiastic over the coccus idea, however, and as a betting proposition would feel inclined to place our money on the Rockefeller entry.

Nor is the portal of entrance removed entirely from the realm of uncertainty. Koplik (6), as far back as 1909, offered two theories—entrance by way of the tonsils, and entrance by way of the gut. Strauss (7), in 1910, after a post mortem study of six cases of poliomyelitis, concluded that the invasion of the virus occurred through the gastrointestinal tract. Flexner (8), however, has shown

\*Read before the Philadelphia Pathological Society, October 26, 1916.



experimentally that the virus of poliomyelitis is incapable of being taken up from the stomach or intestines of monkeys unless the functions of these organs are previously disturbed or arrested by opium.

Flexner and Lewis (9) feel that their experiments support the view that the infection in epidemic poliomyelitis is local and neural and through the lymphatics, and that the "infection atrium" is the upper respiratory mucous membrane. Flexner (10), however, in another communication, says: "The facts known concerning the relation of the nasal mucosa to the virus of poliomyelitis must be taken at precisely their true value, and must not be considered to exclude other modes of infection by way of other channels in human beings."

Neustaedter (1) considers it as accepted that the point of entrance of the virus is the nasopharynx, and points out that while nearly all investigators have considered the nasopharynx as being negative in poliomyelitis because it is not reddened as in ordinary infections of the throat, he finds it constantly edematous in the early stage, with a serous, frothy transudate. This he considers pathognomonic of the earliest prodromal stage. He attributes the foci of congestion in the lungs and alimentary tract to the swallowing of the nasal discharges.

The view that the virus of poliomyelitis travels along the nerves as does the virus of hydrophobia, is generally accepted. Flexner and Amoss (11) believe that in all of the external modes of inoculation practised in their experiments, excepting when direct intravenous injections were made, the virus penetrated to the central nervous system by way of the nerves, and Flexner and Clark (12) have shown experimentally that when the virus was introduced into the upper nasal mucosa in monkeys, its propagation could be followed from the olfactory lobes of the brain to the medulla and spinal cord. Had the virus reached the nervous axis by way of the general circulation, the different areas of nervous tissue involved should have been attacked almost simultaneously. By injecting an emulsion of virus from the spinal cord into the vitreous humor of the eye, Flexner and Amoss (13) have been able to demonstrate that the virus readily reaches the central nervous system by the neural route, while Landsteiner and Levaditi (14) have produced paralysis by inoculating the virus into the anterior chamber of the eye.

The experimenters at the Rockefeller Institute (11) have further shown that small or even infinitesimal doses of virus will induce infection when inoculated endoneurally, while large quantities of the virus given intravenously will only occasionally cause paralysis. This is due, it is assumed, to an inability of the virus to enter the substance of the brain and spinal cord directly from the blood, having first to penetrate the choroid plexus. They have shown also that the permeability of the meninges for the contents of the blood is increased by inflammation of these structures.

Some of the cases seen by the writer in the present epidemic of poliomyelitis differed clinically from the familiar endemic cases of past years. Many presented an extreme tenderness or hyperesthesia,

which, while more or less general, was greatest in the paralyzed extremities. This suggests strongly an extension of the virus along the sheaths of the nerves from their roots to the periphery, with a resulting neuritis of the terminal nerve filaments.

Other cases, instead of giving the usual history of paralysis occurring within twenty-four or forty-eight hours after the first symptoms of illness, would not have any evidence of palsy until seven, ten, or even twelve days after the appearance of definite symptoms of general infection. This can hardly be due to a primary blood infection with delay in passage of the virus through the choroid plexus, as Clark, Fraser, and Amoss (15) have shown that the virus, when inoculated intravenously, remains but a short time in the circulating blood. It would seem more probable that the infective agent in these cases was increasing in numbers and virulence during the latent period, until able to overcome the resistance of the nerve tissue.

The whole question of immunity is one of great interest and importance. It would seem probable that the development of the disease in so comparatively few and scattered cases in a general epidemic must be chiefly due to the fact that many have acquired immunity through having had the disease in the so called "abortive" form—or is it not possible that, like influenza, the infection may be protean in its clinical manifestations and that "poliomyelitis" is only one form, other nonparalytic forms being also capable of conferring immunity?

In a recent publication, Taylor (16) reports a case having had two attacks of poliomyelitis three years apart, and reviews the literature on the subject. He concludes that while "an attack of poliomyelitis in the great majority of cases confers a lasting immunity; that it is definitely established that exacerbations or relapses may occur at short intervals of time after the primary onset; and finally, that evidence is accumulating to show that an actual second attack with reinfection from an external source may and probably does occur in rare instances."

In closing, I wish to express my indebtedness to Doctor Coplin for his kindness in placing numerous reprints and references at my disposal.

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1830 SOUTH RITTENHOUSE SQUARE.

**Air and Rhinitis.**—Walter J. Wurtz (*Annals of Otolaryngology, Rhinology, and Laryngology*, June, 1916) states that hygiene of the body, as well as of the home, schools, and other public buildings, is necessary to prevent "cold in the head."

## THE ROLLIER TREATMENT OF TUBERCULOSIS.\*

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Although heliotherapy has been practised for some years in this country, so far as can be learned, it has been carried out only during the summer months and in a more or less haphazard way with no regard for system and no attempt at control. The results are apt to be inferior under these circumstances, and, as might be expected, have not been sufficiently promising to warrant general application. The solar rays, just as with any other therapeutic agent, if improperly administered and the dose not controlled, may be unsatisfactory and even most harmful. The unsatisfactory results must be attributed to the improper application of heliotherapy or its abuse, or the failure to use the proper appliances.

It was not until two years ago last November that

tients, we have had to refuse admittance to others. It is unfortunate that there is no place where these patients can receive proper treatment.

The J. N. Adam Memorial Hospital, a municipal institution of the city of Buffalo, is situated at Perrysburg, in a most ideal spot for carrying out heliotherapy. It has an elevation of 1,650 feet above sea level and stands on the north slope of a hill overlooking the beautiful Cattaraugus valley. Besides the protection from the prevailing winds by a large tract of woods and the brow of a hill, we have a most extensive view unexcelled in this part of the country. It is forty miles from Buffalo and fourteen miles from Lake Erie. Its close proximity to the lake moderates the temperature, and the continuous circulation of land and lake breezes modifies the humidity to a considerable extent. The mean relative humidity for the year 1915-16 was at 8 a. m. 77.1 per cent. and at 8 p. m. 78.1 per cent. The mean temperature for the same year was 47° F. The highest temperature was 88° F. and the lowest—4°. We had 1,729 hours of sunshine.

The plan and construction, original with Dr. John H. Pryor, is of the old English architecture, simple and attractive. There are two pavilions, one for



FIG. 1.—The north side of sun cure building A, the open air school at the extreme right end and the walk leading to sun cure building B.

Doctor Rollier's method of treatment by heliotherapy was introduced at the J. N. Adam Memorial Hospital by Dr. John H. Pryor, then chairman of the hospital commission. As far as can be ascertained, this marks the introduction of the Rollier method of solar radiation to this country, in an extensive and complete manner, although as mentioned, it has been employed in a crude way during the summer months by several institutions.

We are happy to note that, since the inauguration of this mode of treatment at Perrysburg, it has awakened considerable interest throughout the country. Physicians who have come from all parts of the United States to see the work carried out at the hospital, not only have gone back full of enthusiasm, but have introduced it into their private practice, and those connected with institutions have used their efforts to have it introduced in hospitals.

We hope that it will not be long before sanatoriums will be established in the various States and municipalities to carry out heliotherapy for the cure of surgical tuberculosis. There is a great demand by physicians and patients outside of Buffalo for treatment at Perrysburg, but as the institution has always been filled beyond capacity by Buffalo pa-

the males and one for the females. They are one story high and have terraces on all sides twenty-one feet wide, twelve feet being covered and nine feet uncovered. This is a most convenient type of building, allowing full advantage of the direct rays of the sun during the whole day, and at the same time affording protection from wind and snow. Each pavilion has central administration quarters, with the kitchen and dining room in the rear and a wing at either side. Each wing has two large wards and four private rooms. This allows the separation of the bedridden from the ambulant cases and also the segregation of the children according to age. These pavilions were equipped by the school children of Buffalo through the sale of Red Cross seals. The structures cost \$100,000 and the furnishings \$10,000. They were built to accommodate 128 patients. The buildings are fully equipped and every effort has been made to make them comfortable and cheerful for the children. It has been the aim of Doctor Pryor to make the environment of the whole institution as homelike as possible.

Two teachers have been assigned from the school department to take care of the education of the children. As far as possible, the teaching is done in the open fields and woods. A large open air school room

\*Read, before the Buffalo Academy of Medicine, April 3, 1916.



is used for a certain class of work and when the weather is inclement.

Doctor Pryor remarked in the discussion of our first paper, read before the Buffalo Academy of Medicine, "If we can relieve these crippled, emaciated, and bedridden children of their pain, and im-



FIG. 2.—The teacher taking the convalescents into the woods for instruction.

prove their general condition and thus make their lives happy and comfortable, even without getting brilliant results, we are sufficiently justified in pronouncing the treatment successful." Our results show more than that. Not only has this mode of treatment relieved the children of pain, and wrought a change for the better both in their physical and mental condition, but the results attained in most of the cases could not have been secured by any other method.

It is well to note that solar radiation is of benefit not only in cases of so called surgical tuberculosis, but is being applied with excellent results in cases of puerperal sepsis, anemia, convalescence from infectious diseases, and in fact in all diseases where the resistance of the patient is below par. It is being used in the European war in the treatment of all kinds of wounds.

While heliotherapy cannot be carried out in winter as successfully as in greater altitudes on account of the small amount of sunshine and the weakness of the ultraviolet ray at this season of the year, in the spring, summer, and fall, the treatment can be employed most successfully. Last winter we made use of the artificial ultraviolet ray generated by means of mercury vapor lamps, and although we are not ready to report fully on its value, it has proved an

important aid at this season of the year and in cloudy weather. Notwithstanding the handicap experienced in winter, taking the twelve months of the year as a whole, heliotherapy combined with the open air treatment, has produced upon surgical tuberculosis satisfactory results. The success, so far, has exceeded our expectations, and the longer we practise heliotherapy the more convinced do we feel of its efficacy.

For the sake of those who are not familiar with heliotherapy, we will briefly outline its history, mode of action, and technic as it is employed at the J. N. Adam Memorial Hospital and carried out by its greatest exponent, Doctor Rollier, of Leysin, Switzerland.

The beneficial effect of the sun was known as far back as the time of the Greek, Herodotus, the father of history, who lived between the years 484-425 B. C. It was not until recently, however, that its therapeutic value was recognized so fully as to cause it to be used in a systematic and scientific manner. With due credit to Bonnet, Poncet, Ollier, and Bernard, who used solar radiation in chronic ulcers and bone tuberculosis years ago, we owe its general introduction to Doctor Rollier, who placed heliotherapy on its present scientific footing.

Doctor Rollier became a great enthusiast concerning heliotherapy during his four years' assistantship to Professor Kocher. He noticed that in spite of the excellent technic and wonderful knowledge of this surgeon, the results of operation on bone and joint tuberculosis were not satisfactory. He attributed the unsatisfactory results to the fact that all attention was paid to the local condition and very little, if any, to the general state and resisting power of the patient. The disease was treated purely as a surgical one.



FIG. 3.—At play in the winter.

These observations, the favorable results by Bonnet, Poncet, and Ollier in chronic ulcers and bone and joint tuberculosis, the discovery about the same time by Finsen of the germicidal action of the solar rays, and the fact that pulmonary tuberculosis improved so well under the out of door treatment,

especially in great altitudes, convinced Doctor Rollier so strongly of the value of heliotherapy that, in 1903, he established at Leysin, Switzerland, the first sanatorium of its kind for the treatment of bone and joint tuberculosis by means of solar radiation. He started with a small crude building, caring for a few cases; now he has several large buildings at different heights ranging from 3,500 to 5,000 feet above sea level and housing more than a thousand patients.

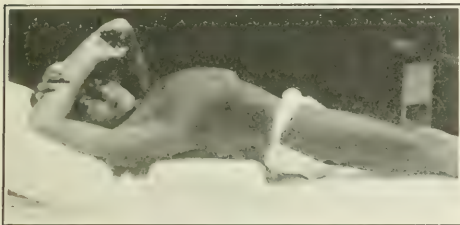


FIG. 4.—Patient with Pott's disease. Shows the ventral position.

He has made this region a famous health resort for the treatment of tuberculosis in general, and surgical tuberculosis in particular. This was the starting point of the systematic treatment of surgical tuberculosis by heliotherapy.

The favorable results achieved with solar radiation are attributed to the luminous or short length waves of the sun's rays, of which the ultraviolet plays the most important part. These rays have a threefold effect upon the skin. They cause a latent hyperemia, a pigmentation, and a thickening of the epidermis, considered by Doctor Rollier as processes of defense. The hyperemia permits the easy absorption of these rays, and the pigment converts them into longer ones, thus giving them greater penetrative power, so that they can be more easily absorbed into the blood. What changes occur in the blood through them are problematic; let it suffice that this absorption of the luminous rays plays a physiological part. These rays are more abundant and more powerful in summer than in winter, and in great than in lesser altitudes. Dr. Rollier recommends that the treatment be carried out in all altitudes and climates, and throughout the whole year whenever possible, and also that every hospital that desires to assume the responsibility of the treatment of surgical tuberculosis shall have spacious and well sheltered terraces where the patients may be rolled out in their beds, and where they may get, from early sunrise, the beneficial action of complete aeration, and when atmospheric conditions permit, general insolation.

When using heliotherapy, certain precautions must be used and the directions must be followed minutely, as otherwise we may have reason to regret omission of the slightest detail. Sun baths may prove very injurious when given improperly.

No insolation is attempted from three to ten days after a patient's admittance to the institution, but during this period the patient gradually becomes accustomed to the action of the air and sun and to the out of door life in general. He is at first made to rest and sleep in bed in his room with windows

or doors open. Then his bed is rolled out on the open porch for about an hour the first day, and the time is increased daily until he is able to be in the open air practically the entire twenty-four hours of the day. During this time a record is made of the temperature, pulse, respiration, and of the urine and blood findings. After this preliminary observation period, the patient is ready for the real solar bath.

No sun bath is given later than one half hour before a noon meal and not sooner than two hours afterwards. The treatment is carried out in bed or on a flat couch and is always started by exposing the feet first, without regard to the site of the lesion. Sinuses and ulcers are exposed to the sun after the whole body has been gradually insolated. In cooler weather, in order that chills may not occur and thus lower the patient's resistance, care must be exercised that no breeze strikes the body. This can be accomplished by wind breaks or screens. The head is protected by a linen cap, an umbrella, or a small awning at the head of the bed, and the eyes are shaded by means of colored glasses. We use a towel over the eyes and forehead, which serves to protect them very satisfactorily.

First day: The patient is dressed in a fabric or flannel garment according to the season, and the head and eyes are protected as mentioned above. The feet are exposed and bathed in the sun's rays for five minutes, three or four times at hour intervals.

Second day: The feet are insolated ten minutes and the legs from ankles to knees five minutes, three or four times at hour intervals.

Third day: The feet are insolated fifteen minutes, the legs from ankles to knees ten minutes, and the thighs five minutes, three or four times at hour intervals.

Fourth day: The insolation of the previously exposed parts is increased by five minutes, and the abdomen is exposed five minutes, three or four times at hour intervals.

Fifth day: Again the insolation of the previously exposed parts is increased by five minutes, and the chest is exposed five minutes, three or four times at hour intervals.

Sixth day: If the condition allows it, the patient is turned on his abdomen, and the same course as described above is repeated.

Instead of waiting for the sixth day to turn the patient on his abdomen in order to insolate the back of the body, from the first day we insolate the front and back of



FIG. 5.—Patient with Pott's disease, lying on board to correct the cyphosis.

every exposed part alternately three or four times a day at hour intervals.

The solar radiation is increased five or ten minutes each time until three or four hours daily are taken. During insolation sinuses and ulcers are covered only by a wire screen so as to allow the rays of the sun to play upon the lesions.

After each insolation the patient is vigorously rubbed



with spirits of camphor, using a glove made of rough material.

If during this preliminary treatment, for any reason, the sun bath is interrupted, the insolation should be resumed at a stage a little earlier than from where it was stopped.

Great care must be exercised during the first formation of pigment and while the patient is becoming accustomed to the sun. We must watch that no dermatitis and that no reaction such as high

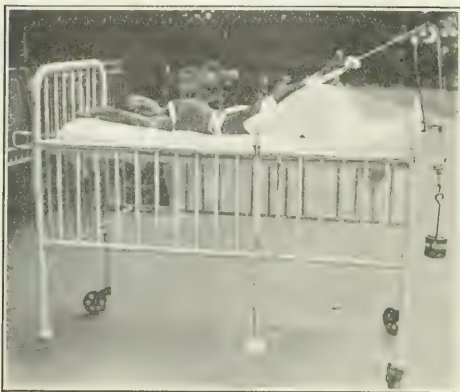


Fig. 6.—Boy in traction. Notice the extension apparatus at the foot and the side extension. The patient is held in position by bands of webbing attached to the sides and ends of the spring.

pulse, rise of temperature, headache, nausea, or other constitutional disturbance takes place. In feeble patients and where there is considerable fever the insolation must be of shorter duration and regulated very carefully, and if any reaction is noticed the exposure is stopped or the dose decreased. It is at this stage that a patient is likely, in his enthusiasm, to overexpose himself, and needs most careful watching.

In summer it is not advisable to take sun baths during the hottest hours of the day, as at this time solar radiation is depressing and fatiguing and likely to produce serious reactions.

After the treatment has progressed for some time, and weather conditions are such that the sun cure cannot be taken, an air bath is given, the time of which is regulated in each case. This depends upon the general condition and resisting power of the patient. Usually an air bath of ten to twenty minutes is sufficient.

In winter, when the days are pleasant and the sun is not strong enough for a bath, we allow our children who can stand exercise to play naked in the open for as long as an hour, while during the summer months they go about with only their trunks the whole day long.

In the course of treatment the skin surface gradually takes on a bronze hue, then a copper color, and finally becomes a chocolate brown. As pigmentation progresses the skin becomes soft and velvety and very healthy looking, and seems to acquire considerable resistance to bacterial infection. There has not been a case of skin infection after abrasion in any of our patients, although, especially during the summer, the children, through climbing trees and

roaming around the woods naked had every chance of becoming infected.

Furthermore, it has been noticed that these children are not subject to the usual winter infections of the respiratory tract. It is a remarkable fact that the children who have taken the sun treatment rarely contract a cold, while other children and adults who have taken only the out of door treatment have acquired respiratory infections moderately often. Last winter there were several outbreaks of influenza, but none of the sun cure patients contracted it.

Besides increasing the resisting power and thus acting as a prophylactic to the usual infections, heliotherapy is a most enjoyable recreation if properly carried out. The most annoying condition that must be avoided and one that will make the sun cure both uncomfortable and possibly unsafe is a cold wind, however slight, striking the naked body. This is avoided as mentioned above by proper screening or wind breaking. If caution and common sense are practised and the patient is faithfully watched, sun exposure is usually safe.

During the winter months we insist most emphatically upon the nurses, that no matter how strong the sun may be, as soon as a child feels or looks chilly he must be taken into a warm room and the treatment temporarily discontinued.

The gradual pigmentation of the skin is in direct proportion to the favorable progress of the cure; in fact, Doctor Rollier uses the degree of pigmentation as an index to prognosis. We have noticed ourselves that the patients with the darkest tan make the best progress.

The effect upon the general condition of the patient is most remarkable. There is a rapid disappearance of pain, fever, and chills, there is a return of appe-

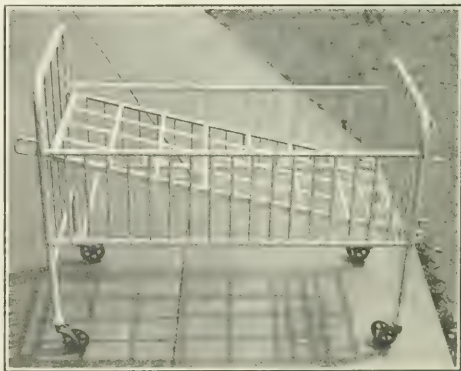


Fig. 7.—The bed, showing the hard spring, which can be raised or lowered at the head or foot for counter extension. The nurse raises the spring to the level of the side bars for ease in making up; lowers it at night so that it becomes a crib. The bars at the foot are for extension apparatus and the large rollers render it easy to move.

tite, an increase in the body weight and strength, and an improvement in the blood condition. Both hemoglobin and red cells increase, leucocytosis, if present, becomes reduced, and an actual lymphocytosis takes place as pigmentation progresses. A slight eosinophilia is also present.

Some of the patients, on admission, present a

pitiful picture. They are anemic, emaciated, and fever ridden and with features suggestive of suffering; yet, in a few weeks, these patients go through a complete transformation. The pain, often intense, disappears in about ten days; the temperature takes a steady drop, weight is taken on rapidly,



FIG. 8.—The wire protective screen, which allows the wound to be aerated and isolated. Heavy gauze pads tend to macerate the tissues.

the features return to normal, and the blood condition is improved.

The most characteristic local result that stands out foremost in the treatment of joint tuberculosis by heliotherapy and one of the greatest importance and advantage is, according to Doctor Rollier, the return of motion in the affected joint. He has attained this motion even in cases of fibrous ankylosis where the condition has existed for years. Although we have not had such results in cases of existing fibrous ankylosis, we have attained good motion in early joint tuberculosis.

Whereas in the ordinary expectant treatment of fixation by casts or by the operative procedure the prognosis depends upon the completeness of the ankylosis, in heliotherapy the gradual establishment of motion goes hand in hand with the healing process. In the former, ankylosis and the destruction of function is the aim; in the latter, the return of the full function of the joint. Besides this return of motion in the joint, the muscles of the affected limb do not suffer atrophy under heliotherapy.

The action of the sun upon the bone tissue is one of repair. There is a separation and painless spontaneous expulsion of sequestra and an intense recalcification. The point of origin of these sequestra may be quite remote from the point of expulsion. They may follow a sinuous tract for some distance.

The effect upon sinuses and ulcers is one of marked reaction on the tract or ulcer, causing at first a profuse discharge, this is followed by sloughing, the formation of healthy granulation, and the gradual drying up and healing of the sinus or ulcer.

In abscesses, heliotherapy usually reduces the volume of pus and frequently causes complete absorption.

The effect upon the nodes is a gradual reduction in their size, and in broken down nodes very often an absorption of their contents.

The effect on effusion, in joints, peritoneum, and pleural cavity, is one of absorption. This is best noticed in peritonitis.

A special bed is employed in the bone and joint cases so that the patient's posture can be properly controlled. It has a surgical spring made of strong interlacing steel bands. This spring can be raised at the foot or head at will and to whatever height desired. A hard mattress is used so as to avoid possible yielding. We follow Doctor Rollier's advice in discarding casts entirely and in using splints only in exceptional cases.

Immobilization is accomplished by means of straps made of webbing placed around the chest and legs and fastened to the side of the spring. Traction is accomplished by braces that grip the knee and ankle. These are connected by straps that buckle at the side, so that the pull will be at both the knee and ankle and may be increased or decreased at either joint at will. This will allow in-



FIG. 9. Heliotherapy in the winter.

solution of a considerable part of the extremity.

In cases of spondylitis, immobilization is instituted, as stated above and the deformity gradually reduced by means of millet down filled pillows placed in such position as to produce a compensating lordosis. Doctor Rollier uses over the mattress three pillows

of millet down, and these are so arranged and of such a size that the uppermost supports the head and shoulders, the middle one the dorsal and lumbar spine, and the third one, which has a central opening like our ordinary air cushion, supports the pelvis. When the back is to be insulated, the three pillows are removed and a three cornered one in the shape of a headrest is substituted, which is placed under the arms and chest so as to give the amount of anterior curvature necessary to correct the deformity.

In coxitis the same special bed is used, but instead of the three pillows only one is employed and this is placed under the buttocks so that the pelvis is slightly raised and the hip joint put in hyperextension to correct the flexion usual in these cases. Continuous traction is employed by the braces that grip the knee and ankle as stated above. Adduction and ab-

duction is open in front so as to give free access to the sun's rays.

In tuberculous peritonitis, epididymitis, and orchitis, rest in bed is essential.

In tuberculous of the genitourinary tract rest is confined to cases in which the lesion is serious.

In adenitis rest is not enforced as in the other cases unless the general condition of the patient demands it.

In tuberculous scleritis and other tuberculous eye conditions no special rest is required unless the general condition demands it. It is necessary, in these cases, that the eye be kept at rest and not unduly exposed to the sun. The local eye insolation is given with lids closed.

Doctor Rollier does not use, in fact, condemn injections of any kind in sinuous tracts. Besides the possibility of infection and intoxication caused by

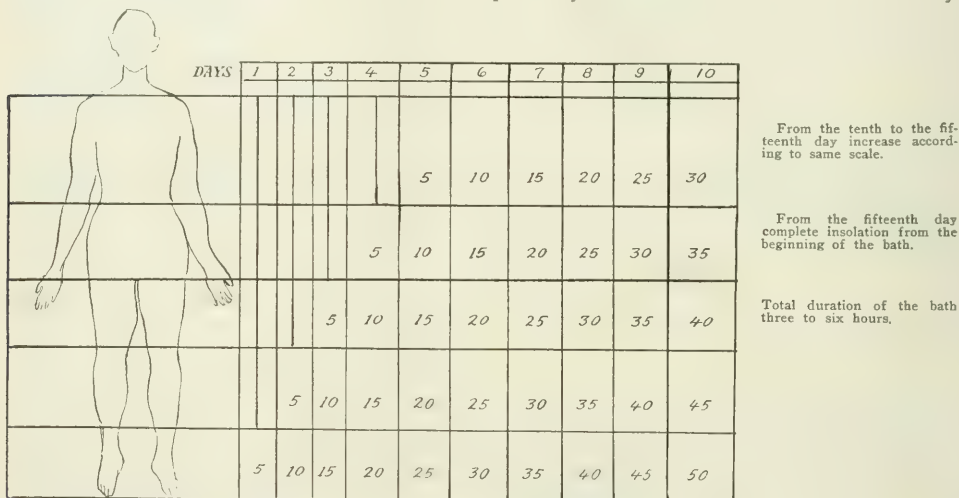


FIG. 10.—Schematic diagram of insolation showing the progression by which the patient is exposed to the sun. (From Rollier's *La Cure de Soleil*.)

duction are corrected by means of a side working extension that grips above the knee and fastens on a roller that runs along the side of the bed.

In gonitis, the same special bed is used, but no sand nor millet down pillows are employed. Immobilization is accomplished as in cases of hip and spine disease. If there is spasm or deformity, traction is used as in coxitis. If subluxation of the tibia exists, the deformity is corrected by a rubber splint suspended on a swing.

In tuberculous of the ankle joint and the joints of the foot, the leg should be placed on an inclined plane. Talipes equinus is avoided by a rectangular splint. This is open in front to make insolation easy.

In the treatment of shoulder joint tuberculosis, no special immobilization is employed, as the arm itself acts as a natural tractor. Only in cases where there is considerable displacement are immobilization and traction employed.

In elbow, wrist, and finger joint tuberculosis, immobilization is obtained by a celluloid splint, which

these injections, he holds that they stop natural drainage.

He advises against the knife, no matter how simple the procedure, for fear of a possible general spread of the disease, and because of the secondary infection that inevitably follows surgical interference, a condition that makes healing tedious, besides leaving unsightly and unnecessary scars.

Where drainage of an abscess is absolutely necessary, aspiration is resorted to rather than evacuation by incision. If the contents of the abscess are too thick to permit of aspiration, he injects a few c. c. of a sterile emulsion made of creosote grammes four, iodoform grammes ten, olive oil grammes seventy-five. This emulsion liquefies the thick pus and makes the withdrawal of the contents easy.

We do not fully accept Doctor Rollier's dictum that operations should always be condemned. We feel that there are cases occasionally in which conservative surgical interference may not only be useful but necessary. We advise that a patient receive both anteoperative and postoperative treatment with



sun baths and open air. We believe that surgery should be secondary and only an adjunct to heliotherapy.

Although we started heliotherapy only a little over two years ago, and are somewhat handicapped in this altitude by the lack of the proper amount of sunshine during the winter months, the results obtained in most of the cases of surgical tuberculosis have been most encouraging. Obstinate cases have been encountered only in open bone and joint tuberculosis, especially since a large percentage of these are surgical cases of long standing and presented on admission severe secondary infection. The improvement has not been so rapid nor so satisfactory as we could wish, but these cases taxed the patience of the physician before they were sent to the hospital, so that we cannot condemn the treatment. Rather should we condemn the cases. The closed bone and joint patients have done well and those who have not recovered have shown at least great general and local improvement. The adenitis patients have all done remarkably well and our results compare favorably with those of Doctor Rollier.

The peritonitis cases have been the most amenable to heliotherapy. The improvement both in the general and local condition may be noticed in these patients from week to week, and we cannot be too enthusiastic in the praise of heliotherapy in tuberculous peritonitis. The results have been as good in operated cases as in unoperated ones. Some patients with peritonitis have had the abdomen so distended as to interfere considerably with respiration. In one of the cases arrangements to open up the abdomen had been made, as it was feared the scar would tear open. This case ended in complete recovery.

We have treated to date ninety cases of surgical tuberculosis by heliotherapy and have now under treatment 150 cases, 120 of which are of the so called surgical type. Forty-three per cent. of these presented on entrance abscesses, sinuses, or secondary infection, and many had been operated upon several times. Sixty per cent. presented one or more lesions other than the primary one. A large proportion of the adults showed a pulmonary lesion.

The average length of stay for all surgical cases discharged was 8.4 months, while the average length of stay for those who were discharged as apparently recovered or arrested, was 13.5 months. Of the patients who remained three months or longer, sixty-seven per cent. were discharged apparently recovered or arrested. Of those who remained six months or longer, seventy-seven per cent. were discharged apparently recovered, and of those who remained nine months or longer, eighty-two per cent. were discharged as apparently recovered. This shows the important bearing that the length of stay has upon the results in cases of surgical tuberculosis.

It is true that the time required under heliotherapy is long, nevertheless the results are permanent. So far as we have been able to ascertain, there has been no recurrence of the disease in cases we have discharged as apparently recovered or arrested. It is needless to say that the best results have been in closed cases.

#### STATISTICS.

Excellent results have been attained at the J. N. Adam Memorial Hospital in uncomplicated bone,

joint, and gland tuberculosis where there is a single lesion, and in tuberculous peritonitis. Multiple lesions and secondary infections render the prognosis less favorable, as will be seen below.

*Adenitis.*—Forty-eight cases of adenitis have been discharged, all of which were apparently cured or arrested. Twenty-nine were closed cases, three of which were complicated with pulmonary tuberculosis and two with a healed coxitis. Ten had closed tuberculous abscesses, four of which had incipient pulmonary tuberculosis; one had advanced pulmonary tuberculosis and one tuberculosis of the middle ear. Nine had discharging sinuses with mixed infection.

Fifty-four cases of tuberculous adenitis are under treatment and all are improving. Fifteen of these have incipient pulmonary tuberculosis, one has incipient pulmonary tuberculosis and tuberculous epidiymitis, and another incipient pulmonary tuberculosis and lupus erythematosus eruption, one has Pott's disease, one a healed tuberculous hip, and one tuberculosis of the hand and wrist.

*Pott's disease.* Three cases of Pott's disease have been discharged, one of which was apparently recovered, while two were unimproved. The one discharged as apparently recovered also had incipient pulmonary tuberculosis. Of the two discharged as unimproved, one had incipient pulmonary tuberculosis, Pott's disease, empyema, and a tuberculous kidney. The patient died in Buffalo shortly after an operation for the removal of the diseased kidney. The other had moderately advanced pulmonary tuberculosis, tuberculosis of the sacroiliac joint, femur, and kidney. Seven cases of Pott's disease are now under treatment; six are making excellent progress toward recovery, while the other has improved only slightly.

*Hip.* Five cases of tuberculosis of the hip joint have been discharged, three apparently recovered and two improved. All of the cases discharged as apparently recovered were closed, and one had incipient pulmonary tuberculosis and tuberculous glands. Of the two discharged as improved, one case did not remain long enough for better results. The other also had moderately advanced pulmonary tuberculosis and tuberculosis of the knee, bladder, and prostate, and was complicated with amyloid degeneration.

Fifteen cases of tuberculosis of the hip joint are now under treatment, all improving excellently. Three of these have incipient pulmonary tuberculosis, two tuberculous glands, one Pott's disease, and one tuberculosis of both hips with abscess.

*Knee.* Three cases of tuberculosis of the knee have been discharged. One was apparently recovered and two were improved. The case apparently recovered also had tuberculosis of the wrist joint and the lungs. The two improved did not remain long enough for better results. We have nine cases now under treatment, all but two making good progress toward recovery. Two are unimproved, both of the blond type which does not tan well. One has remained stationary and the other is progressive.

*Ankle.* Three cases of tuberculosis of the ankle have been discharged, two arrested, and one improved. Of the two arrested, one had incipient pulmonary tuberculosis and a closed lesion of the ankle,

and the other tuberculous epididymitis with a discharging fistula. The case discharged as improved also had Pott's disease, tuberculous glands with discharging sinus, and blepharitis. The glands and blepharitis were healed upon her discharge, but the woman did not remain in the hospital long enough to heal the ankle and spine.

Six cases of tuberculosis of the ankle are now under treatment, and all are making excellent progress. They show the following complications: One, incipient pulmonary tuberculosis and tuberculous glands with sinus; one, tuberculosis of the tibia; one, pleurisy; one, incipient pulmonary tuberculosis; one, incipient pulmonary tuberculosis, pleurisy with effusion, and peritonitis.

*Shoulder.* Three cases of tuberculosis of the shoulder are now under treatment, all with sinus and secondary infection, one with moderately advanced pulmonary tuberculosis, and one with tuberculous osteitis of the tibia.

*Elbow.* Four cases of tuberculosis of the elbow are under treatment. All are making excellent progress; three have marked destruction of the joint, two incipient pulmonary tuberculosis, and two tuberculous glands.

*Wrist.* One case of tuberculosis of the wrist was discharged as improved. This case remained only a short time.

*Hand.* Two cases with lesions of the hand have been discharged; one apparently recovered also had incipient pulmonary tuberculosis; one unimproved was syphilitic. Two cases of tuberculosis of the hands are under treatment, one practically cured and the other improving.

*Osteomyelitis.* Four cases of osteomyelitis have been discharged, two apparently recovered, and two improved. Of the two apparently recovered, one lesion was in the malar bone and the other in the tibia. Of the two improved, one was in the tibia and the other in the sternum. Three cases are under treatment and improving.

We recommend with Rollier that nontuberculous patients with osteomyelitis be trephined before receiving the sun cure, as the sequestra in these cases are too many to be eliminated spontaneously.

*Peritonitis.* Eight cases of tuberculous peritonitis have been discharged. Five apparently recovered, two improved, and one unimproved. Of the five apparently recovered, three were closed; two of these had incipient pulmonary tuberculosis, and two had postoperative sinuses. One of these had incipient pulmonary tuberculosis, tuberculosis of the ilium, and Pott's disease. Of the two improved, one had advanced pulmonary tuberculosis and one tabes mesenterica with multiple abscesses. The one unimproved had acute miliary tuberculosis and was a rapidly progressive case. Ten cases of tuberculous peritonitis are still under treatment and all are improving.

*Eye.* Two cases of tuberculosis of the eye have been discharged as apparently cured; three cases are still under treatment and are making good progress; two have also incipient pulmonary tuberculosis and one has tuberculous glands.

*Genitourinary.* One case of tuberculous kidney and moderately advanced pulmonary tuberculosis was discharged as arrested. Two cases of tubercu-

lous epididymitis are under treatment and improving; both have also incipient pulmonary lesions. One case of tuberculosis of the uterus, tubes, and peritonitis was operated in, and a panhysterectomy performed; the patient is not doing well. She also has moderately advanced pulmonary tuberculosis.

This treatment is recommended in pulmonary tuberculosis when chlorosis, anemia, or neurasthenia is present, and very successful results have been obtained in pleuritic and pericardial effusions due to tuberculosis.

We are greatly encouraged with the results as a whole, and feel sure that these results could not have been attained with out of door treatment alone, nor could they have been accomplished with surgical interference, for some of the patients who have shown marked improvement had been unsuccessfully operated upon several times before they came to us.

We earnestly plead that surgeons and physicians institute the treatment in the closed and early cases when possible and do not wait until the cases have become advanced. The length of time for an arrest or recovery depends upon the extent of the lesion and upon the presence or absence of secondary infection.

As a large number of cases of surgical tuberculosis show a lung lesion, and all manifest constitutional disturbances, we think that ward treatment is wrong and that these cases should be treated in the light of a general disease, and in sanatoriums if possible where the air is pure and the surroundings and associations most conducive to the carrying out of the out-of-door life.

Of all diseases there is none in which the individual resistance plays a more important part than in tuberculosis, pulmonary or surgical. Any treatment, therefore, which increases this resistance and builds up the whole system is the treatment *par excellence*. The goal that we wish to reach is the acme of resistance, and general experience has taught us that fresh air, solar radiation, rest, and sufficient food are the best and most potent weapons at our command.

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## BORDERLINE CASES OF THE UPPER ABDOMEN.\*

BY HARRIS WEINSTEIN, M.D.,  
New York.

The application of the proper form of treatment in these borderline diseases should not be based on preconceived notions as to the propriety of one or the other method of therapeutics, as it is never wholly surgical or wholly medical. The anatomical changes at the critical stage of the disease should influence our judgment, reinforced by a knowledge of the results to be expected from either method. Gastric and duodenal ulcer form an important chap-

\*Read at a meeting of the Yorkville Medical Society, October 16, 1916.

ter in the consideration of the treatment of borderline diseases of the upper abdomen.

At the outset I might state that a correct medical diagnosis is not always possible, despite our fond and revered clinical images of the disease. Only too often it proves to be an appendicitis, gallbladder condition, gastroparesis, pylorospasm, atonic dilatation, or a gastric neurosis.

Simple gastric ulcer cannot be demonstrated by any known method short of actual inspection. The history, clinical or laboratory evidence, and radiographic findings are alike disappointing. Assuming the existence of a simple gastric or duodenal ulcer without complications, we cannot but admit the efficacy of proper medical treatment. Recrudescence of the ulcer occurs where the prescribed regimen is grossly abused, or where the etiological factor is operative and cannot be removed. Healing of an ulcer depends upon sparing of the mucosa, neutralization of hyperacid contents when present, improvement of the general nutrition and of cell resistance, and removal, if possible, of the focus of bacterial invasion. Even in the presence of multiple ulcers which constitute about twenty per cent. of the cases, these desirable results can be attained by proper management. The arguments advanced in favor of surgical interference cannot be lightly set aside. The occurrence of a possible hemorrhage, of chronic oozing, and resulting anemia and debility, of chronic induration and subsequent obstruction or hourglass contraction, of acute, subacute, or chronic perforation, and of probable malignant degeneration, cannot wholly be prevented by medical means. Radical surgery, which alone can be relied upon to prevent the dangerous complications above enumerated, suffers from a rather bad reputation in point of mortality. To make resection still more undesirable, gastric ulcers are frequently inaccessible, as they occur in about eighty per cent. of the cases on the posterior wall of the stomach; are often imbedded in a mass of adhesions, and are just as frequently not found at all.

Gastroenterostomy, the operation of choice, which enjoys a very low mortality, offers, however, none of the advantages of resection. It does not remove the danger of complications or the possibility of recurrence, but leaves a balance of two per cent. mortality against it. To subject a patient to the dangers of an operation with its attendant uncertainties as to outcome, with no advantages to offer over milder and safer treatment, and particularly so in a chronic disease in which the power of resistance is below par, seems to me unwarranted. Gastroenterostomy as a curative measure presents advantages or disadvantages according to the site or effect of the ulcer. The aim of the operation is to divert the chyme from the normal channel to the new opening, in order to protect the ulcer from the irritating effect of the hyperacid contents. It is well known, however, that the stomach does not drain by gravity through the stoma, but by muscular effort through the pylorus. It is evident, therefore, that in the absence of pyloric obstruction ulcers of the antrum, pylorus, or duodenum would still continue in contact with the acid chyme, and that ulcers situated on the lesser curvature, fundus, or at the cardia

could not escape its irritating effect, even though drainage was to occur through the stoma.

In benign pyloric obstruction, when not due to pyloric spasm and consequent gastric congestion, gastroenterostomy offers the only effective method of treatment. Regurgitation of enteric juice takes place in gastroenterostomy and is found in the stomach years after the operation. It permanently neutralizes the gastric juice and thus aids the healing of the ulcer. Ulcers situated in the fundus cannot escape irritation by acid chyme despite gastroenterostomy and pyloric occlusion; operation is therefore not indicated. Disturbed motility due to pyloric spasm should be differentiated from obstructive gastrectasia and treated medically, as it yields easily to lavage and diet. Study and observation often lead to the discovery of the underlying cause of the spasm. Gastrosuccorhea, formerly regarded as a neurosis, almost invariably spells ulcer, and its treatment should fall under that category.

In the treatment of the complications of ulcer, the probable results of either method should be considered, as dictated by experience. The mortality of acute hemorrhages under medical treatment is about five per cent. against sixty per cent. surgical. The difficulty of finding the bleeding point, the poor operative risk the patient presents after severe loss of blood, and the strong probability of cure by medical means should leave no doubt as to the proper course to pursue. In chronic oozing, anemia and debility soon follow, and if energetic medical treatment is not quickly effective, the aid of the surgeon should be invoked without loss of time. Perigastric adhesions interfere with gastric motility to a greater or lesser extent. Unless stenosis dyspepsia has developed, surgery should not be resorted to, as new adhesions form after shortlived improvement.

Acute or subacute perforation calls for immediate operation. When the ulcer makes its way slowly to the surface, plastic peritonitis is excited and the stomach adheres to a neighboring viscus, preventing the gastric contents from entering the peritoneal cavity. Disturbed abdominal function of a serious nature often follows chronic perforation because of the matting together of the various organs by dense adhesions, frequently necessitating operative interference. We should be on our guard against the folly of operating in conditions where the gastric symptoms, although severe, are due to venous congestion of the mucosa in diseases of the heart, lungs, liver, or kidney. In gastric neuroses operation is nothing short of a catastrophe and should be strenuously avoided. While admitting failure of medical and mechanical treatment in prolapse of the stomach, no more can be said of surgery in this condition. Ventrofixation was followed by severe disturbances without removing the old symptoms. The only indication for surgical interference is kinking of the pylorus, calling for relief from obstruction.

The failures of gastric surgery are often due to mistaken diagnosis and to operations in conditions where the indications are not clear, to inaccessibility of the ulcerated area, because of its overwhelming frequency on the posterior wall, or of the thickness of adhesions surrounding it. In ulcers which do not interfere with gastric drainage surgery is not helpful. It is well to remember that resection of the



ulcer does not remove the predisposition to ulcer formation or of the focus of infection.

The attitude of the surgeon toward the question of early gastric cancer is not justified by practical results. Early laparotomy as an aid to diagnosis has not come up to expectations.

Somehow the findings cannot be correctly interpreted in early cases. It has happened, where exploration was resorted to on suspicion of malignancy, and nothing definite was found, later to have discovered gastric cancer. Some supposedly early cases with no palpable tumor prove inoperable because of metastatic deposits in neighboring glands. Conversely, a palpable tumor is no contraindication to operation, as there may be no metastases, despite the presence of a neoplasm. For symptomatic relief in malignant pyloric obstruction gastroenterostomy is obviously indicated.

In view of the difficulty of early diagnosis, a few practical hints for our guidance may not be out of place. Disturbed motility in the absence of free hydrochloric acid should arouse suspicion. From personal observation, absence of, or greatly reduced free hydrochloric acid with a very high total acidity is almost diagnostic of gastric carcinoma. Hyperchlorhydria with sarcinæ and germinating yeast cells does not militate against malignant obstruction. For final decision, rational treatment and observation are required. If there is a tendency toward aggravation of symptoms despite treatment, there is a strong probability in favor of carcinoma.

Prolapse of the viscera does not require surgical interference unless productive of severe symptoms. In the case of the kidney, fixation is indicated in Dietl's crises, intermittent hydronephrosis, and in pressure of the kidney on neighboring organs, upon the sympathetic, or genitocrural nerves.

In the case of the liver hepatopepy should be resorted to only after failure of mechanical supports to relieve pain or attacks resembling hepatic colic.

Movable spleen does not require treatment, unless torsion of the pedicle occurs with swelling and gangrene, when splenectomy should be practised.

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## THE TREATMENT OF STITCH SUPPURATION.

*Beck's Bismuth Paste,*

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Chicago.

At the present time, stitch abscesses which occur after the operation in a clean case are looked upon as a reflection on the technic or on the cleanliness of the operator or his assistants. In fact, in many modern hospitals stitch suppuration is a rare occurrence. That this postoperative complication has not been entirely eliminated is well known to any one who visits the different clinics. Some hospitals even report occasional epidemics of stitch suppuration, and when the cause is sought for, it is found to be some small inconspicuous technical error in operative procedure or in sterilization.

As the infection is usually of a mild character, healing which takes a week or longer occurs spon-

taneously after the removal of the stitches. In certain cases, however, the wound will reopen and healing by secondary union will take place. The healing depends altogether on how extensively and how deeply the infection has penetrated. It has been found that deep sutures of silkworm gut when infected carry the suppurative process into the deep layers of the wound. On the other hand, when the sutures are not deep, the infection is superficial, under the skin, and the muscles and fascia are not involved.

I need not enter into the causes and varieties of stitch abscesses. The condition is one with which every surgeon is more or less familiar. The object of this paper is to describe a method of treatment which we have used very effectively at the North Chicago Hospital in cases of stitch suppuration. I consider this method of sufficient value to bring it before the medical profession.

While the method does not differ from the bismuth paste treatment now generally used, the following suggestions as to the technic are made in order to emphasize the facts more clearly. Liquefied bismuth paste is injected into the channel left by the suture as soon as it is withdrawn. The

injection is made with a specially devised syringe (Fig. 1) with a long pointed nozzle, similar to that of a hypodermic needle except that the point is blunt. The paste will fill out the entire tract left by the thread and exude from the opposite opening. Within twenty-four to forty-eight hours suppuration will usually cease. This procedure is so simple and so effective that I do not hesitate to recommend it.

In cases where the tissues are undermined and large abscesses have formed beneath the skin or underneath the fascia, the paste is likewise very useful. If these abscesses are filled with the paste, the overflow will exude through the stitch holes on all sides of the wound, or, if there are no stitch holes, the paste will extrude through the opening into which it was injected. The pus changes into a serous discharge within a day or so, and in a very short time secretion stops and the wound heals.

It is needless to describe at length the method and



FIG. 1.—Special syringe used to inject bismuth paste.

its *modus operandi*, for this has appeared so many times in print that I have only to refer the reader to the latest articles of Doctor Beck (1), in which he gives the technic as used in cases of suppurative sinuses and empyema.

The arrows in Fig. 2 show the communicating openings of an abdominal incision which opened after the patient had been discharged from the hospital for over a month. The case had had no drainage at the time of operation and healing occurred by primary union within a very short time. After four weeks the wound opened and discharged pus. One injection of a ten per cent. bismuth petrolatum paste closed both openings within two days and there was no further trouble.

Doctor Beck has employed the method for the past eight years. He has not published his results, but he has demonstrated cases repeatedly to visiting surgeons at the North Chicago Hospital. In most

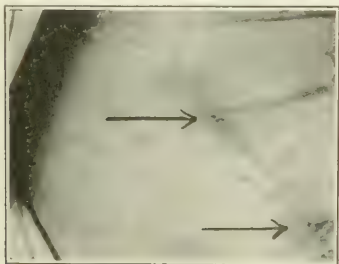


FIG. 2.—Arrows indicate communicating openings of an abdominal incision that opened four weeks after operation. One injection of bismuth paste closed the openings in two days.

instances those who have adopted this form of treatment as a routine measure in postoperative suppurations report results which coincide with those obtained by the writer.

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25 EAST WASHINGTON STREET.

## INFILTRATION ANESTHESIA FOR TONSILLECTOMY, TOGETHER WITH THE EMPLOYMENT OF NORMAL SALINE SOLUTION.

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The subject of local anesthesia, or infiltration anesthesia, has been variously discussed, and many papers have been written upon the subject. We often fear to tread upon such thoroughly studied pathways; however, keeping in mind that the last word has not been said upon any subject, I took courage to study newer and safer methods, and am

bringing forth this new, simple, sane, and safe method of normal saline infiltration for local tonsillectomy.

Among the various substances in vogue at present are: 1. Cocaine; 2. novocaine; 3. beta eucain; and, 4. quinine and urea hydrochloride.

1. Cocaine is the ideal substance as an analgesic, but we never know which patient has an idiosyncrasy for it and recently several fatalities have been reported; therefore, we hesitate to take the chance of using such a dangerous though otherwise good method. Until a method is developed whereby we can determine definitely which patient is susceptible to cocaine, just as we are able to tell by subcuticular anaphylactic tests to which foods a patient may be sensitized, cocaine will remain a bugaboo as a local anesthetic.

Again, a danger in using cocaine is that at times an anomalous vein or venule may be injected, the solution thus rapidly taken into the system producing death.

2. Novocaine was for a time considered the only safe anesthetic on account of its being less toxic, but it has the following disadvantages: It is difficult to sterilize and we are never sure of its sterility; in our clinic we had one fatal, and another grave infection follow novocaine anesthesia tonsillectomy. All other aseptic precautions were observed, so we could blame only the novocaine. Many patients show an idiosyncrasy to novocaine, although in a lesser degree than to cocaine; nevertheless, it should be taken into account and not dispensed freely. The sloughing is sometimes severe, especially when large quantities are used. This is also the case when cocaine is used, and a complete preoperative anesthesia should be sacrificed to eliminate postoperative pain and secondary hemorrhage, and to assist healing. Cocaine and its alkaloids are primarily stimulants, and as many local tonsillectomies are performed on adults who at one time or another had a myocardial or endocardial involvement, the sudden strain of cocaine stimulation thrown upon the heart, plus the nervous element and secondary depression, exclusive of the fact that an anomalous vein may be injected, gives fatal results.

I had often observed that patients complained of pain when novocaine was used unless in large quantities. I therefore inferred that the volume injected in a limited area caused pressure, and, which we afterward proved to our satisfaction, that the latter (pressure) played a greater role than the novocaine; as will be demonstrated later on. The present scarcity and the soaring price of novocaine naturally drove us to look for substitutes, and I believe that we have found one its equal if not its superior, in our saline infiltration. Betaeucaine can briefly be disposed of, as it belongs to the cocaine alkaloid group and has practically most of the disadvantages enumerated above.

Quinine and urea hydrochloride has the disadvantage that the edema caused by it is extreme, the sloughing considerable, and when it is not properly injected, the patients complain of pain.

When I first began to try pressure anesthesia, I used sterile water which gave gratifying results, but water being a hypotonic solution, when injected be-

tween the capsule and the interpharyngeal aponeurosis, the patient complained of a peculiar tearing pain shooting toward the occiput, feeling, from the patient's description, as though water had been aspirated into the nose. It was simply a question of osmosis which was soon eliminated by using an isotonic solution (normal saline). This peculiar sensation was a sign that the solution was retrotonsillar, and I therefore concluded, and afterward proved to my own satisfaction, that the normal saline disposed of this annoying inconvenience.

#### TECHNIC.

1. The anterior and posterior tonsillar pillars are swabbed with a ten per cent. cocaine solution. The swab is very thin and thoroughly squeezed so that no excess of cocaine is spread over the tonsillar area. Just enough cocaine is applied to take off the sharp stinging of the needle when the saline is injected.

2. About two and one half to three drams of normal saline are injected back of each tonsil in the following manner: Superior pole, inferior pole, one injection each; anterior pillars and posterior pillars two injections each. In buried tonsils it is often advisable to catch the tonsil with the tenaculum and pull it forward to inject as described above. When infiltration is perfect, the tonsil bulges out and becomes pale owing to retrotonsillar pressure.

When the myocardium is good, two minims of adrenaline hydrochloride, one in 1,000, are added to the solution for each tonsil, but recently the adrenaline has been dispensed with, although since then patients have expectorated from two to three drams of blood. However, this lessens the danger of postoperative hemorrhage, which is most dreaded. Again, adrenaline hydrochloride is a vasomotor constrictor and, as described above, many patients upon whom local tonsillectomy is performed, are adults who at one time or another have had some involvement of the myocardium or endocardium. By eliminating the adrenaline the danger from strain upon the heart is avoided.

We at present have seventy-two patients subjected to tonsillectomy, most of them at the Out-Patient Department of the Pennsylvania Hospital; fifty-five of them I operated on personally, seven were attended by Dr. George Morrison Coates, and the rest by other assistants in the clinic. All patients recuperated rapidly without untoward effects.

#### SUMMARY.

1. The saline solution is freshly prepared and sterilized, and thus we avoid infections from this source.

2. The saline solution being isotonic, really acts as a cleansing tonic to the tissues, for there was no appreciable sloughing, except from extreme pressure in a few of the very earliest cases, but it was not very marked.

3. The saline can be used to excess without any fear of toxicity.

4. When the tonsils are properly infiltrated, there is absolutely no pain, except in a few cases due undoubtedly to the nervous element.

5. Last, but not by any means least, postoperative sloughing is avoided, healing is promoted, and most patients are able to take food without difficulty within the next twenty-four hours.

The Fielding O. Lewis incision, which consists of an inverted U, with eversion of the tonsil, was used in all cases. The snare used is either the Eve's for rapid tonsillectomy, or the Fielding O. Lewis for the slow constriction or so called bloodless tonsillectomy.

I wish to express my appreciation and gratitude to my chief, Dr. George Morrison Coates, for his kind encouragement and the opportunities afforded me to pursue my study of this subject.

1518 NORTH SIXTH STREET.

### A NEW AND POWERFUL GALACTOGOGUE.

BY CHARLES H. DUNCAN, M. D.,  
New York.

In treating a case of mastitis by means of autotherapy, that is, by injecting subcutaneously the filtrate of the discharge from the nipple, it was noticed, in addition to curing the mastitis quickly, that the quantity of milk rapidly increased until it became more than the patient, a multipara, had ever previously given. The question arose, Was it the milk in the exudate that caused the stimulation of the mammary glands? Several tests convinced the writer that it was, and he appended a footnote to several articles on the subject of autotherapy, mentioning this fact; this was some years ago. At the present time, the writer is pleased to report that these tests have been confirmed, in several independent quarters, in this country and in France. It is the desire still further to disseminate the knowledge of this simple treatment that suggested this present article. This treatment is particularly applicable in cases where the delivery has been recent and in which the supply of milk is quickly diminished.

The technic consists in injecting one c. c. of the mother's own milk into her subcutaneous tissues, under strict asepsis. In two days, repeat, and, if necessary, in five days repeat again. Under ordinary conditions the results are sure.

Dr. A. J. Nossman, of Pasoga Springs, Colorado, reports the following cases:

CASE I. Atypical case. Primipara, aged thirty-five years, in very bad condition. Milk failed on the third day, so I had difficulty in obtaining the twenty drops to inject. There was a slight chill in twelve hours. The milk came in thirty hours. She is, now at nine months, still nursing her baby.

CASE II. Milk failed in about two weeks. The injection brought on a temporary increase. This patient did not want to nurse her baby.

CASE III. Milk failed in three months. Injection negative.

The criticism offered to Doctor Nossman's technic is that he did not repeat the injections in the two latter cases. Had he done this, it is probable that the second patient would have been able to nurse her child, and a bare possibility that the third one would; for, as stated above, the treatment is particularly indicated in the recently delivered.

Dr. Harvey D. Morris, of Port Arthur, Texas, says: "The injection of mother's milk into herself will stimulate the mammary glands when all other known methods fail." He reports several cases treated successfully.



Dr. Alexander L. Blackwood, of Chicago, author of several widely used medical textbooks, and Dr. Clement A. Shute, of Pottstown, Penn., and other physicians and veterinarians in the United States vouch for this treatment.

R. Becerro, in the *Revue de thérapeutique médico-chirurgicale*, reports favorable results in two out of three cases, of sudden cessation of milk, "a condition before which the practitioner is frequently helpless. Dietetic measures, and the administration of thyroid and placenta extract, as advised by Hertoghe and Bouchacourt, are available where there is merely a slow diminution in the milk secretion, but of no value where there is a sudden decrease or complete cessation of the mammary function." Becerro recommends twenty c. c. of the milk injected subcutaneously. He states: "A single such injection in the majority of cases is followed in thirty hours by an abundant secretion of milk." The writer prefers the smaller dose repeated in two days, and if necessary again repeated in eight or ten days.

This treatment should be brought to the attention of the cattle raisers, stockmen, farmers, dairymen, etc., for if this treatment is judiciously given it will insure the animal giving the maximum amount of milk of which she is capable. If this can be done by the Department of Animal Industry, or the Department of Agriculture, at Washington, it seems that they should look into the subject at once in view of the increased price of milk, and the scarcity of milk on the continent of Europe. The technic suggested by the veterinarians is to inject each cow with a half ounce or more of her own milk on the third, fifth, and tenth day after delivery. The writer suggests that practically every cow be treated as indicated to insure her doing her duty toward supplying milk. We never know whether a cow or other animal is supplying her full quota of milk until after the treatment is given. If she is, there is no evidence that harm will result, if the treatment is judiciously employed. If she is not, this treatment, under ordinary conditions, will speed up quickly the supply of milk until it reaches the maximum capacity. Some animals may not require three injections, others may not require two. It is the part of wisdom to individualize each animal and treat it according to its needs.

The attention of veterinarians is directed particularly to the simple method of treating mastitis mentioned in the opening paragraph of this paper, and the application of this principle as developed in human beings, to highbred animals in the care of their young.

CASE IV. Mrs. O., aged thirty-two years; ten days after delivery of her second child, her breasts became flabby and the milk was markedly diminished. The child cried most of the time when off of the breast and sucked its fist. The breasts were cleansed with boric acid solution and sterile water, and by gentle massage about one c. c. was obtained with difficulty in a sterile receptacle. Under strict aseptic precautions this was injected subcutaneously in the gluteal region. Within twenty-four hours the breasts became so distended that milk dropped freely from both nipples. She had no difficulty in nursing her child for over six weeks. This patient received two other injections in the manner indicated.

CASE V. Patient, aged twenty-eight years; seven days after her second child was born, her supply of milk became greatly diminished. She received two injections,

two days apart, and as a result nursed her child with no further trouble for two months. The child was soon very fat.

It is not proposed in this article to say anything about the value of autotherapy because that seems to me to be a self evident proposition. What impresses us today is the ever widening scope of its therapeutic range, embracing practically all of curative medicine and much that lies entirely without its border. Particularly is this natural galactagogue interesting, for the pathogenesis of the condition is obscure. It is valuable, not only in relieving the condition quickly, but also for the fact that it shows how profoundly the system may be affected by the injection of a sexual secretion subcutaneously.

It is stated by some enthusiastic confrères that amniotic fluid injected subcutaneously or taken by the mouth acts as a powerful uterine contractor, greatly facilitating labor. With this the writer has had no experience.

2612 BROADWAY.

**Examination of the Abdomen and Tongue in the Typhoid Group of Infections.**—Léon MacAuliffe (*Paris médical*, November 18, 1916) lays stress on abdominal distention as an early sign of typhoid and paratyphoid infections. The distention increases with the fever in the first week and a half of the disease; then, about the twelfth or fourteenth day in mild cases, and about the thirtieth day in grave cases, the abdomen softens and imparts a pasty sensation, which persists up to convalescence. The distention is best perceived about the umbilicus, the pasty condition in the iliac fossæ and flanks. The distention is due, not to sudden gas production, but to diminished gastrointestinal tonus, while the pasty condition arises from infiltration and tumefaction of the gastrointestinal and parietal tissues, due to stasis of blood and lymph in these structures. In conjunction with the distention, there exists a state of tension or slight rigidity of the abdomen which persists for from twenty to forty days. This is noted especially in the cecal region, and is practically constant at the start of the infection. In the second and third weeks this tension is often such as to render deep palpation impossible. In threatened perforation or hemorrhage, this rigidity becomes general. Deep palpation in typhoid reveals the cecum and descending colon large, puffed out, and gurgling in the beginning of the disease. At the end of the second week the cecum tends to collapse, and the descending colon to become smaller and crepitant; these conditions become more and more marked until the end of the second week. Recovery is signaled by a return to regularity of calibre of the previously irregular palpable intestines. Abdominal percussion in typhoid reveals a tendency to uniformity of the sound elicited all over the abdomen in the second and third weeks. During recovery the normal differences in the gastric, cecal, and ileal percussion notes return. The appearance of the tongue during typhoid varies with the severity of the disease. In the more severe cases it exhibits evidences of irritation, especially at its tip and inferior surface.



# Our Readers' Monthly Prize Discussions

## Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CLXXVII.—How do you treat *delirium tremens*? (Closed.)

CLXXVIII.—How do you treat *acne vulgaris*? (Answers due not later than January 15, 1917.)

CLXXIX.—How do you treat *eczema in children*? (Answers due not later than February 15, 1917.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

*The prize of \$25 for the best answer to Question CLXXVI has been awarded to Dr. Robert T. Morris, of New York city, whose paper appears below.*

### PRIZE QUESTION NO. CLXXVI. THE TREATMENT OF COLLES'S FRACTURE.

By ROBERT T. MORRIS, M. D.,  
New York,

In Colles's fracture, injury to the soft parts is more important than injury to the hard parts. *Ergo*:

1. Always anesthetize the patient and make such correct adjustment of fragments that soft structures within the annular ligament will be freed from compression or angulation. This idea includes the step of freeing the external lateral ligament of the wrist when it has been buttonholed by the ulnar styloid process.

2. Apply a very short and light moulded splint of cardboard to the posterior aspect of the fragments, and a small loose roll of gauze to the anterior aspect of the fragments. If this does not suffice to hold the fragment nicely in place, add a cardboard splint to the anterior aspect after removing the gauze roll. If muscle spasm is present in the case, add a light long basswood splint to the posterior aspect of the fragments, reaching to the knuckles. Without muscle spasm and without a tendency for the fragment to become displaced readily the Colles's fracture patient will do best on the smallest and lightest splinting which will suffice for immediate needs in any given case.

3. Suspend the arm at easy elbow flexion in a sling.

4. Extend and flex the fingers very gently once a day at first, in order to prevent plastic exudate from sealing the tendons in their sheaths, in the vicinity of the fracture. Increase the finger motion later.

5. Extend and flex the hand on the carpus gently once a day at first in order to avoid carpal adhesion formation. Increase the carpal motion later.

6. At the end of three weeks remove the splints permanently, but retain the sling for another week.

7. At the end of three weeks excite a Bier's hyperemia daily with the rubber bandage, or excite a hyperemia by plunging the hand and wrist alternately into hot and cold water for five minutes morning and night. A hyperemia thus induced will favor rapid absorption of interstitial and synovial exudates. It will also stimulate activity of injured nerves.

8. Add massage to the hyperemia resource for as long a time as appears to be desirable.

9. Do not swear in a court of law that this is the best treatment for Colles's fracture. State that it is first rate routine for the average case.

Dr. F. H. McMeekan, of Avon Lake, Ohio, remarks:

Colles's fracture is caused either by falls on the outstretched hand or by back firing in cranking a motor (chauffeur's fracture) or by some other direct violence. Colles's fracture is immediately suspected from the manner in which the injury has been sustained. It is diagnosed by the silver fork deformity of the hand and forearm; by palpation of the displaced fragment; by crepitus between the ends of the fractured radius; by pain and swelling of the traumatized area. Dubious cases call for verification of the diagnosis as a matter of self protection. X rays of all cases should be taken as a matter of record for compensation in accident and industrial insurance. Originals or copies of x ray plates should only be submitted to those legally entitled to them and competent to interpret their evidence.

If the fracture is of recent occurrence the displaced fragment may be reduced without difficulty or with the aid of anesthesia or analgesia, by the method of Championnière. His method of mobilization consists in stroking the injured limb in the direction of the venous flow and the underlying muscles, so lightly at first that pain is not felt even over the fracture area. This stroking massage is continuously applied, in a slow, methodical manner, with increasing pressure, for ten to fifteen minutes on each aspect of the arm, at the end of which time the muscular contractions due to the fracture itself and the patient's effort to hold the limb in a fixed position, are so relaxed that frequently the reduction occurs during mobilization, or upon flexing or extending the wrist. When reduction cannot be obtained in this manner or without great pain, anesthesia or analgesia must be utilized.

While nitrous oxid oxygen anesthesia is the method of choice in hospitals and clinics, ethyl chlorid anesthesia alone or supplemented by the drop method of etherization is preferable for emergency practice. While the injection of novocaine provides sufficient relaxation and obtunding of the parts to permit of painless reduction, the use of local analgesia involves a slight but definite risk of infection. Chloroform anesthesia should never be

used in the reduction of fractures on account of the danger of cardiac fibrillation during light or incomplete narcosis. In all cases anesthesia should be continued until the operator has definitely concluded that the reduction is satisfactory.

In reducing the displaced fragment in Colles's fracture it is necessary and extremely helpful to have the patient's forearm and elbow firmly held by an assistant. The operator then grasps the patient's hand with his *opposite* hand, making traction in a straight line and manipulating the displaced fragment with the thumb and fingers of the other hand until it snaps back into place. Occasionally the fragment can be more readily reduced by flexing or extending the patient's hand on the wrist, depending on the direction in which the fragment is displaced.

The fragment should be so perfectly reduced that the bony contour of the radius is restored to normal. To assure himself that the reduction is sufficiently correct for the restoration of normal function, it is not enough to palpate the contour of the bony structures involved, but the fracture area must be firmly fixed between the thumb and fingers of one hand, while with the other the patient's wrist joint is put through all the motions of which it is capable. If all these motions can be accomplished without a tendency on the part of the distal fragment to become displaced, reduction is as nearly perfect as surgical skill permits, and barring a tendency to displacement of the fragment, a single, posterior retentive appliance will suffice.

The Walker splint in its five sizes (rights and lefts), accommodates itself to the retention of the fragment and the successful treatment of Colles's fracture, better than any other device. Emergency splints of Yucca or pasteboard will answer, if moulded on the same anatomical lines of the Walker splint. While the flat anteroposterior splints with padding under the wrist and in the palm, may effect retention of a fragment that has a tendency to become displaced, their use prolongs the period of treatment and delays the restoration of functional utility.

The Walker splint is covered with a good thickness of absorbent cotton held in place by several turns of gauze bandage. The splint is applied so that the fingers get a firm grip on the handle, and the flange of the radial side accurately supports the fracture area, while the body of the splint extends at least two thirds of the distance toward the elbow.

As a result of some falls or direct violence, a Colles's fracture may cause excruciating pain and severe traumatism and swelling of the adjacent parts. In such instances opiates should be administered, hypodermically, before instituting any treatment at all, so that by the time reduction is accomplished and the anesthetic withdrawn, the patient is under the influence of the preliminary narcotic, and after pain is negligible. Strict attention to this detail is deeply appreciated by all patients.

The swelling due to traumatism should be partially relieved by the method of Championnière, before any dressings are applied. Then a compress, consisting of several flat gauze sponges are laid over the fracture area, extending down to the flange of the splint. This compress is held in place by a

rather broad strip of adhesive tape carried to the under surface of the splint on each side of the wrist, but not encircling it. This band of adhesive tape serves remarkably well in preventing upward displacement of the distal fragment. The splint is further held in place, midway in the forearm and toward the upper end of the splint by similar strips of adhesive tape. The compress is now saturated with a warm solution of aluminum acetate or opium and lead wash, and a one and a half inch gauze bandage snugly applied from the hand grip of the splint to its upper end. As the bandage is applied the compress area is saturated with the antiphlogistic solution. Only those who have tried these compresses and solutions in the handling of Colles's fracture can appreciate to what an extent and with what rapidity pain and swelling are controlled and reduced. Gauze rather than muslin bandages are used not only to facilitate the moistening of the compress, but also because they allow aeration and are far more comfortable, while being sufficiently retentive. The injured arm is now hung in a sling that extends to the knuckles and includes the elbow, and is so carried for a few days until the swelling at the site of fracture is under control. During sleep the injured arm should be rested on an inclined pillow.

If the fracture shows little tendency to the reproduction of deformity, dressings should be renewed daily. The bandage is removed and the hand and forearm washed with soap and water and rinsed with alcohol, after which it is dusted with talcum powder and mobilized according to the method of Championnière. Twenty to thirty minutes should be consumed in this form of massage. With the splint reapplied, with or without the compress, depending on the subsidence of pain and swelling, passive movements are instituted, but they must be slow, gentle, and methodical, and include every joint in the extremity. The amplitude of these movements is governed by the first sign of resistance on the part of the patient. The wrist joint, especially, must be put through all its motions, the amplitude of the motions increasing as resistance decreases. With the Walker splint securely in place, the patient may utilize the hand grip for active movements of the fingers almost immediately, without any danger of displacing the distal fragments, and the continued suppleness of the fingers will automatically assist in the resorption of the inflammatory exudate about the tendon sheaths crossing the wrist joint and fracture area, and in the earliest restoration of functional activity. Nor must the elbow be permitted to become stiff, especially if this joint has received part of the traumatism of the fall causing the Colles's fracture. Supination and pronation of the hand and forearm are the last passive and active motions to be instituted.

Unless there is a marked tendency to displacement of the fragment, the hand grip portion of the Walker splint may be dispensed with after ten days or two weeks, the remaining portion being reapplied until the end of the third week, after which a leatherer wristlet is substituted.

Treatment must be continuous and unrelenting until functional utility of the fractured arm has

been completely restored. With the Championnière method of mobilization, combined with the use of the Walker splint and the other details of treatment outlined, it may be anticipated that full, functional utility will be restored after Colles's fracture, for domestic, clerical, and other nonlaborious occupations, in four weeks, and occasionally in three; for ordinary labor in six weeks; and for work of any kind in two months.

*Dr. Rollin O. Baker, of Montour Falls, observes:*

To successfully treat Colles's fracture, it is necessary to accomplish three things: 1. Complete reduction preferably under general anesthesia or else after sufficient morphine has been given to numb sensibilities. 2. Fixation in a dressing making an even pressure conforming to the normal contour of the forearm especially at the site of fracture. 3. Active and passive exercise, massage, and manipulation must be instituted early, and as little disability as possible allowed to continue during the process of repair.

*Reduction:* In reducing a fracture the direction and application of the force producing it should first be considered and then the force applied to reduce should be directed along opposite lines, taking into consideration the pull of the muscles. These latter however may be disregarded in the reduction of Colles's fracture with the exception of the binding action of the torn posterior ligaments and periosteum, which tend to keep up the impaction of the fractured parts. The force producing Colles's fracture is exerted upward, backward and to the radial side upon the pronated and extended hand and wrist. Result is upward and backward displacement of the fragments, with or without impaction, broadening of the wrist and more or less dislocation backward and to the radial side, constituting the so called silver fork deformity.

Reduce as follows: Standing to the outer side of the arm, grasp it with both hands, backs upward, one at the site of fracture with its thumb overlying displaced fragments, the other grasping hand and wrist below fracture. First hyperextend hand and wrist to lessen tension upon posterior ligaments, torn periosteum, etc. Continuing extension make strong longitudinal traction and forcibly abduct and carry hand to ulnar side to reduce lateral dislocation and break up impaction. Still keeping up traction and abduction, twist and pronate the hand and displacement, and continuing same flex hand and wrist and carry them forward to reduce backward dislocation and displacement. Reduction should always be confirmed by the fluoroscope and x ray when possible. Completely reduced, there is little or no tendency for the deformity to recur.

*Fixation:* Use two light splints of box wood, one anteriorly, one posteriorly, tapering with and no wider than the normal forearm, equal in length, and long enough to extend from the bend of the wrist (anteriorly) to near the bend of the elbow, but not so as to interfere with flexion of either wrist or elbow. First make two wedge shaped pads of gauze or cotton cloth and secure them to the lower ends of the splints. They should extend the entire width of splints and taper from about three eighths of an

inch down to a couple of thicknesses of the material used and should be wide enough to extend from lower ends of splints to about three fourths of an inch above site of fracture. The thick end of the pad on anterior splint should be on the ulnar side to prevent depression of the lower end of ulna and to allow for the greater prominence of the radial styloid. That on posterior splint should have its thick portion on radial side to allow for the greater prominence of the ulnar styloid and to make pressure upon the fragments of lower end of radius and prevent a recurrence of the deformity.

Then pad the surface of the splints and pads with one half to three fourths inch thickness of cotton, making the cotton thicker above the pad on anterior splint where it will impinge on depressed surface on front of forearm just above the wrist. Then wrap splints smoothly with bandage. Splints thus padded, should when applied conform to the normal contour, especially at the site of fracture, and will exert an even pressure. Secure them in position with three one inch strips of adhesive plaster, one binding lower ends, one the middle, and one the upper ends of the splints to forearm. They must not interfere with flexion of either wrist or elbow. Wrap whole with bandage. Pressure should not be so great as to cause discomfort. Adherence to forearm between splints will prevent shifting. Allowance should be made for swelling. The forearm is carried at right angles, with its anterior surface to body, in a narrow sling pinned to under side of dressing just above wrist. The hand must be unsupported and free, when it will naturally fall into a position of pronation and abduction and flexion, its weight making a constant traction preventing any tendency to recurrence of the deformity.

*Care:* Fingers should be moved passively and actively from the first. The hand should be massaged frequently, and as pain and swelling decrease should be passively exercised in flexion and extension. Later, in ten days to two weeks, these motions should be actively done and also adduction and abduction be gently passively carried out.

After twelve to fourteen days, I sometimes apply a plaster cast, but I prefer to use the splints throughout when the patient can be seen every day or two, and upon these occasions I remove the splints, massage and manipulate muscles, and gently pronate and supinate wrist. By the time the process of repair is complete if the proper care has been given, there should be no deformity and very little passive disability. Care and judgment in such treatment of Colles's fracture will in my opinion greatly lessen the number of unfortunate results which have been a source of regret to all of us.

*Dr. Edward Adams, of New York, observes:*

The most important factors in the treatment of Colles's fracture are: 1. To correct the deformity by the reduction of the fragments; 2, to maintain them in accurate position until firm union takes place. Reduction should be made as soon as possible after the injury, and if necessary under an anesthetic. The method that I employ for the reduction is as follows: The patient is seated, with the injured arm flat upon the table and the wrist



slightly flexed over the edge. The doctor is seated opposite the patient, and a friend or an assistant grasps the injured arm, one hand near the elbow joint but below it, and the other hand near the site of the fracture. The doctor grasps the injured hand as if to shake hands and hyperextends the hand. The second movement is to flex the hand, making ulnar abduction at the same time. Direct pressure is made over the displaced fragment of the radius with the thumb and fingers of the surgeon's other hand. By a little gentle manipulation the fragments can usually be pushed in place.

Fixation by splints is best accomplished by means of a posterior plaster of Paris splint moulded directly to the part. An ordinary plaster of Paris bandage about two to two and a half inches in width is used for this purpose. This is best put on after reduction has taken place and can be removed for the first ten days in order to have the affected part massaged for that length of time in order to get rid of the swelling. At the end of that time the splint is applied and left in place for a period of twenty days, and passive motion and massage are then used. During the entire time of the application of the splint, the fingers should be moved as in playing a piano. Usually at the end of four weeks bony union has occurred and no further splint is necessary. Bier's arterial hyperemia can now be employed in the form of baking, as this is of great benefit. An x ray picture should be taken at the time the reduction is made in order to see that the fragments are in good apposition.

*Dr. Thomas S. Cusak, of Brooklyn, writes:*

Colles's fracture is a fracture directly across the lower end of the radius within three quarters of an inch of its articular surface. In young people the line of fracture generally runs through the epiphyseal cartilage. The displacement in this fracture is classical. The lower fragment is or may be displaced backwards, but it is usually tilted in that direction. Owing to the tilting of the lower fragment of the radius the bones of the carpus are carried backward, causing a projection on the back of the wrist with a corresponding depression anteriorly, with abduction of the hand radially, termed the "silver fork deformity."

Treatment of Colles's fracture consists in: 1. Reduction; 2, immobilization; 3, aftertreatment.

*Reduction:* For reduction of Colles's fracture primary anesthesia in the form of ether or chloroform is, to my mind, a very essential prerequisite; then, understanding thoroughly the deformity, reduction is very easy. Clasp the patient's hand in your palm, in other words, shake hands with the patient, and with the other hand grasp the patient's injured hand above the wrist, placing the thumb over the displaced fragment, then with the lower hand make traction, and with the upper hand make countertraction, inclining the hand to the ulnar side and at the same time pushing down the displaced fragment by the thumb that is upon it. This combined traction, countertraction, ulnar flexion, and pressure on displaced fragment will reduce the fracture, though at times we may require force to aid us in our technic. If deformity is properly re-

duced then fixation or immobilization can be easily accomplished.

*Immobilization:* As soon as the fracture is reduced place the hand midway between supination and pronation with a little ulnar flexion, supporting the injured wrist in the palm of the hand. Apply anterior and posterior board splints, each a little wider than the arm, with a little cotton wadding along the surface of the splint next the skin. The anterior splint should extend from the middle third of the forearm to the middle of the metacarpal bones of the hand; in this manner, the fingers may close. The posterior splint should extend from the middle third of the forearm to the carpometacarpal articulation. Pad lightly the anterior splint at a point corresponding to the upper fragment, and the posterior splint thickly, at a point corresponding to the lower fragment. Now keep the splints in place by three circular strips of adhesive, each two inches wide, one at each end, and two in the middle. The adhesive is applied in this manner; apply one end of each strip to the outer side of anterior splint; let it overlap the inner side, the adhesive surface being next the splint. Apply the anterior splint and bring the adhesive strips over the outer side. This being done, apply the posterior splint, bringing the adhesive strips down over its outer side, and this completes the dressing. This can be reinforced by a few rolls of gauze bandages, but not including the thumb in this dressing. The advantage of this stage of the treatment is that if the dressing is tight, it can be loosened very easily, and fingers and wrist have a certain amount of free motion, thus overcoming any possibility of ankylosis.

The forearm is flexed upon the arm at right angles and placed in a semiprone position in a sling. After a day or two I usually have an x ray taken, an anteroposterior, and lateral view. After this if the x ray does not show complete reduction, or proper alignment, I reduce the fracture further and try to secure perfect alignment. If, however, reduction is complete and proper alignment is secured, I leave the fracture in splints for about a week, at the end of which time I am fairly sure of bony union and then proceed to the second stage of the treatment.

At the end of a week I remove the boarded splints and use anterior and posterior moulded splints in the same way as the boarded splints, keeping the hand in ulnar flexion. These moulded splints are reinforced by a few turns of a plaster bandage leaving the thumb free, and supporting the forearm in the sling as before, special attention being paid to the fact that the splints be not applied too tightly, and that the fingers can close.

*After-treatment:* The patient ought to be seen rather frequently after the moulded splints are applied, to see that no complications arise in the shape of pressure symptoms, etc. If so, cut down on the cast and relieve tension, and reapply again a little looser. Keep the wrist in this cast for about two weeks, at the same time advising the patient to begin passive motion of the fingers and thumb. At the end of the two weeks cut down on the cast and begin passive motion and massage of the wrist. This can be done almost every day for a week, at the end of which time the cast can be removed entirely, and the



patient begin active flexion and extension of the wrist with caution. Then gradually the patient can use the wrist in lifting light articles and work back the joint to its normal use.

(To be concluded.)

## Abstracts and Reviews

### GROWTH CHANGES IN THE MAMMALIAN NERVOUS SYSTEM.\*

BY PROFESSOR HENRY H. DONALDSON,  
The Wistar Institute of Anatomy and Biology.

By way of introduction Professor Donaldson said that the greater part of the studies which he was about to report had been carried out on the albino rat by his associates and himself. He pointed out that there might be some question as to the justification for attempting to transfer these results to the growth processes of the nervous system in man. There was more justification for such a transfer, however, than seemed evident at first glance. Primarily it had been determined that an albino rat six days old corresponded in development to the human being at the age of 180 days, and that an adult white rat of three years agreed closely with a man at ninety years of age. There was a constant ratio between their ages, therefore, one day of rat age being equivalent to thirty days of human age. In studying the growth changes in the albino rat the results obtained could be transferred to the human animal at a corresponding age period, and such transfers had been found to agree extremely closely, as would be shown later.

Growth in the nervous system, as elsewhere, was concerned with the number and size of the individual cells, and the size and weight of the organ as a whole. In both man and the rat the weight of the brain at a given age period varied rather widely in a group of brains, although an average might be stated. Very careful observations, however, on the nerves and brains of adult rats showed that for any given portion there was a characteristic number of cells and that the variation in a series of animals of the same age was very slight. A similar characteristic number of cells for a given portion was demonstrated for each of several age periods before maturity in the rat. The same facts were observed to be true of the human species at different age periods. It was found, further, that the characteristic number of cells remained constant for a given age irrespective of the weight of the brain, that is, that the number of cells was not related to the size of the structure. The cells here dealt with were the neurons, which were regarded as the units of which the nervous system is composed.

Using these facts observations could be made upon the growth changes of the mammalian nervous system which would have considerable claim to accuracy. In the white rat at birth cell division in the brain was going on actively, and while there was a characteristic number of cells present for a given age this number was less than was found in the

adult, or after multiplication had ceased. It had been found that this multiplication of neurons continued active for several days, then began to decline and by about fourteen days had ceased, at which time the number of cells present was that characteristic for the adult. Along with the multiplication of the cells in the cerebrum, which at birth occupied the outer zone, there was a migration of the cells inward, so that at the end of the period of multiplication all of these cells occupied an inner zone characteristic of the adult brain.

When the stage of cell multiplication had been completed, that is, at about the fourteenth day of life in the rat, the animal had already acquired fairly well developed powers of locomotion. In the human being parallel observations showed a parallel in development which was strikingly close. Thus, the child was found to have acquired very fair powers of locomotion by the fourteenth month of life, which corresponded to the fourteenth day of rat life and development, as already mentioned. At the fourteenth month in man the multiplication of cells in the nervous system had just ceased, which made the parallelism the closer.

At the time when cell multiplication had ceased—in the rat the fourteenth day, and in man the fourteenth month—the brain was not as heavy or as large as at maturity by about sixty per cent. Since there was to be no further increase in the number of the cells the subsequent gains in weight and volume had to be accounted for on the basis of an increase in the size of the cells. A study of the curve of weight increase of the human brain showed that the increase was very rapid in the first years of life and reached its maximum between the ages of seven and ten years. The increase continued at a slower rate from then to about the fifteenth year, at which time the brain reached the full adult weight. The usual curves presented for the course of the changes in the weight of the human brain showed that after reaching its maximum at the age of fifteen years it steadily declined in weight, although very slowly, until the age of fifty years. Such curves were thought to be incorrect in showing a decline in brain weight before about the fiftieth year. The error arose from the failure to recognize the fact that the weight of the brain is very easily affected by the fatal disease, the more so if it were chronic. Study of the brain weights of organs removed from persons who had met almost instantaneous accidental death showed that the curve should remain flat between the fifteenth and fiftieth years of age. After the end of that period there was an actual slow decline in weight due to the inception of senile changes. These observations, including the influence of disease on the weight of the brain, were confirmed by careful observations on the white rat.

The cortex of the brain was found to reach its maximum thickness in the rat by the fifteenth day and in the man by the fifteenth month. From then until maturity, however, while retaining its thickness unchanged it increased sixty per cent. in area. This was accomplished by the growth in size of the individual cells.

The growth changes dealt with concerned the anatomical features alone, but along with the ana-

\*Summary of a lecture delivered before the Harvey Society at the Academy of Medicine, New York, December 16, 1916.

tomical changes there went certain changes in the chemical constitution of the brain and nervous system. Thus the brains of both rat and man were found to lose water from birth onward. This loss of water continued in the rat through the first forty days, at the end of which time it had reached its maximum. The maximum was reached in man between three and three and a half years of age. Synchronously with the loss of water there was an increase in the myelin substance of the cells, that is, of their sheaths. The cell bodies themselves, however, did not lose water. The accumulation of myelin, although producing a loss of water in the total brain, led to an increase in its size and weight.

The results of these studies on the growth changes in the nervous system and their bearing in man were stated as follows: At birth cell division is progressing. This division is completed by about the fourteenth month of life. From then to the fifteenth year the brain and nervous system grow in bulk and weight, lose water, and accumulate myelin. By the time of the completion of the multiplication of the cells the power of locomotion has become manifest, but it is very imperfect and is but a model of what will later be developed. At this stage fatigue is very easily induced. At this period, too, some of the cells have reached a stage of development in advance of the rest, and from this time on to brain maturity the remainder of the cells acquire their full development with the perfection of function and an increase in the ability to resist fatigue.

During the growth and developmental periods the cytoplasm of the cells grows more rapidly than their nuclei. Long after the cell bodies have reached their full growth their axons continue to grow and the myelin sheaths increase to four times their original size. After full growth is reached, that is, after cell division has been completed, the size and weight of the brain continues to increase, due to alterations in the chemical constituents. After the maximum weight is reached it remains constant until about the fiftieth year of age, after which senile changes begin to make their appearance with a slow decline in the brain weight. During adult life the weight of the brain may be readily influenced by the occurrence of disease, the influence being greater in chronic than in acute diseases. This influence has led to the erroneous belief that the brain weight steadily decreases after it has once attained its maximum.

## Contemporary Comment

**Read the Journals.**—This is distinctly the era of periodical literature. Some people read books, and books will always be read, but the busy man will read ten times as much periodical literature as he will read books. This is true also of the professions, especially of the medical profession. What busy doctor, with the incessant demands upon him and interruptions to which he is constantly subjected, can take the time to pore over the cumbersome books that are written upon the hundreds of subjects of interest to the profession? The physician

must keep up, and about all that he can do is to read the brief discussions that are found in the medical journals, referring to the big textbooks only when he finds that a necessity. Whether this is best or not need not be discussed, but it is true that it is the almost universal custom among successful physicians to try to keep up with the current problems as set forth in the periodicals, and they are forced to do this almost to the exclusion of the book discussions. Of course, a few physicians do not read much of anything, but they are a negligible quantity so far as professional progress goes.

Another reason why the periodical has become so popular, observes the *Texas Medical Journal* for November, 1916, is that many diseases become prevalent and then subside before books treating of them can be published. A few months ago the whole country was wrought up over infantile paralysis, and there was great fear that it would spread all over America, but it appears to have been checked almost as quickly as it came. The journals of the country discussed it freely then, but books on the subject are still in the making. The great advantage of the periodical is that it handles issues while they are alive, and handles them in such a pointed way that the busy practitioner has the time to keep informed. The physician or surgeon who boasts that he hasn't the time to read medical journals is boasting of his lack of information upon the things in his profession which every one should know.

**Those Were Happy Days.**—The editor of the *Buffalo Medical Journal*, in his December, 1916, issue, writes ironically of *tempus actum*. He says, days were happy when the doctor could shake his head sadly and murmur that there was nothing to be done—and do so with a clear conscience.

When almost any well informed physician could, in his spare time, do research work that deserved respectful consideration.

When almost any group of seven physicians could hire a building and start a medical college that would pay expenses and even salaries.

When social position, a little money, and an aggressive disposition would not only secure a large practice but professional prestige.

When almost any practitioner could speak patronizingly and sceptically of germs and bacteriologists.

When we could sit on the branch of preventable diseases, saw away on it, on the side nearer the trunk, have a sense of personal righteousness, and, at the same time, the comfortable economic assurance that it would be a long, long time before we produced any weakness of our support.

When the quack traveled with a tent, a band, and a ventriloquist's outfit, instead of having a college degree and a better x ray equipment than our own.

When a doctor could make more of an impression with a \$350 horse and buggy than he can now with an \$800 automobile.

When the boy who restrained his impatience to study medicine till he had done three years' high school work, could feel that he had voluntarily made a heavy sacrifice to the cause of educational preparedness.

When internships were frankly stated to go, like kisses, by favor and not according to merit.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

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Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JANUARY 6, 1917.

### CLAUDE LAMONT WHEELER.

With the closing of the year Claude Lamont Wheeler, for fourteen years on the editorial staff and for the past five years junior editor of the JOURNAL, passed to his rest. With regard to his ability as an editor, the JOURNAL itself supplies the best evidence.

He was a man of striking physique and commanding appearance, and was endowed with many qualities which endeared him to those with whom he worked. He possessed a keen and subtle wit which, however, was always tempered with kindness, and he always showed unfailing courtesy to all with whom he came into contact and especially to the members of the staff, each of whom feels in his death a deep sense of personal loss.

Carefully trained by Dr. Frank P. Foster, the dean of medical journalists, and intimately associated in his work on the JOURNAL with the brilliant and scholarly Kenneth W. Millican, who recently died in London while associate editor of the *Lancet*, and with the present senior editor, Doctor Wheeler ably performed his part in the perpetuation of those ideals and traditions which have for the past forty years maintained for the NEW YORK MEDICAL JOURNAL a unique place in medical journalism.

## SUNLIGHT AND TUBERCULOSIS.

It is undoubtedly true that physicians do not pay deserved attention to sunlight as a therapeutic agent. Its disinfecting properties and its vitalizing activity are theoretically recognized, but advantage is not sufficiently taken of them in actual practice. With the increasing role assumed by sunlight in the treatment of tuberculosis, it is worth while for the general practitioner to take to heart the lesson to be learned. In nonpulmonary tuberculosis particularly has heliotherapy won a richly deserved position as a powerful remedial agent.

Among a number of communications recently on this topic is one of practical interest by C. F. Gardiner (*Interstate Medical Journal*, July, 1916), describing the use of sunlight in Colorado, chiefly in the treatment of tuberculosis. He points out the advantage of a fairly high altitude such as 5,000 to 6,000 feet, because the actinic rays are not absorbed by the denser and more humid air of lower elevations. A large proportion of clear sunny days is also a desideratum. Gardiner states that the heat rays serve their therapeutic function by bronzing the skin, in this process causing first a superficial congestion with definite nervous and circulatory reflexes which affect the metabolism and benefit the entire body. The white skin reflects the chemical or actinic rays, but after tanning or bronzing by the heat rays, the actinic rays are absorbed and have an additional beneficial effect on the tissues. It may be said that opinion differs as to how these various elements of sunlight act and the subject is a fertile field for investigation; but it is abundantly demonstrated that good clinical results are obtained.

Gardiner believes that the brilliant results obtained by the use of sunlight in surgical tuberculosis should not obscure the possibility of securing benefit also in pulmonary tuberculosis, although in the presence of fever especially the utmost caution is requisite. The cases must be selected, carefully watched, and the régime long continued and carefully graduated. He describes cases of pulmonary tuberculosis which under such controlled conditions have experienced decided benefit.

With the progress of exact therapeutic knowledge, sunlight is being found of increasing importance in medicine, and the sun is to be recognized not only as a tremendous source of potential physical energy, but also as a tremendous potential source of health. The physician must make this potential source actual.



## THE PRACTITIONER AND THE LABORATORY.

Although the clinical laboratory has many problems of technical nature to solve, not one of them is so difficult as the problem of the uninformed practitioner. In many instances the laboratory worker is looked upon in the same light as a post office expert or a Scotland Yard detective; an authority by whom unanswerable questions are answered or undecipherable ciphers are translated. The unfortunate technician is called upon to perform miracles. He is given little or no information concerning the case, but if he does not make a diagnosis, outline the treatment, and give a prognosis, his intelligence is considered distinctly below par.

It would be a most excellent thing if the profession at large could be taught, clearly and plainly, the limitations as well as the capabilities of the laboratory. It is common knowledge that there are many tests that to all intents and purposes are mathematical in performance and results. Yet there is a large number in which many facts must be correlated before a decision can be given, and even then the laboratory finding should be considered merely a link in the chain.

There is probably no branch of laboratory work that requires more care in the interpretation of results than serology. Much depends upon the skill of the technician and in equal degree upon the ability of the physician to appreciate the relative value of the laboratory reports. A negative Wassermann is obtained from the serum of a patient who has distinct nervous symptoms, and the laboratory as well as the reaction is damned. A similar test of the spinal fluid might have cleared up the situation; or, what may be worse, the patient is not treated for syphilis because the Wassermann is negative.

It is the same in other laboratory branches. One is given a tonsil, is asked to isolate the particular organism that is causing the trouble, and then make a vaccine. Incidentally full instructions as to the dose are asked and a guarantee of a cure. As a rule the work is expected to be done inside of twenty-four hours.

The roentgenologist, also, suffers from the same troubles. A negative finding is given commonly just as much weight as a positive. If nothing is found to substantiate the physician's preconceived idea the roentgenologist is incapable; or else complete faith is placed upon the result and the patient goes untreated.

From the point of view of the laboratory there is a large and serious hiatus in medical education, both of the past and of the present. It may appear very flattering to be looked upon by some as almost om-

niscient; but it is far from pleasant to be considered by others as lacking in the ordinary attributes of human intelligence. Most men would prefer more of a medium position, and to that end one laboratory worker puts in a plea for better instruction regarding the correlation of the laboratory with the practice of medicine. The former should be considered as a valuable adjunct, but not as an infallible court of last appeal.

## THE FIRST DESCRIPTION.

We are obliged to Doctor Jelliffe for calling our attention to our inaccuracy in stating that poliomyelitis was "hardly known before 1840." We had in mind the statement introductory to every essay we have seen on the subject, that the disease was "first described" by Heine in that year. Although we fortified our own remark by the conveniently indefinite adjective "hardly," we ought, from general knowledge, to have guessed that it was not only known but described long before. Tracing such matters of first description is not unlike hunting for a needle in a haystack. Underwood (1784) considers that he was giving the earliest description, although such was by no means the case.

Our modern indexes and bibliographies in part prevent the repetition of these errors of chronology and spare the repetition of experimental work which has been already well done. Much has been lost, however, that must now be repeated with great inconvenience and much unnecessary puffing up of the discoverer of something or other long since known and forgotten. Recently some investigators went to much pains to prove that the urine does not under normal conditions back up from the overfilled bladder into the ureters—in fact, cannot be forced into them. They were repeating an experiment of Galen, but not for the purpose of confirming his findings, since they little knew it had been done so long ago; nor would they have credited the Greeks with so much experimental research. After describing an experiment on the living animal to show that the urine enters the bladder by way of the ureters, Galen in his work on *The Natural Faculties* continues: "Before the animal urinates if one ties a ligature round the penis and then squeezes the bladder all over . . . nothing goes back from the bladder into the kidneys."

Some of us are distressingly jealous lest we will not be given due credit for the priority of our supposed discoveries, and great and time wasting controversies have been carried on to establish such points even for the deceased. What matters it? Especially when we may be only rediscovering some-



thing long ago forgotten, and which will be as promptly forgotten again before many moons? Besides, all discoveries depend on the work of those who go before us and are not so much ours, as they are of our age, which makes them possible.

Nothing takes more of the conceit out of the student of medicine, nor puts more of wisdom into his head than the study of the history of medicine, not from books or lectures on the subject, but by coming face to face with the men and medicine of the past in their own writings. There may be much to smile at, but there is more to arouse our admiration, to quell our pride in twentieth century wisdom, and to keep us adequately conservative in our views.

### CRITICAL POINTS IN A NEUROTIC'S LIFE.

We all understand fairly well what we mean when we speak of a patient as neurotic or neuro-pathic. Every doctor has a number of such cases on his visiting list and also has the frequent experience of cases coming from other doctors to him, temporizing with him a little while, and then flitting on to another doctor. But when we try to say just what the etiology of such cases is and what precautions we should take to keep them from developing serious psychoneuroses or even psychoses, we are more at sea. In recent years, however, a great light has been thrown on the whole subject by Freud and his school. To be sure, he has ardent detractors, some of whom go so far as to deny the new psychology any merit whatever. Even those who cannot accept psychoanalysis *in toto* are usually willing to admit that there is enough truth in it to repay further investigation.

Besides the disciples of Freud, who, so to speak, worship at his shrine, there are others who, starting out under his leadership, have gradually developed schools of their own, differing from Freudism in many fundamental ways. Thus we have Alfred Adler, who gives us a theory of the neurotic constitution based on organic inferiority and overcompensation through the central nervous system. Not to go too deeply into his theory—and indeed it cannot be stated succinctly enough to be quoted here—it is interesting to the general practitioner to learn that there are certain epochs in the life of a neurotically predisposed patient when he (or more usually, she) is especially liable to develop a neurosis or a psychosis. He names ten such epochs, as follows: The desire for sexual knowledge, the onset of menstruation, the epoch of menstrual activity, the epoch of sexual activity, the selection of a spouse, pregnancy, the puerperal state, the climacteric, the choice of a vocation, and the danger of death.

Whether we are inclined to agree with Janet, with

Freud, Jung, Adler, Ferenczi, Stekel, or any other of the psychopathologists who have investigated the hysteric from the analytic and genetic viewpoint, or whether we are inclined to call such a patient merely "nervous" and treat her with ammoniated valerian and suggestion, at least it is valuable to know that there are definite periods in her life when she is predisposed to the outbreak of grave disorders, so that we can protect her, so far as it is in our power, from exciting or precipitating causes at those times.

### VENEREAL DISEASE IN CHRISTIANIA.

It is perhaps too much to hope, for the immediate future anyway, that our country will adopt any system of compulsory notification of venereal disease. Perhaps in time a city here and there will adopt it, and upon its success in such progressive communities will depend its extension to the nation at large. If some enthusiasts will brand us as ultraconservative in this matter, at least we have the support of the chief European powers in our attitude. Here and there, however, throughout the civilized world, countries are beginning to adopt measures looking to the safeguarding of their citizens from these insidious and prevalent dangers. Frequently we find the progressive offspring of a conservative parent welcoming such public health measures, as witness Australia. Then, to jump nearly the length of the globe, there is Christiania, which has been reporting venereal diseases since 1876.

In the report of the medical officer of health, Dr. Yngvar Ustvedt, for 1915, there are reported 2,424 new cases of venereal disease. This is more than twice as many as were reported in 1876, but since that year the population of Christiania has more than tripled. In other words, the percentage of venereal disease to the population had fallen from 1.28 to .96. The percentage of syphilis itself has fallen from .53 to .25 per cent. It is not probable, from what we know of lues, that these figures represent an actual decrease in the prevalence of the disease. It is more likely that with the advent of the Wassermann reaction and other diagnostic refinements many cases were definitely decided not to be syphilis, but chancreoid or some skin disease. The day has gone by, we hope never to return, when the medical student learned two kinds of skin disease, eczema and syphilis, and every case was certain to be either one or the other.

Doctor Ustvedt's report mentions that during the year seven women were convicted in the courts of knowingly exposing others to the infection. It does not mention how many men were brought to trial who were directly responsible for complete hysterectomies.

## Obituary

CLAUDE LAMONT WHEELER, A.B., M.D.,  
of New York.

On Saturday morning, December 30, 1916, DR. CLAUDE LAMONT WHEELER, editor of the NEW YORK MEDICAL JOURNAL, died of bronchopneumonia at his residence, 418 East Sixteenth street, Brooklyn, in his fifty-third year.

Doctor Wheeler was the son of Dr. Thomas Brown Wheeler, of Montreal, and a nephew of William Wheeler, a former Governor of the STATE of RHODE ISLAND. He was born in Montreal on March 5, 1864, was educated in the public schools of that city, and took the degree of Bachelor of Arts at Laval University in Quebec. He was graduated in medicine from McGill University, Montreal, in 1889 and served as intern in the Royal Victoria Hospital in that city. He practised medicine for a short time in Burlington, Vt., and twenty-six years ago came to New York city, where he served in the Manhattan Eye and Ear Hospital and in the New York Polyclinic Hospital. Later he engaged in private practice, specializing in ophthalmology. In 1902 he joined the editorial staff of the NEW YORK MEDICAL JOURNAL as an assistant editor, and on the death of Dr. Frank P. Foster in 1911 became editor, with Dr. Charles E. de M. Sajous, of Philadelphia, as supervising editor. Doctor Wheeler was an accomplished linguist, speaking French with remarkable fluency and having an unusual knowledge of Latin and Greek, which was most useful in his editorial work. He also had a fair knowledge of German, Italian, and Spanish.

Doctor Wheeler was a man of fine presence and charming manners, which won for him many friends both in and out of the medical profession. He was a member of the Players' Club, the British Schools

and Universities Club, and the Canadian Society of New York, in both of which he had been an officer; the Fendsophs Club, of which he was president; the Hospital Graduates' Club, the Loyal Legion, the Masonic Order, the McGill Graduates Club of New York, and the American Medical Editors' Association, and was a Fellow of the American College of Physicians.

Notwithstanding the strenuous nature of the tasks which he performed in his editorial work, Doctor Wheeler found time to keep in touch with current

literature, and had a cultivated and discriminating taste in literary matters. He was particularly fond of poetry and familiar with the works of the modern as well as the classic poets. His literary taste found expression in the series of interclinical notes which have been an interesting feature of the NEW YORK MEDICAL JOURNAL for many years under this title and earlier under that of *Medicoliterary Notes*. These notes gave opportunity for the play of the facile wit and delicate humor which were so characteristic of his writings. His artistic temperament likewise found expression in music, as he was an accomplished pianist and had a well trained voice of great beauty and volume.

Doctor Wheeler had been a sufferer from bronchial asthma for several years and about a year ago his general health be-

gan to fail. He continued in the active discharge of his duties, however, up to within a week of his death, when an attack of acute indigestion was followed by bronchopneumonia, under which he gradually sank, dying early Saturday morning.

The funeral services were conducted at his late residence on Sunday afternoon, December 31st, a distinguished company being present, including representatives of the various organizations to which he belonged. The body was buried in the family plot in Montreal. Doctor Wheeler is survived by his widow, a young daughter, and a sister, Miss Annie Wheeler, of Montreal.



*Claude L. Wheeler*

WENDELL REBER, M. D., F. A. C. S.,  
of Philadelphia.

One of Philadelphia's most distinguished ophthalmologists, Dr. Wendell Reber, passed away on December 30th from pneumonia, contracted while attending the annual meeting at Memphis, Tenn., of the American Academy of Ophthalmology and Otolaryngology, of which he was a former president.

Doctor Reber was born in St. Louis, April 3, 1867. He was a graduate of the medical department of Washington University, St. Louis, class of 1889, and of Jefferson Medical College, class of 1893. After serving a year as hospital intern, he began practice in Philadelphia, where he has been located for the last twenty years. He became professor of ophthalmology in the Temple University Medical School, and visiting ophthalmologist for the Samaritan, Garretson, Polyclinic, and Philadelphia General hospitals. He was also professor of ophthalmology at the Philadelphia Polyclinic Post Graduate School, and consulting ophthalmologist to the State Hospital for the Insane, Norristown, and to the Friends' Asylum, Frankford.

Doctor Reber was the American representative on the council of the Ophthalmological Congress, at Oxford, England. He was ex-president of the Philadelphia Clinical Association, a member of the Philadelphia County Medical Society, the Pennsylvania State Medical Society, the American Medical Association, the Philadelphia Medical Club, and a fellow of the American College of Surgeons.

Among his very large circle of friends Doctor Reber was universally esteemed for his charm of character and goodness of heart. To his professional colleagues he had endeared himself for his unflinching devotion and scientific acumen. Doctor Reber is survived by his widow.

PAUL M. PILCHER, M. D., F. A. C. S.,  
of Brooklyn, N. Y.

Dr. Paul M. Pilcher, a son of Dr. Lewis S. Pilcher, died at his home, 405 Grand Avenue, Brooklyn, on Thursday, January 4th, of pneumonia. Doctor Pilcher, who, with his brother, Dr. James T. Pilcher, conducted a private hospital, occupied a front rank among Brooklyn surgeons. He was born in Brooklyn in 1876, and received his early education in the Polytechnic Institute. He was graduated from the College of Physicians and Surgeons (Columbia University), and studied at the universities of Michigan, Berlin, and Vienna. He was a Fellow of the American Medical Association, and of the American College of Surgeons, and a member of the American Urological Society, of the Brooklyn Gynecological Society and of the Pathological Society.

## News Items

**Changes of Address.**—Dr. F. William Stechmann, to 147 East Eighteenth Street, New York.

Dr. James T. Fisher, to 1012 Brockman Building, Los Angeles, California.

Dr. Henry W. Berg and Dr. Albert A. Berg, to 10 East Seventy-third Street, New York.

**Harvey Society Lectures.**—The fifth lecture of the series will be given at the New York Academy of Medicine, Saturday evening, January 13th, by Professor E. V. McCollum, of the University of Wisconsin, his subject being *The Supplementary Dietary Relationships Among Our Natural Foodstuffs*.

**Efficiency and Inefficiency.**—At a stated meeting of the New York Academy of Medicine, held in Hosack Hall, Thursday evening, January 4th, Dr. Pearce Bailey read a paper on *Efficiency and Inefficiency as a Medical Problem*, which was discussed by Dr. Lee K. Frankel, Dr. Charles L. Dana, Dr. Stewart Paton, and Dr. Thomas G. Salmon.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, January 8th, Samaritan Hospital Medical Society, Academy of Surgery; Tuesday, January 9th, Aid Association of the County Medical Society (directors), Pediatric Society; Wednesday, January 10th, County Medical Society; Thursday, January 11th, Polyclinic Ophthalmic Society, Pathological Society, Medical Examiners' Association; Friday, January 12th, Psychiatric Society, Northern Medical Association.

**Philadelphia County Medical Society.**—At the annual meeting of the West Branch of this society, held on December 19th, Dr. Samuel McClary was elected vice-president of the county society, Dr. John Welsh Crockey was elected chairman, and Dr. J. Morton Boice, clerk. The Southeast Branch of the society recently elected officers as follows, to serve for the year 1917: Chairman, Dr. Charles Mazer; chairman of committee on scientific program, Dr. M. Ginsburg; vice-president of the county society, Dr. Aaron Brav.

**Eastern Medical Society.**—A special meeting of this society will be held at the Hotel Brevoort, Monday evening, January 8th, at 8:15 o'clock. The purpose of the meeting is the consideration of the medical provisions of the proposed health insurance act and action on certain resolutions relating to a measure providing for compulsory health insurance which will be introduced at the next session of the legislature of the State of New York. Dr. Alexander Lambert, Dr. Sigmund S. Goldwater, Dr. John B. Andrews, and Professor J. B. Chamberlain have been invited to address the meeting, and there will be a general discussion.

**Annual Dinner of Women's Medical College Alumnae.**—The alumnae of the Women's Medical College of the New York Infirmary for Women and Children will have a reunion dinner at the Hotel McAlpin, New York city, Monday evening, June 4, 1917. This date has been chosen as convenient for those physicians who wish to attend the meeting of the American Medical Association, which will be held in New York during that week. An effort has been made by the class secretaries to reach every graduate and those physicians who were students in the college at the time of its closing, but some addresses are lacking. Consequently, every alumna not otherwise notified is asked to consider this item her invitation and for further information to write to the secretary, Dr. Ethel D. Brown, 26 Gramercy Park, New York.

**The Ear in Diagnosis.**—At a meeting of the Section in Otology of the New York Academy of Medicine, to be held on Friday evening, January 12th, the program will consist of a symposium on the ear in relation to medical and surgical diagnosis. Dr. Isaac M. Jones, of Philadelphia, will read, by invitation, a paper on the *Practical Application of Recent Work on the Internal Ear*; Dr. Lewis K. Fisher, of Philadelphia, will read, by invitation, a paper on *Vertigo*; Its Causes and Methods of Diagnosis by Ear Tests. Dr. B. Alexander Randall, of Philadelphia, will open the discussion, and among those who will take part in the discussion are Dr. Charles A. Elsberg, Dr. Frederick Tilney, Dr. Arnold Knapp, and Dr. Isadore Freisner. The papers will be illustrated with motion pictures showing the normal vestibular reactions and also the variations from the normal as found in a series of cases where diagnosis was confirmed by subsequent operation.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### SODIUM BICARBONATE IN GASTRO-INTESTINAL DISORDERS.

By LOUIS T. DE M. SAJOUS, B.S., M.D.,  
Philadelphia.

Few drugs retain so completely the confidence of the practitioner for the relief of certain definite groups of cases as does sodium bicarbonate. Huchard and Fiessinger, planning a small therapeutic handbook entitled *La Thérapeutique en Vingt Médicaments*, in which twenty drugs were to do service in the whole gamut of internal disorders requiring medical treatment, did not hesitate to include this agent, along with the true specific remedies, and devoted a lengthy chapter to the indications for its use and modes of administration. Uncertainty is still at times manifest as to some of the details of its pharmacological action in gastrointestinal affections, and in our discussion of its uses, a brief consideration of the chemical and physiological changes underlying its effects will be considered.

That the initial and chief step in the action of sodium bicarbonate consists in its neutralization by acids and the liberation from it of carbon dioxide is self evident. There is in many instances, however, room for doubt as to which of the two results of the chemical reaction with acids, neutralization of the acid or carbon dioxide production, is the main factor in the beneficial effect exerted. The former origin of its analgesic action is generally accredited as the actual one, excess of hydrochloric acid being supposed to irritate the sensory terminals of the gastric mucous membrane, especially when the stomach is empty, the sodium bicarbonate being added to neutralize the irritant. Léon Meunier, however, having noticed that in many instances pain is most severe when the hydrochloric acid in the stomach is at a minimum, and is nevertheless easily relieved by the alkali, has ascribed the action of the latter rather to the carbon dioxide set free, which gas both he and others believe to exert a sedative action on the stomach. Such a conclusion directs attention to the advisability, in gastric pain occurring when the amount of hydrochloric acid in the stomach is small, of not depending upon this acid to liberate the carbon dioxide from the bicarbonate, but administering at the same time an organic acid, e. g., tartaric acid, in such a way that the two shall react chemically in the stomach, and give off the gas at any desired amount and rate.

Meunier discredits sodium bicarbonate for interfering with gastric and pancreatic digestion by neutralizing the hydrochloric acid which activates pepsin and the pancreatic secretion, but in doing so he lays stress on a condition which he has himself mentioned as being devoid of any great significance, the amount of hydrochloric acid in the stomach being, as he states, usually small at the time when gastric pain arises and sodium bicarbonate is given to relieve it. At all events, this author reports good results from tartaric acid in one gram powders, given in conjunc-

tion with alkaline powders each containing sodium bicarbonate, 0.4 gram, calcium carbonate, 0.3 gram, and hydrated magnesium carbonate, 0.2 gram. The acid and alkaline powders are dissolved separately by the patient in two half glassfuls of water, and when pain is experienced alternate tablespoonfuls of the two solutions are taken until relief has been obtained. The correctness of his views, Meunier asserts, is shown by the fact that the results thus secured are much better than if the alkaline solution is taken alone. The carbon dioxide produces relief, in his estimation, not by a direct sedative action on the mucous membrane, but by augmenting gastric peristalsis and hastening the passage of irritating material into the intestine. While such a myotonic action of carbon dioxide is generally recognized to occur, a partial discrepancy in Meunier's view will appear when it is pointed out that lime water, containing calcium hydroxide as its main constituent, also relieves gastric pain—albeit less perfectly—in spite of the fact that no carbon dioxide is liberated in its reaction with hydrochloric acid. The same thought applies in the case of magnesium oxide, though the argument here is confused by the fact that magnesium excites peristalsis and thus might bring relief. On the whole, it would seem, granting the accuracy of Meunier's clinical observations, that both carbon dioxide liberation and hydrochloric acid neutralization may take part in the analgesic action of sodium bicarbonate, and therefore, that the mode of procedure which will bring these two influences simultaneously into play will, in many cases, procure the maximum results.

We are next led to inquire whether any additional actions are exerted by sodium bicarbonate and, if so, in what classes of cases and by what procedures these actions may be therapeutically employed.

(To be continued.)

**Surgical Correction of the Obese and Relaxed Abdominal Wall.**—W. Wayne Babcock (*American Journal of Obstetrics*, October, 1916) writes concerning weakness of the anterior abdominal wall, such as occurs chiefly in women of middle age or advanced years, and arises either congenitally, through overdistention from pregnancy, ovarian tumors, ascites, or general debility, or through nerve injury or paralysis, especially postoperative. These patients suffer from indigestion, headache, flatulence, constipation, etc., and often are greatly handicapped when in the erect posture. Corrective operative measures include resection of an elliptical or otherwise shaped area of skin, lipectomy, reconstruction of the fascial and muscular planes of the anterior abdominal wall, and reinforcement of the latter by the implantation of new tissue or such foreign substances as silver wire and kangaroo tendon. Imbrication of one or more layers of the parietes may be employed to strengthen the deeper abdominal wall, but often conditions are such that this

procedure is not sufficient. In these cases a buried filigree of fine silver wire, as suggested by Willard Bartlett, has proved of great value, but in Babcock's experience, the delicate transverse loops of soft silver are easily distorted and displaced both during and after the operation. To overcome this defect a time consuming anchoring of each loop to the underlying tissues is alone efficient. In time, moreover, such filigrees become fragmented and the sharp ends of broken wire may cause pain. Babcock has therefore in the last two years been substituting fine sterling silver chain, as supplied by jewelers, for the filigree with marked success. The abdominal wall is reinforced either by transverse strands of silver chain fastened in position by catgut or fine silver wire sutures, or, preferably, by means of a continuous, broad right angled suture of buried chain. The latter is readily carried through the tissues when attached to a round needle, and its ends are fastened to the aponeurosis with silver wire or chronic catgut. Being threaded through the tissues, the chain has firm support and is not readily displaced. A single piece of chain five feet or more in length may be introduced. It may be embedded in the form of a broad open mesh. The advantages of the chain are its flexibility, high tensile strength compared to virgin silver wire, permanency, and almost complete lack of irritation.

**Venereal Diseases.**—J. E. R. McDonagh (*Practitioner*, December, 1916) presents views on the causative agent of syphilis, the Wassermann reaction, and salvarsan that are considerably divergent from the German theories which have gained wide acceptance throughout the world. His paper should be read in full, for it is impossible to give the force of the arguments in an abstract. His claims are that the *spirochæta pallida* is only the male form of the protozoan of syphilis, the function of which is to fertilize the female form, that salvarsan does not cure the disease because its action on the other forms of the protozoan is not as destructive as on the male form, and that while a positive Wassermann reaction allows the presumption to be made that the patient has had syphilis, it does not necessarily signify that the disease is active, or that the patient requires treatment. In place of the Wassermann reaction he proposes what he calls the "Gel" test. From five to twenty c. c. of blood are taken from a vein and allowed to clot in order to separate the serum. It is better not to use a centrifuge, and the serum should not be incubated. An opaque serum or one tinged with hemoglobin may be used, but it should not be more than a few days old. Both a negative and a positive control are necessary, i. e., a known nonsyphilitic and a known syphilitic serum, because the time of year and the temperature of the room have an influence on the results. Four c. c. of glacial acetic acid are placed in a clean dry test tube, one c. c. of the serum to be tested is added, and the tube is shaken. Four test tubes are thus prepared for each serum to be tested. One c. c. of glacial acetic acid is placed in each tube; then two drops of the acid serum are added to the A tube, four drops to the B, six drops to the C, and eight drops to the D. The tubes are then shaken, 0.2 c. c. of a saturated solution of lanthanum sulphate in glacial acetic

acid is added to each, the tubes are shaken again, and then left to stand. In the positive control a precipitate soon forms in D, then in C, A, and B, or C, B, and A. Half an hour or so later the precipitate has fallen in all four tubes, leaving a clear solution above. In the negative control the precipitate forms slowly, and the supernatant liquid does not become absolutely clear, even if left over till the next day. Hence it is easy to differentiate a syphilitic from a nonsyphilitic serum, and also to tell the grades of positivity, so that the effect of treatment can be accurately gauged. The results obtained by this test, under control of the Wassermann reaction, he avers to be more than satisfactory. McDonagh maintains that arsenic is not the most important part in the salvarsan molecule, but that its therapeutic action is mainly due to its orthoaminophenyl groups. He gives a list of bad results, including six of sudden death, from treatment with arsenic substitution products since the war began. He finds sulphur and iron better fitted for the purpose of the treatment in syphilis when in forms that furnish these orthoaminophenyl groups. The most suitable sulphur compound so far prepared is diorthoaminothiobenzene, or intramine, as it is called for short. Over five hundred injections of this substance have convinced him of its efficiency. He believes it to be not only one of the most active drugs we have, but one of the least toxic, and one that has a much wider sphere than salvarsan. He says that it should succeed in early syphilis, but that in recurrent and late syphilis it should precede a metallic compound. Its therapeutic effect is enhanced by the previous use of iodine. The best organic compound of iron prepared was the ferric triparaamino sulphonate, which he calls ferrivine. This has not yet proved as satisfactory as intramine, though its therapeutic action was in many cases superior to that of salvarsan. Colossal iodine, a colloidal iodine, he prefers for the administration of this drug. An outline of the way in which he uses all of these substances in the treatment of syphilis is given.

**Pathogenesis of Asiatic Cholera.**—G. Sanarelli (*Presse médicale*, November 16, 1916) reports experiments in newborn rabbits, which showed that cholera organisms introduced by the mouth never reach the intestine by way of the stomach. Even in these young animals the hydrochloric acid of the gastric juice kills all the bacteria. The latter, instead, enter the circulation by absorption through the buccal mucosa and settle in elective fashion upon the intestine, the walls of which they traverse. They appear first near the ileocecal valve—in the ileum, cecum, and appendix. Since in suckling rabbits the ordinary intestinal flora also appears at this point, such an elective occurrence of bacteria in the ileocecal region is seemingly a general law. Elective intestinal involvement from the blood in this manner occurs not only in cholera, but perhaps also in typhoid fever, dysentery, appendicitis, certain forms of diarrhea, and other microbic diseases considered intestinal because their causative factors are found in the feces. In some of the young rabbits used, the cholera infection traveled up the small intestine, but only very rarely did it reach the duodenum. Typical cholera was induced in newborn rabbits whether

the germs were taken by mouth or administered subcutaneously or intravenously. On the other hand, in rabbits born of mothers vaccinated against the disease, no form of introduction was followed by development of cholera, thus showing that active immunization through the blood is capable of protecting against the intestinal involvement. The normal adult (unvaccinated) rabbit is completely resistant naturally to intestinal cholera. Sanarelli found that susceptibility to the infection could be artificially induced by following the cholera organisms with an injection of living colon bacilli into the wall of the appendix or the sacculus rotundus, or of colon bacillus toxin into a vein. Typical cholera symptoms and pathological changes follow such a procedure. The colon injections, though *per se* producing no apparent effect, evidently predispose the intestinal tissues to elective attack by the cholera organisms circulating in the blood. Sanarelli expresses the hope that improved prophylactic and therapeutic methods in cholera and other intestinal diseases will result from the above observations.

#### Weak Feet in Pregnancy and the Puerperium.

—Jacob Grossman (*Medical Record*, December 16, 1916) pleads for greater attention to the feet during pregnancy and the puerperium. Prophylactic treatment involves the use of proper footwear with room for expansion at the top—a raising of one eighth of an inch of the inner border of the sole and heel to prevent or overcome valgus, with rounded heel edges and nonslip soles to avoid accidents by catching in carpets, etc. It also includes exercise twice daily without tiring the patient, using tip toe exercises and walking as much as possible. Curative treatment depends on the type of weak foot in question, the nonspastic type being amenable to the use of proper shoes and exercises while the spastic cases require strapping shoes, and Whitman's braces. Neuralgic pains in the legs, back, sciatic region, and edema of the ankles should arouse suspicion of weak feet in pregnant or puerperal cases.

#### Scientific Treatment of Urethral Stricture.—

G. S. Peterkin (*Northwest Med.*, December, 1916) states that erroneous conceptions of the mechanism of urination so far as the parts from the bladder externally are concerned underlie the prevailing methods of treatment of urethral strictures and render them far less satisfactory than should be anticipated by the conditions. It should be borne in mind that the meatus is the most constricted portion of the urethra, constructed so in order to secure force for the stream and to dilate the whole course of the urethra. For adequate treatment stricture should be diagnosed before it has become cicatricial. This can be done by determining the presence of a zone or of zones of resistance to the passage of a bougie à boule. At this stage the stricture is due to the presence of cellular infiltration which will become cicatricial later. Treatment should aim at curing this condition before the scarring has occurred, and for this purpose the constriction at the meatus must be preserved. Hence no sound of greater size than No. 20 F should ever be passed. When a forming stricture is encountered on the passage of a bougie à boule treatment should be instituted immediately by dilatation of the stricture with a Kollman dilator.

This instrument is about 20 F. in size, but its inner portion can be dilated by means of a thumb screw on the handle. Combined with the mechanical dilatation of the forming stricture the patient should be taught to irrigate his urethra several times daily with water as hot as it can be borne, injected under pressure with a hand syringe having a glass nozzle. A mild antiseptic can be added to the water if desirable. Such an irrigation should be taken at least four times a day so long as the mechanical dilatation is being continued, after which it is to be stopped. This method of treatment is essentially a prophylactic one and aims to prevent the formation of true strictures. It has given the best of results.

#### The Conservative Treatment of Congenital Clubfoot.—

Eben W. Fiske (*American Journal of Orthopedic Surgery*, December, 1916) states that by means of the nontraumatic treatment he obtained excellent results in several rigid noncorrective clubfeet, and in ten cases of relapsed postoperative feet. He first increases the flexibility and corrects the foot by the use of a walking plaster dressing which is applied in three sections. The foot cast is made with a pad under the prominence of the external border of the foot; the leg cast is made and then the two casts are joined by a third while the foot is being held in the corrected position. An external wedge of plaster is placed beneath the sole of the cast. Having obtained some flexibility and correction by the above procedure, he overcorrects by means of another plaster in which he makes a "thigh cuff" and foot cast. Then he joins these two by a third plaster, making forcible eversion, abduction, and dorsiflexion of the foot. He uses a brace which permits function, in overcorrection, for the retention of the position.

#### Boric Acid Poisoning.—

George C. Maguire (*Practitioner*, December, 1916) reports a case of crushed leg which was treated in the ordinary manner surgically and with antiseptic dressings for eighteen days, until the wound showed a complete covering of healthy granulations. The treatment then was changed to fomentations of lint wrung out of a saturated solution of boric acid. That evening the patient complained of a slight headache, which persisted. Two days later a macular and papular rash appeared over the body, the patient was much depressed, and vomited dark green fluid. The next day the temperature began to rise, on the next ecchymoses appeared under the eyes, the depression deepened, and death followed on the next day. Autopsy showed all of the organs normal except the brain, the surface of which was congested and covered with plastic lymph. No septic focus could be found and the cause of death was left in doubt. The question is raised whether the boric acid might have caused the meningitis. The following passage is quoted from Hale White's *Materia Medica* concerning the therapeutics of boric acid: "It may cause a scaly eruption. In exceptional cases, when applied in large quantities to raw surfaces or mucous membranes rise of temperature, depression of spirits, feeble pulse, ecchymoses, lumbar pain, albuminuria, nausea, vomiting, and diarrhea have supervened." No other reported case of death was found in the literature.



**Oxygen in the Treatment of Purulent Pleurisy.**

Dehau and J. C. Roux (*Paris medical*, November 11, 1916) state that even after rib resection and dependent drainage in these cases the general condition of the patient may remain grave for several weeks or even months. Fever persists, dyspnea exists and is sometimes very marked, the patient becomes emaciated, copious suppuration continues, and the pus often remains malodorous. In their experience, antiseptic washings of the pleura gave little result in such patients, but as soon as oxygen was used an improvement, sometimes extremely rapid, was observed. The temperature returned to normal in a few days, the discharge and odor quickly diminished, and the general state improved in a striking manner. In a case in which the oxygen insufflations had to be interrupted for four days, fever at once returned, only to disappear again when the procedure was resumed. The oxygen was passed through a wash bottle and out through a number eighteen or twenty Nélaton catheter. The latter was passed through the pleural drain and pushed into the pleural cavity as far as possible. Insufflations lasting one hour were practised once or twice daily, under low pressure. In eleven patients thus treated suppuration ceased within a few weeks. The gas seemed to exert far greater benefit in the pleura than in wounds of the extremities and suppuration of the knees.

**Soap in the Treatment of Wounds.**—Walther

(*Presse médicale*, November 16, 1916) reports for Ratynski and Bergalonne, the results obtained with a procedure in which soap is used as the chief remedial agent in the treatment of wounds. The hands having been disinfected, pieces of white Marseilles soap to the amount of about twenty to forty per cent. are dissolved in lukewarm, distilled, or boiled water. Pledgets of sterile gauze dipped in this solution are first used to wash the raw surfaces. Copious irrigation with the soapy water is next practised, and the wound then embalmed with soap. For this purpose one or more compresses of gauze, sixteen to twenty layers thick, are dipped into the solution already mentioned, then rubbed vigorously against a piece of soap until saturated. The compresses are next rolled and squeezed between the palms of the hands until a fine, abundant froth is obtained in the gauze interstices. A spongy tissue of innumerable, minute soap bubbles is thus produced, the bubbles rendering the dressing porous. The recesses and interstices of the wound are finally covered with this porous dressing, which is spread so as to remain everywhere at least one centimetre thick. A thick layer of absorbent cotton and a tarlatan bandage complete the dressing, which should be renewed every two or three days. Immediately after the first application of the dressing a marked diminution or complete disappearance of local pain was always observed. At subsequent dressings the fact was noted that the soapy froth fails to adhere, either in or around the wound. When removed the dressing caused no bleeding. The wounds healed very rapidly, the red, edematous, irritated surfaces very early assuming a healthy, reddish color. Granulations showed marked vitality from the beginning of the treatment.

**Treatment of Poliomyelitis.**—Royal Whitman

(*Medical Record*, December 16, 1916) states that preventive treatment of deformity consists in moving the joints of the affected part through their full range of motion at least twice a day that all muscles may be extended to their normal limit. Attitudes that lead to deformity must be avoided and the child must not be allowed to stand or walk on weak or uncontrolled limbs. Nutrition must be preserved in the paralyzed limbs and this may be aided by gentle massage, hot baths, and electricity. Electrical treatment is merely a local stimulant of nutrition and is better adapted to adults than to children, as the latter are usually frightened by its application. Muscle training, while of value, has its limitations, as paralyzed muscles cannot be trained. However, in suitable cases if properly applied it lessens the tendency to deformity and aids restoration to muscles where they are susceptible to restoration. Braces are used to prevent deformity and to prevent locomotion. Plaster supports may be applied temporarily to rest the inflamed spinal cord and hold the uncontrolled and sensitive limbs in position. Braces are employed to protect the weak muscles and lessen the strain on joints which otherwise would induce deformity. Properly regulated functional use of muscles is the most powerful aid to recovery, and it is often necessary to use supports to aid such exercise. Operative treatment may be indicated after several years when the amount of permanent paralysis can be accurately determined.

**Treatment of Infantile Paralysis.**—F. E. Peckham

(*American Journal of Electrotherapeutics and Radiology*, October, 1916) urges great care to prevent overstretching of the affected muscles during the acute stage of infantile paralysis. Removable braces should be employed to keep the strong muscles stretched out. To relieve pain and dissipate infiltrations and edema in various parts of the body Peckham recommends the use, as early as practicable, of the static wave current and light wave treatment. The static wave current is applied over the lumbar spine for twenty minutes and the weakened or paralyzed muscles then exposed to a 500 candle power lamp, screened with blue glass, for a like period. This blue light causes pain to disappear in the painful stage of the disease. The lamp is also applied over the lumbar spine. Immediately after, the pain and tenderness in the affected muscles having been thus removed, vibration treatment is applied to these muscles, followed by gymnastic movements. The splints are removed for these treatments, which are given three times weekly. The manipulations rendered possible by the relief of pain and tenderness resulting from the blue light lead to preservation of the elasticity of the strong muscles. The apparently paralyzed muscles often respond promptly to the treatment, which, by permitting of earlier mechanical care of these muscles, tends to prevent or reduce deformity and obviate subsequent surgical procedures, such as tenotomy, for its correction. The gymnastic exercises with or without resistance, are of great importance and should never be neglected. In neglected cases, especially where the weakened muscles have been pulled around by the strong, the stretched muscles show prompt response.

**Treatment of Asthma with Autogenous Vaccines.**—Truman C. Terrell (*Texas State Journal of Medicine*, December, 1916) collects the specimen in a sterile receptacle after the mouth has been thoroughly cleansed and the gums and teeth painted with tincture of iodine. The specimen is collected immediately after arising in the morning. Three smears are made and stained, one with methylene blue, one with Gram's, and one with Ziehl-Neilsen. The bacteria are planted on suitable culture media. At least eight tubes should be planted, one half of them being grown anaerobically and the other half aerobically, at 37° C. In preparing the vaccine the media is washed off with 0.9 per cent. salt solution that contains 0.5 per cent. phenol, or one per cent. quinine. The colonies of bacteria are broken up by being transferred to a shaking bottle and shaken for some time. Later they are centrifugated. The supernatant fluid is poured off and the proper dilution made. It is then either heated to 60° C. for one hour on a water bath, or placed in an incubator for twenty-four hours at 38° C. The initial dose should be from fifty to 300 million bacteria. In tuberculosis cases we must be especially careful with the size of the dose, always starting with the minimum. The left arm is usually selected as the site for the first injection, followed by the right arm, left thigh, right thigh, and finally the shoulders. The intervals should never be less than five days, usually from seven to nine days, depending upon the reaction.

**Wounds of the Spinal Cord and Their Treatment.**—G. Guillaín and J. A. Barré (*Presse médicale*, November 9, 1916) lay stress on the following complications as the chief causes of death from spinal wounds in military practice: Purulent meningitis; disturbances of sympathetic innervation in the alimentary tract, abdominal viscera, and ductless glands resulting in cachexia from failure of assimilation; and anemia of the cerebral centres and medulla. Cervical spinal wounds are the gravest because they entail maximal sympathetic disturbances. All spinal wounds should be explored as soon as possible—within a few hours. The dorsal orifice of entrance should be opened up, the wound disinfected, and the bony parts examined. Bone fragments, bits of clothing, missiles, and other foreign bodies should be removed, and the wound then treated like other military wounds, viz., by free irrigations with warm saline solution. All operative work should be done in very warm rooms, nervous tissue being sensitive to cold. Local anesthesia should be as much as possible substituted for chloroform or ether anesthesia, which seems greatly to impair the general condition and bring on death in these cases. If the dura is found un torn, it should never be opened, even if subdural or intraspinal hemorrhage is suspected, such opening always influencing the operative prognosis unfavorably. If the dura is found torn and the spinal tissue is visible, prolonged washing with warm saline solution is the only rational treatment. A projectile posterior or lateral to the cord, or in the cord, should be removed, but where it is anterior to it and has cut through it, perhaps incompletely, finding and removing it is of doubtful propriety, increased injury or complete section of the cord being a certain re-

sult of such interference. The nursing is of extreme importance in these cases. The patient, placed on a special bed, must be kept scrupulously clean at all times. Infection of the skin from contact with fecal matter is avoided by local ablutions with soap and water and alcohol many times a day and even at night, followed by sterile talcum powder. Careful catheterization four times a day is required. Food should be given to the extent that patient's appetite demands. In the first few days or in the terminal stage saline or glucose hypodermoclysis, often with one c. c. of adrenaline solution added, is very useful. Camphorated oil, caffeine, sparteine, ether, and morphine may also be required.

**Autogenous Defibrinated Blood in the Treatment of Bronchial Asthma.**—M. H. Kahn and H. W. Emsheimer (*Archives of Internal Medicine*, October, 1915) report six cases treated by this new method. In each case twenty to thirty c. c. of blood were withdrawn from a vein with a sterile needle and received in a sterile one ounce flask containing glass beads. The contents were agitated for from five to seven minutes to separate the fibrin, and the defibrinated blood then drawn into a thirty c. c. syringe and immediately injected subcutaneously into the loin of the patient. Ten injections at weekly intervals were made in each case. No local or immediate general effects followed the injections. Whenever possible the blood was obtained during an asthmatic attack. The procedure is based on the consideration of the asthmatic paroxysm as a spasm of the bronchioles due to anaphylaxis the result of protein sensitization. The repeated injections of small doses of the causal protein in the patient's blood are intended to produce an active immunization. The patients treated all showed definite improvement, as indicated by diminution in frequency and severity of the attacks, gain in weight, increased ability to work, and improved subjective symptoms.

**Excision of the Knee Joint for Severe Infection.**—Andrew Fullerton (*Brit. Med. Jour.*, November 25, 1916) states that in a large proportion of serious infections of the knee joint the usual measures of treatment, such as aspiration and irrigation, or the injection of two per cent. formaldehyde in glycerin, or of ether, failed. The anatomical structure of the interior of the knee renders all attempts at open drainage more or less doomed to failure. In such cases, therefore, other methods of treatment must be adopted. There are but two for consideration—amputation or excision. The latter has proved very successful if undertaken reasonably early, and while the patient's general condition was such as to indicate his ability to go through a long convalescence. It has the advantages, also, of conserving his leg and of being far more acceptable to the patient than amputation. The technic of the operation of excision is described in detail and consists, in brief, of the removal of the femoral condyles just above their cartilaginous surfaces, the removal of a thin layer from the upper end of the tibia and excision of the patella with opening of the bursa in the posterior aspect of the knee joint. The total length of bone removed is not over two inches. The wound is treated like a compound fracture, the leg being fixed in a Thomas splint.

**Treatment of Eclampsia.**—Ubaldo Fernandez and Torribio J. Picardo (*Clinica Obstetrica y Ginecologica del Hospital Alvar* año 1915) give their treatment succinctly and almost laconically, as follows: In antepartum cases hysterectomy was done usually by the vaginal route before viability of the fetus and by the abdominal method after viability. In eclampsia occurring during actual labor they practised *accouchement force* by manual dilatation with extraction either manual or by forceps, internal version or embryotomy, according to the classical rules depending upon presentation, fetal viability, etc. In post partum eclampsia venesection was their sheet anchor, up to 1,700 c. c. having been drawn off without untoward effect.

**Melena Neonatorum.**—Valle y Jove (*Revista de Medicina y Cirugia Practicas*, November 28, 1916) reports a case treated unsuccessfully by absolute gastrointestinal repose, an icebag to the abdomen, calcium chloride by mouth, and twenty c. c. of normal horse serum subcutaneously repeated in twenty hours. Then Bendix's treatment by adrenaline was tried successfully, one c. c. being given daily for two days and one half c. c. on the third day, no further hemorrhage occurring. For five days no alimentation was practised by mouth, but subcutaneous injections were given every three hours of twenty c. c. of a five per cent. solution of glucose serum. For later feeding mother's milk was used with complete recovery.

**Foreign Protein in Skin Diseases.**—M. F. Engman and R. A. McGarry (*Journal A. M. A.*, December 9, 1916) report the treatment of several forms of skin disease with the parenteral injection of foreign protein. The protein was obtained by using suspensions of typhoid organisms. The results were very favorable in such conditions as lupus erythematosus, psoriasis, and several other types of dermatosis. Although the immediate results were satisfactory the treatment was often followed by relapse. It is not recommended for general use as yet, but its results are worthy of much further investigation, in the opinion of the authors.

**The Choice of Tuberculins.**—Benjamin White (*N. Y. State Jour. Med.*, November, 1916) writes that for the purpose of diagnosis the original tuberculin of Koch, or "O. T.," is generally accepted as the standard, but it is a good practice to determine the activity of the sample which is to be employed by testing it upon a person whose sensitiveness is known. This can be accomplished easily by the intracutaneous injection of 0.05 mil of each of a series of dilutions. For therapeutic purposes "O. T." also probably leads in general popularity, but some objections have been raised to it on account of the denaturalization which it has undergone as a result of heating. It has been sought to overcome these disadvantages by the preparation of a filtrate of the broth cultures of tubercle bacilli. This is known as "B. F." and is held to have marked antipyretic properties, but to be weaker than "O. T." Both "B. F." and "O. T." contain the excretory products of the growth of the tubercle bacilli and these have been eliminated in the preparation of "B. E." or Bazillen emulsion, which is merely an emulsion of

the finely ground bodies of tubercle bacilli. It has the possible disadvantage of slower absorption than is the case with the other tuberculins mentioned, and the production of more or less persistent, tender swellings at the sites of injection. An excellent combination can be made by mixing "B. F." with "B. E.," thereby obtaining the whole bacillary substance and the products of its growth, both unaltered by heat. A very large number of more or less modified tuberculins has been brought forth with claims for advantages in each case, but it is probable that the best results are still to be secured by the intelligent use of the three old and tried preparations just discussed. Certainly these three meet the theoretical requirements and their use is based upon large experience.

**The Use and Abuse of Pituitrin.**—A. J. Skeel (*Ohio State Journal of Medicine*, December, 1916) states that pituitrin has three distinct fields of usefulness in obstetrics: 1. To terminate the second stage of labor in cases where no reason exists for delay except insufficient uterine activity and provided the head has reached the pelvic floor. This includes the delivery of the second child in twin labors. 2. Laceration of the cervix when used before complete dilatation. 3. To limit the bleeding in cases of marginal placenta prævia, and in Cæsarean section. Its possibilities for harm may be summarized as follows: 1. Rupture of the uterus if obstruction of any nature exists. 2. Laceration of the cervix when used before complete dilatation. 3. Laceration of the perineum when precipitate labor is caused by a full dose. 4. Occasionally its use results in tetanic uterine contractions somewhat resembling that produced by ergot, with consequent asphyxiation of the child. Before pituitrin should be used the following conditions should be fulfilled: 1. Complete cervical dilatation. 2. The membranes must be ruptured. 3. The presentation must be longitudinal. 4. There should be no malpresentation. 5. There must be no disproportion. 6. The presenting part must be completely engaged. It is a good plan to use pituitrin in fractional doses, 0.33 to 0.5 c. c., and repeat when the effect wears off. This reduces the risk of uncontrollable action. If pituitrin causes excessive pain either chloroform or ether should be administered. It has been used as a galactagogue and as a substitute for the catheter in post partum urinary retention.

**Treatment of Tetanus.**—David Bruce (*Lancet*, December 2, 1916) states that the prophylactic inoculation of patients which subsequently manifested tetanus reduced the mortality only slightly. Thus in prophylactically inoculated patients the death rate was about forty-three per cent., while in those not so treated it was 52.5 per cent. Curative treatment with tetanus antitoxin gave a mortality of forty-seven per cent. as compared with seventy per cent. in those not treated with the antitoxin. No advantage was found in the use of intrathecal injections over the subcutaneous and intramuscular methods of administration. Neither magnesium sulphate nor injections of phenol had any effect in reducing the mortality, which was seventy-eight per cent. after the former and sixty-eight per cent. after the latter method.



# Miscellany from Home and Foreign Journals

**Life History of the *Ascaris lumbricoides*.—**F. H. Stewart (*Brit. Med. Jour.*, December 2, 1916) states that experiments, in continuation of earlier studies, have shown that in the rat and mouse larvæ of the ascaris persist in the lungs and trachea up to the twelfth day following infection, and begin to migrate down into the intestine after the ninth day. By the next day their migration down the intestine is fully established and they begin to accumulate in the large intestine. This process continues through the next two days, during which large numbers of the larvæ are passed with the feces. These observations seem to show that the larvæ reach the foods of human beings from the rodents' intestinal tracts rather than from their mouths and saliva, as was stated earlier in the course of these studies.

**Shrapnel Bullet Free in the Left Ventricle.**—Lobligeois (*Bulletin de l'Académie de médecine*, November 7, 1916) reports the unique case of a soldier wounded some months previously who had been sent to him for radioscopic examination to ascertain the condition of the left lung and whether a projectile which the patient still affirmed to be lodged in his thorax was actually present. The patient had completely recovered clinically, and was in no way being disturbed by the foreign body. The examination revealed a free shrapnel bullet in the left ventricle, swirled about at each cardiac contraction. At the close of diastole the bullet rested at the lower margin of the heart near the apex. In systole it rapidly traveled along this margin from the patient's left to his right, was arrested at the septum, next passed directly upward to the uppermost point of the ventricle, and finally, at the conclusion of systole, sank slowly to the apex. Attention is called to the fact that this condition could not have been discovered by the ordinary procedure, viz., making an x ray plate (unless instantaneous), the movements of the bullet being too rapid.

**Relationship of Tuberculosis to Psoriasis.**—Gaucher (*Bulletin de l'Académie de médecine*, November 7, 1916) adduces evidence to show that the initial cause of psoriasis is tuberculosis, or, more precisely, tuberculous toxic infection. From the pathological standpoint a bond between the two conditions is suggested by the cases of psoriasiform papules to which the term parapsoriasis has been applied and some of which have been thought due to a papular skin tuberculosis. The pathogenesis of psoriasis may be compared to that of lupus erythematosus, many cases of which are unquestionably of tuberculous causation. The chief argument in favor of the tuberculous origin of psoriasis is, however, derived from clinical observation. Gaucher has been struck by the frequency of psoriasis in tuberculous families. The children of a single family often present psoriasis and tuberculosis in different individuals. Psoriatic patients not infrequently develop tuberculous lesions. In all cases of acute or scarlatinoid psoriasis which had become transformed into secondary pityriasis rubra

Gaucher witnessed ultimate death from pulmonary tuberculosis. Many psoriatic patients have lost a parent, brother, or sister from the latter disease or from tuberculous meningitis, or have relatives with osseous or articular tuberculosis. The children of parents with psoriasis not rarely succumb to tuberculous meningitis or later to pulmonary tuberculosis, or exhibit lymphatic, bony, or articular tuberculous disease. Psoriasis patients themselves sometimes develop pulmonary tuberculosis, or, more often, show signs of larval tuberculosis, such as chronic cervical adenitis, asthmatic states, and chronic joint disorders. Similar evidence was, for a long time, available to show the tuberculous nature of lupus, now recognized as tuberculous by all. The presence of tubercle bacilli or of the tuberculous follicle is no longer essential in making the pathological diagnosis of a tuberculous lesion. In fact, atypical, inflammatory, or nonfollicular tuberculosis appears to occur as frequently as the typical form.

**Rupture of the Scar of a Previous Cæsarean Section.**—Palmer Findley (*American Journal of Obstetrics*, September, 1916) points out that there is no positive assurance of obtaining a perfect healing of the uterine wound after Cæsarean section whatever the method of suturing or whoever the surgeon. Although a perfectly healed wound may be relied upon to resist the forces of labor, in view of the fact that the integrity of the wound is an unknown factor in all cases the utmost caution is necessary in the conduct of every case of pregnancy and labor following Cæsarean section. Failure to secure perfect healing is accounted for by departure from the principles of suture proposed by Sænger, and by septic infection of the uterine wound. Again, a latent gonorrheal infection may defeat the most painstaking efforts to secure perfect healing. When Cæsarean section is followed by a fever course the uterine wound should be regarded as insecure, and Cæsarean section again performed at the onset of labor in a succeeding pregnancy. When infection is known to exist, sterilization and hysterectomy should replace conservative Cæsarean section. Transverse fundal, extraperitoneal, and cervical incisions do not lessen the liability of rupture in subsequent labors, but, on the contrary, probably increase the hazard. All cases of pregnancy after Cæsarean section should be hospital cases and the operation repeated at the beginning of labor if the uterine wound is known to be defective or if some cause of obstruction to delivery exists. Version, high forceps, uterine tampons, hydrostatic bags, and pituitrin should never be employed in the presence of a Cæsarean scar. Not more than two per cent. of ruptures of the uterus occur after Cæsarean section in subsequent labors; yet one is not justified in voicing the slogan "once a Cæsarean section, always a Cæsarean section." Nor is one to rely implicitly upon the uterine scar in any case. The liability to rupture, though slight, stands as an argument against the increasing tendency to widen the scope of elective Cæsarean operations.

**Polycythemia.**—Rawson J. Pickard (*Journal A. M. A.*, December 16, 1916) reports a case in which all the usual therapeutic measures were tried without any influence on the progress of the condition. Raw spleen and spleen extract were given with a gradual reduction in the number of erythrocytes and an ultimate return of the blood picture to normal. There had been a marked increase in the resistance of the red cells to the lytic action of antihuman amboceptor and this condition also disappeared with the recovery in the blood.

**Grafting with Frog Skin.**—H. W. M. Kendall (*British Medical Journal*, November 11, 1916) states that as far back as 1886 he employed fresh frog's skin for the purpose of grafting over indolent leg ulcers with excellent results, and has again made use of this method in the treatment of wounds encountered in the present war. Fourteen cases thus treated are briefly summarized, two of which were unsuccessful, the others being strikingly satisfactory in rapid healing. The advantages of the method are that it is simple, the material is abundant and easy to obtain in a fresh condition, the skin used is free from hair, healing is greatly hastened, and cicatricial contraction is much reduced. The technic consists in gently cleansing the surface of the wound without the use of antiseptics, drying its surface, and laying on it a piece of the skin taken from the thigh of a living frog. The under surface of the frog's skin is applied next to the wound. Over the graft a strip of gutta percha tissue, coated with a mild and nonirritant emollient, is laid, and fixed in place with adhesive plaster. A dry dressing is then applied. In three days the entire dressing, including the gutta percha, is changed, and after a second similar interval the dressings may be made without the tissue, the wound surface being covered with boric acid ointment or other bland preparation.

**Influence of Age and Sex on Hemoglobin.**—C. S. Williamson (*Archives of Internal Medicine*, October, 1916) points out that practically all our knowledge on this important subject dates back to the studies of Leichtenstern in 1878, which were made in too few subjects and by antiquated methods. Personal studies in 919 subjects with Huefner's spectrophotometer showed that the amount of hemoglobin in the blood of normal persons varies greatly at different ages, following a well defined curve. The variations, which are greatest from birth to the sixteenth year, are so marked as to necessitate consideration of the age in comparing the hemoglobin with the normal in any given case. The amount of hemoglobin falls within the first year from twenty-three grams in a hundred c. c. of blood to thirteen grams, then rises up to the sixteenth year, remains almost stationary until the fifty-fifth year, thereafter declining slightly. Between the ages of sixteen and sixty there is a distinct difference between the two sexes, the average amount being seventeen grams in males and 15.5 grams in females. This difference grows less after the sixtieth year. In view of the above observations Williamson recommends that all hemoglobinometres be standardized in absolute—not percentage—terms, most conveniently in grams of hemoglobin in a hundred c. c. of blood.

**Six Cases of Esophagectasia.**—H. Batty Shaw and A. W. Woo (*Lancet*, December 2, 1916) state that dilatation of the esophagus has been known to the anatomist and the pathologist for a long time, although it has been considered a rare condition when not due to some form of anatomical lesion producing constriction of the tube. It has however, very rarely been diagnosed before death. Six cases of the condition are here presented in detail. The symptomatology of the condition is very variable, but the most striking features are the occurrence of obstruction to the passage of solid food with intervals during which such food passes freely; pain in the epigastrium associated with the food obstruction; the pain is of a sticking character as described by the patients; it is relieved by regurgitation of the food through the stimulation of the desire to vomit, or by taking a deep breath or coughing. Eating is often followed by a sense of obstruction to the respiration with attacks of asthma, reflex coughing, and other respiratory symptoms. There may be a history of recurrent attacks for several years, or one of dyspepsia of undiagnosed causation. The diagnosis of the condition can be made by studying the transit of a bismuth meal through the esophagus. The cause of the condition is not known, but it is suggested that it may be due to an anatomical obstruction to the cardiac end of the stomach through an exaggeration of the normal angulation which occurs in that location. Several of the patients had periods of unconsciousness of unexplained origin, and one died after being unconscious for forty hours.

**Estimation of the Coagulation Time by the Air Bubble Method.**—E. Lenoble (*Bulletin de l'Académie de médecine*, November 7, 1916) collects venous blood, drop by drop, in the small test tube accompanying Hayem's hematimetre, until the surface of the blood reaches the upper margin of the tube at the periphery, though a cuplike depression remains in the centre of this surface. By occluding the tube with a cover glass a small air bubble is thus produced, which is extremely mobile, as in a spirit level, and remains mobile until the blood begins to clot. The start of coagulation is marked by failure of the bubble to shift when slight deviations of the tube from the horizontal level are made, the bubble showing at this moment only a tendency to elongate or shorten. The completion of coagulation, on the other hand, is indicated when the bubble fails to change its shape upon movement of the tube. The blood interposed by capillarity between the margin of the tube and the cover glass seals the tube and prevents all evaporation of the blood under examination. The air bubble should not be larger than a large pinhead. Only slow movements should be imparted to the tube; sharp movements may lead to recovery of mobility by the bubble and an error of twenty-five to sixty seconds in the results. In one hundred subjects in which this procedure was applied, the beginning of coagulation was observed to occur in from fifty-five seconds to six minutes and thirty seconds, averaging two minutes and forty seconds; the end of coagulation occurred in from one minute and thirty seconds to eleven minutes, averaging four minutes and thirteen seconds.

**The Influence of the Os Calcis on the Production and Correction of Valgus Deformities of the Foot.**

—Percy Willard Roberts (*American Journal of Orthopedic Surgery*, December, 1916) believes that the position of the os calcis has considerable influence as an etiological factor on weak feet and certain types of paralytic valgus. He suggests the use of a metal plate which grasps the os calcis and rotates it outward, thereby raising the arch of the foot and transferring the strain to the outer border. The plate, in addition, extends forward supporting the transverse arch.

**Paralysis agitans.**—Walter B. Swift (*Journal A. M. A.*, December 16, 1916) states that in the course of the treatment of the tremulous speech by the slow pronouncing of vowels, it was accidentally observed that the general tremors were greatly benefited. On the strength of this a series of very slow exercises were prescribed, and had the effect of giving complete relief from the tremor, improved sleep, and a relief from what the patient described as "bad feelings." The results were obtained only while the treatment was continued.

**Thyroid Disease in Relation to Rhinology and Laryngology.**

—B. R. Shurly (*Journal A. M. A.*, December 9, 1916) states that it is manifestly obvious that the physiology of the thyroid and of other ductless glands is profoundly affected by toxic disturbances in general, and especially by those that enter the tonsillar chain of lymphatics. The direct and definite physiological and pathological relation of the tonsils to the thyroid should be realized, and a routine investigation of the effects of tonsillitis, quinsy, and other infections of the lymphoid tissue in the upper respiratory tract should be made.

**An Experience with Epidemic Cerebrospinal Meningitis.**

—A. Azalbert (*Bulletin de l'Académie de médecine*, November 14, 1916) reports on twelve cases recently witnessed simultaneously in soldiers. Stress is laid on lumbar puncture as a diagnostic procedure, the cerebrospinal fluid losing its customary limpidity and always issuing under high tension. Examination of this fluid showed the meningococcus in ten cases, a staphylococcus in one, and undetermined cocci and rods in the twelfth. Two cases were clinically misleading, the one being mistaken on the first day for measles and the other for acute tonsillopharyngeal inflammation; neither of these had meningeal symptoms at first. Azalbert advises the use of lumbar puncture in doubtful cases in times of epidemic. The disease did not seem especially contagious, none of the men in the neighboring beds or comrades of the patients contracting the disease; nor did any of the orderlies acquire it. In the treatment, the ten c. c. doses of antineuritis serum were soon increased to twenty, thirty, and forty c. c., apparently with improved results. The serum seemed to do some good even in the two cases in which the meningococci had not been found. One patient, moribund when admitted, died in a few hours. The remaining eleven recovered, seven completely, one with residual convergent strabismus, two with unilateral deafness, and one with bilateral deafness and disturbances of equilibration.

**Diphtheria Carriers.**—Sophie Rabinoff (*Journal A. M. A.*, December 9, 1916) concludes that the presence of a foreign body in the nose may provide a favorable environment for the growth of diphtheria bacilli. The removal of tonsils and adenoids seems to offer a safe and rapid method of eliminating diphtheria bacilli from the nose and throat of carriers, and should finally be resorted to where other methods have failed.

**The Pineal Gland.**—Frederic Fenger (*Journal A. M. A.*, December 16, 1916) states that the extensive chemical and pharmacological investigation of this gland as obtained from cattle, sheep, and lambs, and from adult and young animals showed it to be practically devoid of any material pharmacologic action. Further, the extirpation of the gland from young animals failed to have any deleterious effect on the animals. It was apparent that the gland must be considered as being, in all probability, of no medicinal value.

**Urinary Origin of Supposed Intestinal Fevers.**

—Martinez Vargas (*Archives de Medicina Interna*, September, 1916) declares that modern methods of examination and laboratory work show that in many cases of supposed intestinal toxemia with fever, the urine shows evidence of a cystitis or a pyelitis. In such urinary infections the usual infective organisms are the colon bacilli and less often the bacillus proteus and the staphylococcus. The treatment of such cases is the alkalization of the urine with potassium citrate, and two irrigations of the bladder each day with permanganate solution one in two thousand.

**Acute Purulent Infections of the Nose, Throat, and Ear.**

—Hill Hastings (*Journal A. M. A.*, December 2, 1916) states that fresh and salt water plunges, contaminated by nasal and throat secretions, especially during epidemic periods of nose and throat infections, are far more dangerous than some other conditions for which strict health regulations are enforced. Many mastoid cases, and some deaths occur that should be and can be prevented by keeping people with "colds" from swimming, and especially from diving. Over ninety per cent. of the cases of middle ear abscess and mastoiditis result from ordinary "colds" and "sore throats." Nearly all cases of suppuration of the frontal, sphenoid, and ethmoid sinuses, and the majority of the cases of suppuration of the maxillary antrum result from neglected "colds in the head." The best protection against infection of the ears, especially in children, is the removal of tonsils and adenoids; but when present, the best protection against further spread of the purulent infection of the middle ear is prompt incision of the drum membrane as soon as the abscess forms. The dangerous practices that tend to the spread of the purulent infections of the nasopharynx into the ear are the use of nasal douches, with the head thrown back; also the snuffing of salt water up the nose; the forcible douching of the nose with syringes; the blowing of the nasal secretions out of the nose with too much force; swimming, and particularly diving, when there is a "cold in the head."



# Proceedings of National and Local Societies

## ASSOCIATION OF AMERICAN PHYSICIANS.

*Thirty-first Annual Meeting, Held at Washington, D. C., May 9, 10, and 11, 1910.*

The President, Dr. HENRY SEWELL, in the Chair

*(Continued from page 1170.)*

**The Control of Malaria by Treating Malaria Carriers.**—Dr. C. C. BASS, of New Orleans, said that where malaria prevailed there were many more malaria carriers who were not known to be infected than there were persons who had acute symptoms of the disease. In many such localities it was not practical at present to install or maintain antimosquito measures. Koch advocated the possibility of control and eradication of malaria by finding and treating all infected persons in the community. Experiments and a demonstration of this method on a large scale was now being made in Bolivar County, Mississippi, in the heart of the malaria section of the South. The work had advanced sufficiently to show that in this country, which is believed to be representative of a large part of the South in which malaria was most prevalent, the cooperation of all the people could be secured to the extent of making a complete malaria survey and of inducing practically all to take quinine as directed. The cost of the control of malaria by such a method would be very small compared to the cost of applying known methods of mosquito control.

**The Main Factors Affecting the Intensity of the Sounds as They Pass from the Interior of the Lungs to the Periphery of the Chest.**—Dr. GEORGE W. NORRIS and Dr. C. M. MONTGOMERY, of Philadelphia, stated that the main factors diminishing the intensity of the sounds as they passed from within the bronchi to the external chest surface were reflection and diffusion. Reflection might be a potent factor where vibrations passed through media of different densities, as air and fluid, or air and tissue. Sound was not much affected in its passage between fluid and tissue because the differences in density were not sufficiently marked. Marked vocal resonance occurred over solid lung because the parenchyma was airless, thus eliminating reflection in this part of the lung. The vocal resonance might also be increased when fluid separates a solid lung from the chest wall. In the normal lung, on the other hand, reflection took place between the bronchi and the surrounding air, between the tense membranous tissues of the parenchyma and the adjoining air, and between the air in the lung and the chest wall. Diffusion, while more or less a constant factor in all conditions, played a special part in pleural effusion, the sounds becoming spread out or diluted as they pass from the lung surface in contact with the fluid to the point on the chest revealing diminished vocal resonance.

**Experimental Endocarditis.**—Dr. H. K. DETWEILER and Dr. W. L. ROBINSON, of Toronto, reported that the cultures of streptococcus viridans obtained from the blood in cases of chronic endocarditis had been inoculated into a series of rabbits,

and endocarditis was produced in a large number of cases. The inoculations were all intravenous and consisted of enormous quantities of the organism suspended in saline. The autopsy findings led them to believe that this organism had a special affinity for the heart, and especially for the heart valves. Evidence was forthcoming to show that the streptococcus viridans obtained from the normal mouth is equally productive of heart lesions, and any grade of endocarditis may be produced by any one organism, depending upon the amount injected, the number of injections, and the length of time between the first injection and the death of the animal.

**Remissions in Leucemia Successfully Produced by Radium.**—Dr. THOMAS ORDWAY, of Albany, stated that a certain group of leucemia cases were resistant to x ray and to benzol. Refractory cases might yield to radium therapy and details of a case treated by radium were given, including charts showing analysis of blood changes. Radium was applied systematically according to a plotted chart corresponding to the surface outline of the spleen. The results were a remarkable improvement of the blood picture; reduction of the spleen to normal; and great improvement of the patient's general condition.

**Observations on the Starvation Treatment of Diabetes.**—Dr. C. F. MARTIN and Dr. E. H. MASON, of Montreal, stated that in the course of the observation of the metabolism of a number of cases of diabetes treated by the starvation method, charts were made to illustrate the effects of such treatment. The charts illustrated the speed with which one might arrive at the tolerance for various food stuffs by this method, and also that hyperglycemia was a much better criterion than the glycosuria of the dietetic needs. Starvation, too, affected acidosis in different ways, as was shown by the charts. In diabetes it was found that the blood sugar curves, with the glucose test, differed constantly from those of the normal individual.

Dr. A. JACOB, of New York, said it seemed to him that the starvation treatment of diabetes was very satisfactory to the experimental doctor; but what happened to the patient? He had seen patients with five per cent. or six per cent. of sugar go along in satisfactory health for five or ten or even twenty years. He had seen starved patients, emaciated and suffering with cerebral anemia, complain bitterly of other symptoms of nerve exhaustion, and they were now dead. They would not have died if they had not been starved. Were not those patients with glucose in the urine better off than those that died? He would like to know whether more, or less, diabetic patients had died in the past few years.

Dr. C. F. MARTIN, of Montreal, said that Doctor Joslin had answered Doctor Jacob's question as to the present mortality rate of diabetes in the discussion of acidosis. He was sorry that Doctor Jacob had the idea that he actually starved his patients; as a matter of fact they were not even hungry; they were not fasted to that extent.

**Preliminary Note on the Germicidal Action of Quinine Salts and Allied Compounds.**—Dr. S. SOLIS COHEN and Dr. JOHN A. KOLMER, of Philadelphia, reported the results of germicidal tests *in vitro* with sixteen different quinine salts, including ethylhydrocuprein, hydroquinine (methylhydrocuprein), and quinine and urea hydrochloride upon pneumococci of types I, II and III; the germicidal activity of urea hydrochloride; and a study of the parasitism of quinine on pneumococci by cross germicidal tests with other chemicals and microorganisms.

**The Effect of Exposure to Cold upon Experimental Infection of the Respiratory Tract.**—Dr. JAMES ALEXANDER MILLER and Dr. WILLIS C. NOBLE, of New York, stated that at the present time there was considerable difference of opinion as to whether exposure to cold played any part whatever in the causation of disease. Experimental evidence was conflicting and as many of the animal experiments have been conducted with pneumococci, which organism did not produce experimental disease with regularity in animals, the results were not conclusive.

The present experiments were carried out with rabbits inoculated with *Bacillus bovissepticus*, an organism which causes the laboratory disease in rabbits known as "snuffles." It was selected for experiment because it produces in rabbits conditions very similar to those in respiratory infections in man and because of the relative difficulty of producing pneumococcus pneumonia in rabbits. The experimental animals were kept in a warm temperature for varying periods of time and were then inoculated by spraying the nose and throat with virulent cultures of the "snuffles" bacillus. They were then immediately chilled by exposing them to outside cold weather. Two series of experiments in two successive winters were carried out. The results in each series were given in detail. The totals for the two series showed that of thirty-seven experimental animals, fifteen, or 40.5 per cent., reacted to the infection, while an equal number of controls, nine, or 24.3 per cent., reacted.

The conclusion seemed justified that exposure to cold after previous subjection to warm temperatures rendered rabbits somewhat more liable to infection with *Bacillus bovissepticus*.

Dr. HENRY SEWELL, of Denver, said that the work reminded him of experiments made by Baker, of Ann Arbor; monkeys were put in ice water and then exposed to the breeze; then back into the water and exposed to the breeze again; but the animals thrived. They died in a few days, however, when they were confined to an old cellar room where dead bodies had been kept. His own experiments, in which guinea pigs were sensitized to or protected against serum by the mode and time of instillations of serum into the nose, solved the secrets of this whole problem. Throughout life we are constantly receiving antigens which protect us if we are in training, and sensitize us if we let down the bars by unhygienic indiscretions.

Dr. S. J. MELTZER, of New York, said that experiments seeking to show the relations between exposure to cold and lung affection must all fail for

the present, because the lungs were always maintained at the same temperature. But the same cannot be said of the nose and larynx; exposure to cold did cause a reaction in these parts and we begin to sneeze or cough. These symptoms were not diseases, however; they were efforts of the body to get rid of undesirable substances. While these effects of exposure did not cause disease, they undoubtedly opened the way to disease. The only way to prove the matter so far as the lungs or bronchi were concerned would require the introduction of hot or cold air through a tube to the lung or bronchus where organisms had been previously placed. This would not afford complete evidence, however.

**On the Expectorant Action of Ammonium Chloride.**—Dr. WARREN COLEMAN, of New York, stated that ammonium chloride had long been recommended as an expectorant. Objections to its use had been based on a few experimental observations on animals. The objections and factors in this experimental work were pointed out. His experiments were on human subjects, being observations on the expectoration in bronchitis before and after administration of ammonium chloride. The sputum was carefully collected and preserved and subjected to chemical examination, which showed a large increase of ammonia N in sputum after the exhibition of ammonium chloride. Some of the observations were upon himself; when one half grain doses of ammonium chloride were taken every two hours during the day up to seven p. m., a distinct taste of the drug was perceptible in the sputum the next morning, but not in the saliva. Another subjective observation was that the sense of bronchial rawness and tightness in bronchitis was relieved in a half hour after taking chloride. The explanation of this effect probably lay in the water carriage of the drug when excreted by the bronchial mucosa, the mucous membrane, and secretion being softened thereby.

Dr. A. JACOBI, of New York, said that some years ago, as many years ago as 1857, in lecturing before the students at the College of Physicians and Surgeons, he had told them that ammonium chloride did not have the expectorant value of the carbonate or the acetate. Indeed, when he was a young man in Germany, it was the habit to give ammonium chloride as a placebo. Since then he had come to the conclusion that there was one indication for it: it would do something in chronic bronchitis where the sputum was sticky and hard to raise.

Dr. S. J. MELTZER, of New York, said that Doctor Coleman's interesting experiments did not decide the questions surrounding the expectorant action of ammonium chloride. First, we should want a definition of expectorants; Doctor Coleman indicated that there were two kinds: secretion increases and removal helpers. The observation that a given substance was absent from a secretion was not evidence that the substance had no effect on the secretion; it may have had some effect on something in the blood. Physicians should not give up something that good clinical observers had found useful on the basis of mere experimental evidence. His own observation for many years had been that ammonium chloride

was beneficial in a cold. It would not save a patient destined to die, but it was a good palliative remedy.

Dr. JOSEPH ERLANGER, of St. Louis, said that one could not be positive that the ammonium chloride found in the sputum was excreted with it. What precautions were taken to see that no ammonium chloride was retained in the mouth? Was any ammonium chloride eliminated in the saliva?

Dr. L. G. ROWNTREE, of Minneapolis, asked: At what stage in acute bronchitis did Doctor Coleman believe ammonium chloride was indicated? Was its action central or peripheral?

Dr. MAX EINHORN, of New York, said that he was delighted that the experiments were on humans rather than on rabbits. Animal experiments were good, but clinical work on patients was better, and personal observations of the effects of drugs on the experimenter himself were particularly valuable.

Dr. WARREN COLEMAN, of New York, said that his remarks had to do with ammonium chloride only; he hoped to make further studies with other drugs. He replied to Doctor Erlanger that careful examinations of both sputum and saliva had been made by Benedict; only a very slight ammonia reaction was to be found in the saliva. As to the stage of bronchitis in which ammonium chloride was indicated, benefit might be expected after the first few doses given as soon as the first dry, rawness in the bronchi appeared. The effect of the drug was probably due to its elimination by the bronchial mucosa, the water carried with it softening the secretion.

**Coagulation Time in Lobar Pneumonia.**—Dr. J. M. ANDERS and Dr. GEO. H. MEEKER, of Philadelphia, stated that the etiological factors in coagulation were obscure. That toxins played a part was admitted, but the nature of the part played was in doubt. It was agreed that in pneumonia, coagulation was hastened, while in other infections it was rather retarded. In the present observations, the so called Boggs's test was employed; the blood was obtained by free puncture of finger tip or ear lobe. Daily venepuncture was not considered warranted. Tables of coagulation time in pneumonia were given. It was found that in pneumonia coagulation time was slightly shortened, the mean time being nearly two minutes. In normal individuals the effect of meal time on coagulation was slight but constant; two hours after a meal, coagulation time was slightly lengthened. As to the cause of the shortened coagulation time in pneumonia there was no definite evidence. Various hypotheses were discussed. It occurred to them that the rapid destruction of leucocytes in the exudate might set free much enzyme and so set up the process. It was shown that calcium was not increased in pneumonia and therefore had no effect on the change in coagulation time.

Dr. S. J. MELTZER, of New York, said that in similar experiments he had observed in nonvirulent pneumonia no increase of calcium; but there was an increase of this element in experimental virulent pneumonia. Starch pneumonia was not attended with fibrin increase.

Dr. RUFUS I. COLE, of New York, called attention

to Dochez's work, in which it was found that in blood obtained direct from the vein in pneumonia the fibrinogen was increased, but the coagulation time was prolonged.

Dr. HENRY SEWELL, of Denver, said the profession did not yet realize the truth of Dochez's observation: that there was more fibrinogen, but longer coagulation time in pneumonia.

Dr. MAX EINHORN, of New York, asked if the retention of NaCl in the blood in pneumonia might not play a part in accelerating the coagulation time.

Dr. J. M. ANDERS, of Philadelphia, said with reference to Dr. Cole's remarks, that he had felt that in pneumonia we have a paradox in the behavior of the blood: in the course of the disease there was a shortened coagulation time; but clots found post mortem had shown a buffy coat, indicating that their formation was slow during life. Venepuncture might prevent the body fluids from influencing the results; he hoped to do further work on that basis.

**A Study of the Action of Certain Diuretics in Chronic Nephritis.**—Dr. H. A. CHRISTIAN, of Boston, stated that from former studies it was known that certain diuretic drugs shortened the lives of animals with acute experimental nephritis; also that in the same disease, diuretics decreased renal function. Similar observations were made on acute nephritis complicating gripe in man. The effects of theocin (as representing diuretics) were varying; there might be an increase or decrease of diuresis, of salt, or of nitrogen; but NaCl was more often increased than N and tended to parallel water excretion. Charts were given, showing results in individual cases. The conclusion seemed justified that theocin caused an inconstant and not marked effect in acute nephritis in man. Charts were also given showing the effects of theocin in chronic nephritis. Conclusions: 1. In chronic nephritis and chronic cardiorenal disease, theocin (as example) produced diuresis in inverse ratio to renal function. When diuresis was induced, it was followed by reduced renal function, suggesting the advisability of the intermittent use of diuretics. 2. There might be diuresis without increase of nitrogen output; this made questionable the use of diuretics for detoxicating purposes. In many cases with severe nephritis, diuretics were probably harmful, being followed by no diuresis, no increase of urinary ingredients, and by diminution of renal function.

Dr. W. S. THAYER, of Baltimore, said that Doctor Christian had undoubtedly contributed an important piece of work. The conclusions were in accord with clinical experience; he had noted the beneficial effect of diuretics in cardiac disease, and had noted also the danger of continuous use of diuretics in severe renal disease.

Dr. J. M. ANDERS, of Philadelphia, said the paper was timely because heretofore we have had no criteria for the use of diuretics; the work will afford these for practical application. In his own practice he had relied on saline diuretics. We should not employ diuretics unless the phthalein test showed good functional capacity. In order to aid elimination we have been used to giving large draughts of water; was this taken into consideration in the studies?

Dr. L. G. ROWNTREE, of Minneapolis, said that Doctor Christian had attacked the Verduin of diu-



retics. If he had been asked to pick the best diuretic from theoretical considerations, he would have chosen theocin. Were there any observations on water alone as a diuretic?

Dr. HENRY A. CHRISTIAN, of Boston, said that Doctor Anders had brought up the phthalein test as index to the use of diuretics; but the value of the test for this purpose will depend upon whether a low output is due to chronic passive congestion or to tubular insufficiency. As to the influence of water, this was not studied; however, all of the patients were on a constant fluid intake. As to the diuretic value of water, it acted like other diuretics in shortening the lives of experimental nephritic animals. The subject needed more study.

**The Toxic Effects of Urea on Normal Individuals.**—Dr. A. W. HEWLETT, Dr. Q. O. GILBERT, and Dr. A. D. WICKETT, of Ann Arbor, stated that in order to study the toxic effects of urea on man, about 100 grams of urea were taken by mouth within a few hours. When the concentration of urea in the blood exceeded 160 mgms. per 100 c. c. of blood, the subject usually complained of headache, dizziness, drowsiness, mental apathy, inability to concentrate the attention, muscular weakness and fatigue, and slight muscular tremor. These symptoms were similar to those described in the asthenic types of uremia, in which type the blood urea approached and often exceeded the threshold of symptoms observed in these experiments. It was probable therefore that in this type of uremia many of the symptoms could be attributed to the high concentration of urea in the body. In these experiments no nausea or loss of appetite occurred at the maximum level of urea in the blood, nor was there any marked rise of blood pressure.

Dr. WARREN COLEMAN, of New York, said that an instructive case was that of a girl of thirteen years, who came to the hospital in uremic convulsions. Blood taken for therapeutic purposes yielded of noncoagulable N a total of twenty mg. per 100 c. c. In later convulsions other observations never found the noncoagulable N above thirty mg. per 100 c. c. of blood. It was evident that in some cases urea was not a factor in the convulsions.

Dr. HENRY A. CHRISTIAN, of Boston, said that Doctor Hewlett's observations were important. They coincided with his own observation as to the non-effect of diuretics on the removal of nitrogen and their failure to influence the symptoms of uremia. It was necessary to consider both blood accumulation of N and kidney excretion of N in these problems; storage was the factor rather than the amount in the blood. How long did it take for the level of blood urea to return to normal?

Dr. A. W. HEWLETT, of Ann Arbor, said that it was necessary to keep in mind that more substances were concerned in uremia than urea. Foster had demonstrated the presence of a definite toxic substance in the blood of eclamptics.

The time of the return of the urea level of the blood to normal was not ascertained, the observations were not continued long enough; the threshold of symptom production was passed on the down wave in six hours.

(To be continued.)

## Letters to the Editors

### BEWARE OF PICTURE PRIDE.

NEW YORK, December 16, 1916.

To the Editors:

For the privilege of having your photograph, with others, placed in the leading club rooms of this city, thus making you an "immortal," the sum of twelve dollars and fifty cents must be looked upon as small indeed by those responding to such solicitation amongst the medical profession. It would appear that the higher in the scale of life a man may be, the more sensitive his organism becomes, and likewise, the higher the standing in the medical association, the easier the mark. However, there would seem to be no valid reason why an immortal should feel perturbed, because the writer was similarly approached, but declined the honor, or that this fact should in the least degree impair the distinction conferred upon such an immortal.

It may not be amiss to remark that conceit is an expensive trait, the realization of which explains why the writer declined the opportunity above mentioned, and like the kite, which in its soaring would tend to break the cord that holds it to earth, men in their desire for notoriety are at times led into action which breaks rather than cements the bond of union which should exist not only between members of the medical profession, but between members of the great human family everywhere.

JOHN D. COGLAN, M. D.

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Bref och Skrifvelser. Af och till Carl von Linné.* ANDRA AFDDELINGEN UTLÄN SÅKA BREFFVÄXLINGEN. Del. I. Andanson-Brünnich. Utgifven och med upplysande Noter Forssedd af J. M. Hulth. Upsala: Akademiska Bokhandeln; Berlin: R. Friedländer & Son, 1916. Pp. 429.

This publication comprises the foreign correspondence of Carl von Linné, a series of Scandinavian letters having been previously collected by Th. M. Fries. The letters date from the epoch making years in Holland, 1736-1739, when Linné, at the age of twenty-eight, having come under the patronage of the banker Clifford in Amsterdam as the latter's house physician and curator of his botanical garden, issued not only the *Horius Cliffortianus* and his *Flora Lapponica*, the product of his Lapland journey of research, which now went to press at the expense of his benefactors—among these were Gronovius and Herman Boerhaave—but it was at this time that he entered upon the prodigious activities that resulted in the publication of his *Systema Naturæ* and *Genera Plantarum*, these winning for him acquaintance with influential and scientific men, as did also his subsequent visit to France and England. Further correspondence dates from the time that Linné, having returned to his native land in 1739, established himself in the practice of medicine in Stockholm, while continuing his researches into the *Flora Succica*, and rising rapidly to high honors, becoming in turn physician to his majesty the King, founder and præsides of the Academy of Sciences, Professor of Medicine at the University of Upsala, exchanging this soon for the chair of botany, which he held until his death in 1776. His writings in the meantime brought him into communication with the whole scientific world, the more that foreign students flocked to Upsala, thither attracted by his lectures, among them many young scientists, who later joined the ever widening circle of Linné's correspondents, keeping in touch with the viro celeberrimo, regis primario medico, botanicorum principum perillustri equiti de stella polari, etc., etc., for of this type was invariably the mode of address of the elaborately courteous letters. Among the varied contents of the epistles, which in tone are often effusive to the point of flattery, are the main topics of common interest, observations on plants and specimens, suggestions in the treatment of disease, etc., for the botanists were usually physicians also.

And Linné says: "It was no less ardent a correspondent, in a letter to Brinnich in his later years he writes: 'Ne delasseris oro frequenter ad me scribere de iis quæ vides; hæc me reficiunt, excitant et refocillant sub ingravescentibus annis: si unquam cum reciprocis oculis inseruire non intermittam.'" The letters are almost without exception written in Latin. Among the American correspondents was the wealthy Lord Baltimore, addressed by Linné as Dominus in tota Marilandia, who journeyed to Sweden to see the botanist, spent a never to be forgotten day at his estate near Upsala and later sent him regal gifts, among which was a priceless snuffbox, now in a museum, and many treasures in epistolary form remain to give evidence of their mutual admiration. But the author and collator of the letters comments on the Latin of Lord Baltimore, that it was very faulty. This was also the case with one or two others who had difficulty in handling the universal language then in vogue among scientists. But even more discouraging was the tardy delivery of letters, the postal facilities being such that weeks and months were needed, and in one instance the Italian botanist Allioni acknowledges receipt of letter and herbarium just come to hand that had been sent two years previously. Many of the Linnean letters are in the custody of the Linnean Society of London. Vol. I contains 267 letters alphabetically arranged. These letters go far to illuminate in an entertaining way a period characterized by profound learning and studious pursuits, especially in the field of natural history, that of botany being especially popular, and many distinguished botanists were physicians as well.

*La Clinica Obstetrica y Ginecologia Del Hospital Alvear en' ed. 1905.* By UBALDO FERNANDEZ and TORIBIO J. PICCARDO. Pp. 168.

This as the title implies is the annual report of the gynecological and obstetrical department of the Alvear Hospital in Buenos Ayres. From the many excellent photographs in the volume this is a thoroughly modern institution. The clinic is housed in a separate pavilion from the hospital proper. The department treated 1068 cases in 1915 of which 728 were obstetrical and 340 gynecological. The report goes into minute details and gives evidence of a vast amount of work in its preparation.

*Proceedings of the American Society for Psychical Research.* Section B of the American Institute for Scientific Research. Volumes IX, X, XI. *The Doris Case of Multiple Personality.* By WALTER FRANKLIN PRINCE, Ph. D. and JAMES H. HYSLOP, Ph. D. *The Patison Case.* By JAMES H. HYSLOP, Ph. D., New York: American Society for Psychical Research, 1916. (Price, Volumes IX and X, \$6 each; Volume XI, \$8.)

The study of multiple personality dates back to 1830 when MacNish reported his case of Madame X and this was followed during the nineteenth century by Azam, Dufay, Bourru, Burot and others. The presumption was that certain portions of the personality were capable of breaking away and leading independent existences, even becoming entities themselves resembling a human personality. This led to the formation of a theory of the subconscious. In the last decade of the century notable work was done along this line by Binet, Flournoy, Janet, Prince, Sidis, and White, leading finally to Janet's theory of hysteria. Since that time there has been nothing startlingly new developed in this field, although there have been some excellent case reports, of which the present is probably the most notable. Dr. Prince, following in the footsteps of his distinguished father, has made a thoroughly scientific and exhaustive investigation of the case of Doris Fischer who showed dissociation of her personality into what were apparently five parts. The first volume is occupied with a description of the periods during which these five personalities displayed themselves, together with the beginning of the period of cure. The second volume continues the improvement to the return of normal consciousness, a record of the automatic writing, some statistical and graphic studies of the case, and a copious index. Volume three contains an interesting theoretical discussion of the case, and an examination of the various hypotheses dealing with two of the personalities. This volume also describes the Patison case, a so called instance of obsession in which an otherwise normal child becomes "possessed" with the spirit personalities of famous persons.

## Meetings of Local Medical Societies

MONDAY, January 8th.—New York Ophthalmological Society (annual); Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo; Association of Alumni of St. Mary's Hospital, Brooklyn; Williamsburg Medical Society, Brooklyn.

TUESDAY, January 9th.—New York Academy of Medicine (Section in Neurology and Psychiatry); Medical Society of the County of Wyoming; Ontario County Medical Society; Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); Newburgh Bay Medical Society (annual); New York Obstetrical Society; Onondaga Medical Society; Medical Society of the County of Oneida (annual).

WEDNESDAY, January 10th.—New York Pathological Society (annual); New York Surgical Society; Alumni Association of Norwegian Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx (annual); Richmond County Medical Society; Rochester Academy of Medicine (annual); Medical Society of the County of Montgomery; Medical Society of the County of Dutchess; Brooklyn Medical Association (annual).

THURSDAY, January 11th.—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association (annual); Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Society of Sanitary and Moral Prophylaxis, New York; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua (annual); Cayuga County Medical Society Medical Society of the County of Allegany.

FRIDAY, January 12th.—New York Academy of Medicine (Section in Otolaryngology); Society of Exinternes of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York; Clinical Society of the German Hospital and Dispensary; Manhattan Dermatological Society.

SATURDAY, January 13th.—New York Association of the Medical Reserve Corps of the United States Army.

## Births, Marriages, and Deaths

### Dead.

BUCKINGHAM.—In Boston, Mass., on Saturday, December 23rd, Dr. Edward Marshall Buckingham, aged sixty-eight years.

CARTER.—In Abbeville, La., on Friday, December 15th, Dr. Nelson S. Carter, aged eighty-three years.

CUMMINGS.—In Grand Rapids, Mich., on Wednesday, December 20th, Dr. Erasmus H. Cummings, aged eighty-one years.

FAULKNER.—In Pittsburgh, Pa., on Wednesday, December 20th, Dr. Richard B. Faulkner, aged sixty-three years.

GORDON.—In Toronto, Ont., on Saturday, December 16th, Dr. Andrew R. Gordon, aged fifty-three years.

HARRINGTON.—In Grand Junction, Colo., on Friday, December 8th, Dr. Robert B. Harrington, aged thirty-seven years.

HARVEY.—In Colville, Wash., on Sunday, December 17th, Dr. Lee E. Harvey, aged forty-eight years.

KUTZ.—In Weissport, Pa., on Sunday, December 24th, Dr. Wilson L. Kutz, aged sixty-three years.

LAMBERT.—In Port Jervis, N. Y., on Friday, December 8th, Dr. Emerson B. Lambert, aged sixty-four years.

ONION.—In Lewiston, Ill., on Saturday, December 16th, Dr. Emory Oliver Onion, aged thirty-nine years.

RADUE.—In Union Hill, N. J., on Tuesday, December 26th, Dr. William F. Radue, aged fifty-five years.

WHEELER.—In Brooklyn, N. Y., on Saturday, December 30th, Dr. Claude L. Wheeler, aged fifty-two years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal <sup>and</sup> the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 2.

NEW YORK, SATURDAY, JANUARY 13, 1917.

WHOLE No. 1989.

## Original Communications

### THE RELATION OF CHRONIC INFECTIONS OF THE GENITOURINARY TRACT TO OBSCURE INTERNAL DISORDERS.\*

BY HUGH HAMPTON YOUNG, M. D.,  
Baltimore.

*From the James Buchanan Brady Urological Institute, Johns  
Hopkins Hospital.*

That my subject is one of great importance—especially now when the whole question of the bacteriology of focal infections is receiving so much attention in the medical journals, I recognize at once, but I also realize how difficult it will be to bring together accurate comprehensive data to show the important role played in such infections by the genitourinary tract. Bacteriological findings and statistics are particularly unsatisfactory for two reasons, first, because the common presence of the colon bacillus in urinary infections as a secondary invader often obscures other more delicate organisms such as the streptococcus, and, secondly, revolutionary advances have been made in bacteriology in the last six years which depreciate much of the older work.

In a masterly article on chronic focal infections Billings (1), in 1911, drew the attention of the medical profession to a long neglected field of medicine. After calling attention to the tonsils and throat, gums and teeth, bronchiectatic and pulmonic cavities, gastrointestinal ulcers, appendicitis, and cholecystitis as foci of infection, he remarked that the urinary tract, including the pelvis of the kidney and the bladder, are often the sites of infection. "Pyelitis, even when there is only moderate obstruction of the drainage of the kidney pelvis, may produce myositis, arthritis, neuritis, etc. The prostate and seminal vesicles are a common source of infection of gonorrheal arthritis and probably of ordinary septic infections. The Fallopian tubes and the uterus are less common, and the parametrium more common focal sources of infection. Local submucous and subcutaneous septic foci anywhere may be a source of systemic disease."

Billings further remarked that "the insidious slow degenerative process in patients at the meridian of life is due to intoxications from focal infections, and the result of the removal of those infections has been most astounding in many instances."

In a previous article, published in 1910, Poynton and Paine (2) had described their diplococcus of

rheumatism which they obtained from the blood, pericardial fluid, and tonsil in ten cases.

Other papers, in 1912, increased interest in the subject, particularly one by D. J. Davis (3) on the bacteriology of chronic infections, and a paper on chronic oral infections by T. L. Gilmore (4). The year 1913 saw the publication of important studies: C. S. Wright (5); Bass (6); Fuller (7). During the same year an important symposium on the subject was held in the surgical section of the American Medical Association, at which Billings (8) presented a paper on focal infection and Young (9) a paper on the prostate and seminal vesicles in general toxemia. In the medical section, McCrae (10) read a very important paper on the remote effects of lesions of the prostate and deep urethra.

During the years 1914 and 1915, Barney's (11) article on the seminal vesicles, Brackett's (12) arthritis and the genitourinary tract, and additional articles by Fuller (13), Quinby (14), Squier (15), Thomas (16), Belfield (17), all on the seminal vesicles and their relations to the general disorders, added further interest to the subject and brought to the forefront the importance of the genitourinary tract.

This year, 1916, has seen a continuance of the interest, as shown by the publications of McCrae (18) on chronic arthritis, of Anderson (19) on the seminal vesicle in gonorrheal rheumatism, and of Maier (20) on the pelvic organs and systemic disease, a very important article from the gynecological standpoint. Lastly Culver (21) has presented by far the best bacteriological study of seminal vesiculitis which has appeared.

With such an impressive array of investigators, experimental and clinical, it would seem almost useless to attempt to throw new light on a subject concerning which the profession is already so thoroughly aroused. A careful analysis, however, shows at once that there are many sides to the question of infection in the genitourinary tract the importance of which has been overlooked, and many remote and "obscure internal disorders" the dependence of which on these infections is not only *not* generally appreciated but is not even mentioned in the literature of the subject. It was with the hope of thus broadening the scope of medical interest and pointing out untilled fields for future investigation, that I accepted the formidable invitation of your society.

\*Read by invitation before the New York Academy of Medicine.



In the first place, what are the "obscure internal disorders" which are related to chronic focal infections? Billings gives this rather terrifying list in recent publications, viz., acute rheumatism, arthritis deformans, gonorrheal arthritis, malignant endocarditis, myositis, myocarditis, pericarditis, septicemia, nephritis, various visceral degenerations, thyroiditis, pancreatitis, peptic, gastric, and duodenal ulcer, cholecystitis, appendicitis, various cardiovascular degenerations, arteriosclerosis, and chronic neuritis, chorea, erythema nodosum, herpes, spinal myelitis, iridocyclitis.

Wright has added the following: Secondary anemia, urticaria, furunculosis, eczema, diabetes, purpura hemorrhagica, asthma, chronic catarrh and nervous breakdown, and Maier cites cases of anorexia, tachycardia, and asthenia, as due to chronic focal infections.

McCrae, giving cases which he has seen in our clinic, lays stress on the disproportionate general symptoms which accompany lesions of the verumontanum, prostate, and seminal vesicles. "In many cases," he says, "the predominant feature is anxiety for which no cause is found except disturbances in the sexual sphere. In several cases with symptoms, especially referred to the heart—palpitation, rapidity of rate, attacks in which there is precordial distress, tachycardia, pain simulating angina pectoris, have all been seen." One patient came with a diagnosis of angina and a gloomy prognosis; disease of the deep urethra and prostate was found, local treatment cured him and the "angina" disappeared.

In 1906 we (22) called attention to various obscure referred pains which occurred as a result of chronic inflammatory infiltrations in and about the prostate, ejaculatory ducts, and seminal vesicles. Previous diagnoses of lumbago, renal and intestinal colic, neuralgia, neuritis, and sciatica had been made, but were dissipated by cure of the prostatic disease.

The mere recital of this rather formidable list of maladies which has been shown to be due to chronic focal lesions is enough to show the impossibility of treating the subject assigned me in an exhaustive manner.

In order, however, to discuss the subject systematically it seems advisable to take up seriatim the various genitourinary regions subject to infection, and to point out the anatomical peculiarities which might render certain locations natural points for the localization and persistence of infectious processes.

**Kidney.** Starting with the kidney, a glance at the anatomy and pathology would seem to indicate at once that many opportunities for absorption from localized infectious processes are present. In the glomerulus we find at once a distended sac with constricted neck and uphill drainage, and likewise in the urinary tubule imperfect drainage in the narrow ascending tubule should infection occur. In parenchymatous and perinephritic infections the chances of absorption and resulting general sepsis are even greater.

From the renal pelvis and calices the drainage is ordinarily good, and in simple pyelitis we see little absorption, but inflammatory infiltrations, anatomical abnormalities, and calculus interfere with drainage in many cases, and pelvic dilatation, hydroneph-

rosis, destruction of renal cortex, and perirenal inflammation follow, producing typical conditions for systemic invasion with toxins and bacteria. We should therefore expect to find in our clinical material and in the literature an abundance of evidence of systemic disease from focal infections in the kidney and pelvis. But strange to say, such is not the case. Rheumatism and arthritis are certainly very rare as complications; our clinical records show none, and a hurried survey of our 4,000 autopsy records reveals no case with a combination of arthritis and chronic renal suppuration. We do find many instances of chronic myocarditis and occasionally of endocarditis, and Osler states that chronic suppurative processes of the kidney are common sources of infection in acute endocarditis.

A careful search of the literature reveals very little definite information on the subject. Billings says "pyelitis of whatever type, even when there is only moderate obstruction of the drainage of the kidney pelvis, may produce myositis, arthritis, neuritis, etc.," but he gives nothing more on the subject and cites no case histories. Likewise David J. Davis, reporting on the bacteria of focal infections, says that his "first work had to do with genitourinary disease, and chiefly infections of the bladder with the colon group," but he cites no cases and gives no facts in regard to the relation between renal infections and systemic disorders.

Even the more recent textbooks of pathology, bacteriology, and surgery throw no light on the subject. The many bacteriological studies which have been made of the urine from the bladder in urinary infections have invariably shown a large preponderance of colon bacillus infections in chronic cases. In cultures from twelve cases of pyelitis Brown found *Bacillus coli* seven times, *Bacillus proteus vulgaris* four times, *Staphylococcus albus* once. In acute cystitis Suter (23) and Tamaka (24) found cocci to be the more common etiological factor, but agreed with Brown and others that *Bacillus coli* was the common organism of chronic cystitis.

All investigators are agreed that streptococci are very rarely found in chronic urinary infections—cystitis and pyelitis—and this may explain why arthritis, rheumatism, and endocarditis so rarely accompany renal suppurations. Apparently the latter are specifically due to streptococci or gonococci, both of which are found with great rarity in focal renal infections. In the acute suppurative nephritis of Brewer the foci of infection of which are generally due to the staphylococcus, endocarditis often coexists, but both are acute local manifestations of a blood infection and do not properly belong to the subject under discussion.

Dr. Walter James has kindly sent me the statistics of cultures taken from 800 cases of arthritis by Murphy and Kreuscher and presented to this academy on October 19th. In this study they found the source to be the urethra in seventeen per cent., the bladder in four per cent., and the kidney pelvis in four per cent. Streptococci predominated and were found in thirty-one per cent. of the cases, gonococci in fourteen per cent., staphylococci in eight per cent., pneumococci in five per cent., and colon bacilli in only four per cent. of the cases. There was a combination of two or more organisms in thirty-

eight per cent. of the cases, the varieties found not being given.

We have here again conclusive evidence that arthritis is a coccus disease; various kinds of cocci being present in fifty-eight per cent. out of the sixty-two per cent., in which a single organism was found. Their demonstration that the disease is periarticular confirms other work in which the joint fluid has been usually found sterile.

**Ureters.** We have already mentioned the changes at the upper end of the ureter which lead to urinary obstruction, pyelitis, nephritis, etc. Similar conditions may exist almost anywhere along the course of the ureter with similar results, particularly in the pelvic portion where the ureter is often involved in diseases of the reproductive organs of the female and sometimes in seminal vesiculitis in the male. The terminal portion of the ureter is frequently obstructed by calculi, strictures, tumors, and congenital defects, and we often find it transformed into a dilated flabby tube filled with stagnant infected urine, surely most propitious for producing back pressure effects and a general toxemia, but here again the literature and clinical material afford little help; no citations of definite general systemic infections which can be attributed to pyoureters. We have numerous instances, however, of severe impairment of kidney function due to back pressure effects, as shown by the following cases:

CASE I (3010). C. A. C., aged thirty-two years, came complaining of dull pain in the left side of abdomen, night sweats, and general weakness of long standing. Examination showed two ureters on the left side, one of which was greatly dilated (about two inches in diameter), as shown by the radiogram. The lower end of this ureter was strictured and the dilated portion above was herniated into the bladder in the form of a globular mass, but when the bladder contracted in efforts to void, the tumor would disappear through the diverticulum like orifice, only to recur on deep inspiration. Lowered kidney function, pyrexia, and asthenia resulted from the retention of infected urine in the ureter and was relieved by a plastic intravesical operation.

CASE II (5168). A. L. B., woman aged thirty-five years, complaining of burning on urination of ten years' duration. General health remarkably good. Recently pain of slight degree in the right iliac region and increased frequency of urination. On ureter catheterization, huge pyoureters were found on both sides, and the phthalein test showed no excretion during the first hour and only a trace during the second hour. Both kidneys were badly infected with colon bacilli and very little urea was excreted. At operation, stricture of the lower end of each ureter was discovered and relieved by ureterotomy. The case was remarkable on account of the absence of general symptoms, although the kidneys had practically been destroyed by back pressure from ureteral obstruction.

**Bladder.** It is not to be expected that much absorption will occur from ordinary cases of cystitis. The stratified mucosa of the bladder is one of the least absorbent surfaces in the body, and with good drainage and frequent evacuations little trouble is caused by severe and long standing cases of vesical infection. That remote infections may come from localized cystitis is shown by the following case:

CASE III (4920). R. H. D., aged thirty-six years. Localized focal cystitis associated with arthritis; applications of ten per cent. silver nitrate through the ureter catheter cystoscope; apparent cure of cystitis and arthritis. Admitted March 26, 1916, complaining of "painful swelling of joints and pain around the bladder." No history of gonorrhea. Present illness began two and a half years ago with frequency, burning pain on urination, and swelling of

wrists and hands. Eighteen months ago another surgeon performed suprapubic cystotomy and removed a median lobe of the prostate, but without relief of symptoms. Now urinated with pain very frequently night and day. Examination: Chronic arthritis of shoulders, elbows, wrists, hands, spine, and left knee. Prostate and seminal vesicles indurated, but secretion obtained by massage showed no pus or bacteria. Urine cloudy with pus, but no bacteria found on several examinations. The cystoscope showed on posterior wall near vertex of bladder four small red areas, probably three to five mm. in diameter, with evidence of hemorrhages in mucous membrane at periphery of lesion. These areas, which were recognized as localized cystitis, were scattered over an area three or four cm. in diameter. X ray showed infectious polyarthritis, sinuses negative. One diseased tooth found and extracted without benefit.

Treatment: With catheterizing direct cystoscope, application was made with ten per cent. silver nitrate through a ureter catheter (with end cut off so as to remove eye) directly upon the four small areas of localized cystitis, on four different occasions. Patient noticed improvement at once, and the arthritis soon began to disappear; in two months he was apparently well, and the cystoscope showed the bladder to be normal.

Sometimes the mucous membrane is so resistant that an infection may persist for months without causing inflammation. When obstruction is present, however, drainage is interfered with, residual urine develops, the bladder becomes trabeculated, pouches and diverticula form, and excellent opportunities for infection, deep seated inflammation, ulceration, septic absorption, and general infection occur.

Here again the usual absence of the streptococcus is probably the reason—we rarely encounter rheumatism or arthritic complications. But the bacilli of the colon typhoid group which preponderate here as the infective agents are far from harmless.

The course followed by *Bacillus coli* infections of the bladder is seen regularly in enlarged prostate cases. After a few catheterizations the bacilli are generally found in the urine. For a time they may produce no inflammatory reaction, appearing simply as a bacilluria, but as a rule a mild acute cystitis and urethritis results with varying systemic manifestations—fever, malaise, and occasionally chills and moderately severe evidences of toxemia. After a short period—three to ten days—a tolerance to the chronic infection, which has by this time become engrafted, is usually established, and the patient may go on catheterizing himself for the rest of his days with only occasional attacks of sepsis. If, however, regular catheterization is not afforded and considerable residual urine is persistently present, pressure effects with concomitant trabeculations, diverticula, dilatation of ureters and renal pelvis occur, with results of a serious nature upon the whole organism.

Adami has described very lucidly the varied phases of "persisting infection" which he prefers to the term chronic; exacerbations which occur when a smouldering infection bursts forth into a blaze; remittent types which light up from time to time; and latent infection which persists without causing disturbance. He uses the term subinfection to apply to "the presence of bacteria in the blood which are not potent enough to cause gross symptoms of infection yet which do wear out the cells whose duty it is to combat with and kill them." Adami considers that subinfection with *Bacillus coli* is responsible for the production of an important series of

chronic morbid states. Just as these bacilli may get into the circulation from the intestinal tract when in a condition of stasis from chronic constipation, so may the same organisms infect and poison the body in chronic urinary obstructions. By repeated inoculation of relatively nonvirulent colon bacilli, well marked anemia can be experimentally produced. I have just seen a case of chronic urinary retention with colon bacillus infection accompanied by an anemia of almost pernicious type which I believe to have resulted from it.

A more potent effect, however, is probably produced upon the kidneys and through them upon the heart, bloodvessels, and other vital structures by infection combined with back pressure. Space does not permit me to discuss fully the important remote disorders thus produced. The clinical picture is a common one, a pale, anemic, asthenic patient, with lack of appetite, at times nausea and severe digestive disturbance, and with evidence of myocarditis, arteriosclerosis, hypertension, and chronic renal insufficiency. The catheter shows considerable residual urine of poor quality, the phthalein test reveals marked impairment of the kidney function, and uremic and cardiac crises during the course of palliative treatment emphasize clearly the desperate condition of the patient.

Such cases not infrequently show little or no urinary symptoms and go along untreated or mistreated for months or even years, while the insidiously destructive effects of residual urine, back pressure, and colon bacillus infection go merrily on, unsuspected, while the patient is treated for cardiovascular disease, hypertension, indigestion, anemia, neurasthenia, or even paresis.

How many of these unfortunates are brought to the clinic, and how surprised are their physicians when the catheter withdraws a pint or more of residual urine, and the phthalein test shows a mere trace of kidney function left! The only complaint of one patient with normal urinary intervals in whom we found two quarts of residual urine, was that his abdomen was constantly growing larger so that he had repeatedly to buy new trousers.

The proof of the urological etiology of these grave internal disorders is the marvelous way in which they disappear when the back pressure of infected urine is relieved by systematic catheterization, drainage, or prostatectomy. Several distinguished internists who have directed the medical treatment of certain severe cases have been astounded to see patients who were apparently *in extremis* gradually become rational as uremia disappeared and the vascular and myocardial and endocardial conditions improved so astonishingly that ultimately a radical perineal prostatectomy was carried out almost without risk. The remarkable recuperative power of the kidneys is shown by scores of cases in which the phthalein test and blood urea indicated only a trace of functional capacity left on entrance to the hospital, but which under catheter drainage so rapidly improved that often within a month a fairly good function was obtained and operation successfully performed:

CASE IV. Patient, aged seventy-nine years, with a previous history of two apoplectic attacks, came in complaining of incontinence. He was pale and weak. The pulse

was intermittent, arteries were markedly atheromatous, the heart was dilated, and murmurs were present. The prostate was considerably enlarged, 1,200 c. c. of residual urine present, and only a trace of phthalein appeared in four hours. Under catheter drainage, rest in bed, digitalis, and special cardiac diet, the kidney function gradually improved, and at the end of six weeks thirty-one per cent. was excreted in an hour. Perineal prostatectomy was then safely performed. I saw him the other day; he was eighty-four years of age, but apparently enjoyed life and was quite well.

Such cases might be enumerated at length, but suffice it to say that not only is it possible to bring back well toward normal, by preliminary catheter treatment, kidneys which have been greatly impaired, but also at the same time to bring about such a great improvement in the cardiac condition that where operation at first seemed unthinkable, it may finally be safely performed.

*The urethra and annexa.* We come here to an anatomical system rich in structures of potential infection, and with an entirely distinct bacteriology. The various glandular structures surrounding and draining into the urethra, all with narrow ducts, furnish a most fertile field for the development of chronic infections. The glands of Littre and of Cowper, the prostate, verumontanum, utricle and ejaculatory ducts, seminal vesicles, vasal ampulla, vas, epididymis, and testicle furnish the most complex glandular system in the body, and as one or all are infected in thousands of cases of gonorrhea, we can appreciate the dangerous condition of these patients not only to society but also to themselves.

Gonorrhea is of course the great primary cause of infection, but space does not permit of further lengthy discussion of this most important chronic disease. European statistics attribute to it a fearful prevalence and the deep annexa have been shown to be involved in from seventy to ninety per cent. of the cases.

As a result of the advent of the newer silver injections, an aroused medical profession, and increased knowledge among the laity, gonorrhea is less prevalent, more often cured, and deep seated chronic infections are now less frequent, in America at least, than formerly. They are sufficiently prevalent, however, to be our greatest infectious menace, and the medical profession is even yet rather ignorant of or indifferent to the fact that a patient should never be declared well simply because the discharge has ceased and shreds are no longer present in the urine. The examination of the secretion from prostate and seminal vesicles is so easy and so decisive that it should never be neglected before discharging an acute or chronic gonorrheal case as cured.

The remote lesions produced by the gonococcus are manifold. Almost every tissue and structure of the body has yielded cases of gonococcus infection (25). In addition to the common lesions produced by direct extension—ampullitis, vasitis, epididymitis, and orchitis in the male, and vaginitis, adenitis, endometritis, salpingitis, oophoritis, and peritonitis in the female—we may have (although rarely) cystitis, ureteritis, pyelitis, and nephritis, all from direct extension. We have also gonococcal septicemia, endocarditis, arthritis, synovitis, myositis, pleuritis, meningitis, and localized abscesses in almost every part of the body.



Although fulminating in onset, many of these very severe infections, even endocarditis and general septicemia, are sometimes not fatal, but the deforming effects are generally terrible in their results. One of the most interesting phases of chronic gonorrheal inflammation is the general disappearance of the gonococcus and its frequent replacement by other bacteria, particularly the streptococcus. This has been particularly demonstrated in chronic seminal vesiculitis. It has been shown that the gonococcus disappears with increasing rapidity as the years go by. Notthafft's figures show the gonococcus in the prostate in seventy-three per cent. of cases seen within twelve months after the last infection; in fifty per cent. of twelve to eighteen months' cases; eighteen per cent. of eighteen to twenty-four months' cases; six per cent. in two to three years' cases. No gonococci were found in the prostatic secretion after the third year.

In a bacteriological study of chronic prostatitis we (26) found streptococci in sixteen per cent. of the cases, *Staphylococcus albus* in sixteen per cent., no colon bacilli and no gonococci found in any case, though fifty per cent. came within three years of the gonorrheal infection. Our findings have been confirmed by a recent exhaustive study by Culver (27) of twenty-four cases of chronic vesiculitis with arthritis; he found streptococci in six cases, micrococci in four cases, and staphylococci in six cases. The colon bacillus was present only once, the proteus twice, and the gonococcus four times. Skin and agglutination reaction and inoculation tests with killed organisms were positive in nearly all cases. Picker, Voelcker, Barney, and others have found cocci in the seminal vesicles at operation. We have apparently definite proof, therefore, that the pyogenic cocci and not the gonococcus or colon bacillus is responsible for chronic infections of the prostate and seminal vesicles, and also for the arthritis and rheumatic conditions which so frequently accompany them. The whole literature on streptococcus infection has been in a very unsettled state since 1910, when Poynton and Paine (28) announced that they had discovered an anaerobic diplococcus in the blood, pericardial fluid, and tonsils of ten patients with rheumatism, and proved the specificity of their *Micrococcus rheumaticus* by inoculations into rabbits in which they produced lesions typical of rheumatism. Other observers, while failing to confirm exactly these findings, have discovered various streptococci and diplococci in rheumatism, and Rosenow has produced a nonsuppurative arthritis and endocarditis in rabbits with streptococci which he obtained from the joints of seven cases of articular rheumatism. He has not, however, clarified the situation by his discoveries of marvelous mutations and selective affinity or predilection which he ascribed to cocci coming from various lesions. Apparently most bacteriologists agree that "judgment must for the present be held in abeyance."

Holman (29) offers evidence from a long and varied experience with diplococci against the occurrence of mutations, and feels that a culture of streptococci, once carefully purified, remains true to type, even for years. He also suspects the reliability of animal passages, noting the ease with which other

varieties of streptococci will invade the tissues of the experimental rabbits, especially from the alimentary canal.

Rosenow's ideas of transmutation and selective tissue affinity are very attractive and have been accepted by Billings, Mayo, and others as offering the long sought solution of various knotty problems of focal and remote infection, and Squier has suggested that it is not too much to presume that the gonococcus may mutate and "what is in the beginning a Neisserian seminal vesiculitis is latterly a streptococcus infective process."

Clinical cases, in great number, are on record to prove the varied lesions of remote and serious character which owe their existence to the seminal vesicles and probably also to the prostate and other annexa. To Eugene Fuller much credit is attributable for his observations, operations, and remarkable series of splendid results. Thanks to him, to Squier, and others the profession realizes that one of the common causes of chronic rheumatism, arthritis, myositis, endocarditis, neuritis, and various other remote lesions mentioned at length early in this paper, is focal infection in the seminal vesicle, generally curable by operations for drainage or extirpation.

The marvelous way in which disabled rheumatic joints and myocardial conditions disappear, and patients who have been helpless invalids for years get well in a few weeks, is one of the wonders of modern surgery. One case may be mentioned here:

CASE V. J. H. W., aged forty-nine years; severe chronic multiple arthritis; myocarditis cured by prostatectomy and seminal vesiculectomy. Admitted February 11, 1915, complaining of arthritis and heart disease. No history of gonorrhea. In 1911, suffered chronic pain in lumbar region, and examination in 1913 showed marked prostatitis and seminal vesiculitis, pus, and *Staphylococcus aureus* present. In 1914, manifested multiple arthritis. Diseased teeth were extracted, autogenous vaccines given without benefit. Later tonsillectomy and operations on nose and sinuses without result. Examination showed severe multiple arthritis, with shoulders, elbows, wrists, spine, hips and right knee involved. Atrophy of corresponding muscles, marked fixation of joints, patient confined to bed. Pulse ranged between 100 and 110; gallop rhythm. Heart enlarged two cm. on right side and 9.5 cm. on left in fifth interspace; no murmurs. Prostate, slightly irregular and indurated; seminal vesicles moderately enlarged and indurated; prostatic secretion contained pus and staphylococci. All other possible foci having been operated upon without relief of arthritis, seminal vesiculectomy and prostatectomy were performed, with immediate benefit. Arthritis disappeared; patient, who had been bedridden for many months, was soon walking; stiffness of joints and rapidity of pulse disappeared. Six months later, the symptoms were seen again; examination by another surgeon showed recurrence of seminal vesiculitis. A second operation was performed—perineal prostatectomy, and excision of seminal vesicles. The arthritis again disappeared, and patient reported, fifteen months after operation, that he was entirely well and strong—joints and heart normal.

In numerous other cases simple drainage of the seminal vesicles has been sufficient to cure a chronic arthritis which had made invalids of such patients for years. The role of the prostate in such local and remote infections has been too much neglected, and little information is to be found in the literature. Not infrequently the prostate is seriously inflamed in conjunction with the seminal vesicles, and it may be responsible alone for remote rheumatic and cardiac lesions. It should unquestionably be incised and drained along with the seminal vesicles in such cases. Likewise infection often occurs in

hypertrophy of the prostate, invading, as a rule, the normal layer of prostatic tissue behind and external to the hypertrophied lobes. Several of my cases have been associated with joint and heart disorders and have rapidly improved after perineal prostatectomy in which this portion of the prostate is drained by the preliminary capsular incision. In some prostatectomies I have also exposed and drained the seminal vesicles, and I believe this should be done more frequently, as vesiculitis is not seldom present.

Judging from the experiments of Thaon, Posner, Kahn, Cornus and Gley, Legueu, and Gaillardot, there seems to be little doubt that the prostate has an internal secretion. The active principle has not been isolated nor are its exact physiological properties established, but evidence already accumulated points to its being toxic when injected into animals, and that it affects the blood pressure and to some extent the heart. Certain investigators have even noted an anticoagulative action, and this may be responsible for some of the troublesome hemorrhages that sometimes occur from the prostate. Doctor Macht is at present engaged in a research on these problems, and we have been using a blood coagulant, kephalin, particularly after prostatectomy, with apparently marked effects in the rapid stoppage of hemorrhage.

The *verumontanum*, composed as it is of glandular and cavernous tissue, and containing the utricle, ejaculatory ducts, and a highly complex nerve supply, is one of the most common focal causes of remote disorders. Not only do we have chronic inflammatory conditions accompanied by disproportionately severe sexual and urinary symptoms, but the most remarkable referred symptoms frequently occur. This condition is often inseparable from chronic prostatitis and should be considered here at the same time. In a study of 358 cases of chronic prostatitis we (26) found that referred pains of varied character were present in a large proportion of the cases. The most common site was the back—sixty-four cases; then came the perineum thirty-five, suprapubic region twenty-two, hips ten, thighs twelve, knee four, leg four, simulating sciatica five, kidney region eight, simulating renal colic ten, etc. The widespread character is thus evident. The severity was often great and in other cases the more or less constant presence of pain was fearfully nerve racking. Those cases with pain in the kidney region often simulating renal colic are excellent examples of reflexes arising from inflammatory infiltration in and about the prostate, which are explainable by Head's researches on the "pain of visceral disease," viz., the pain is referred to "the portion of the body supplied by nerves from the same spinal segment instead of to the viscera actually affected."

In an excellent paper on the "remote effects of lesions of the prostate and deep urethra," McCrae (30) cites "several cases in which the symptoms have been referred to the heart—palpitation, rapidity of rate, attacks in which with precordial distress there is tachycardia, and attacks simulating angina pectoris." McCrae also mentions a patient who suffered with severe attacks of abdominal pain due to inflammation of the *verumontanum* which could

be reproduced by touching the *verumontanum* through the urethroscope. "There could be no doubt of the severity of the attack—the patient went almost into collapse." I have seen many patients who had been treated for a host of diseases—lumbago, sacroiliac disease, renal calculus, appendicitis, neuralgia, sciatica, and various neuroses and psychoses, all due to disease of the *verumontanum*, prostate, or vesicles, the frequency and importance of which are little appreciated by the medical profession.

The seminal tract is likewise a frequent focus of infection, both for tuberculosis and other suppurative processes. Drainage and treatment of the vasa deferentia and seminal vesicles, advocated by me in 1901, have been elaborated and popularized by Belfield in his articles on "pus tubes in the male," and Hagner's work in epididymitis has drawn attention to the seriousness of these foci of suppuration, both locally and remotely, and to the need for prompt operation in many cases. The demonstration that the entire seminal tract may be removed without injury of the prostatic urethra, bladder, or testicle (which is generally healthy in both tuberculous and other inflammations of the epididymis) has brought another region into the radically curative field of surgery.

It seems appropriate to reserve for the last my lantern slides<sup>1</sup> of anatomical peculiarities which predispose to focal infection and systemic absorption, the pathological changes which lead to toxemia or sepsis, and some surgical measures by which they can be eradicated.

The object of this long paper has been to fulfill the requirements of the topic assigned; to show "the relation of chronic infections of the genitourinary tract to obscure internal disorders," and to demonstrate what the urologist has to offer in the cure of the local disease and the relief of the obscure disorders. If I have somewhat accomplished these purposes I shall feel well repaid for having inflicted upon my readers so long a dissertation.

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<sup>1</sup>It has been necessary to omit illustrations of the fifty lantern slides showing the pathology and surgery of chronic suppurative lesions of the urinary tract.



## THE BÊTE NOIRE OF THERAPEUTICS.

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The delimitation of our thesis is altogether arbitrary—solely a matter of convenience and of selection. With the same degree of truth and consequentness its scope might be extended to the entire field of medicine—or, farther than that, to science in general—or, yet farther, to humanity's beliefs and practices as a whole. The fallacy of logic denominated *post hoc, ergo propter hoc*, is the *bête noire* in question. This has constituted the root and source of a vast bulk of popular superstition and of many another human error, hoary, and venerated. The common prejudice against thirteen at table and Friday undertakings on the one hand, and the frequent custom of planting crops and slaughtering cattle with reference to the moon's phases, on the other hand, are relevant examples. Within the stricter confines of actual science the operation of the same *bête noire* has been pernicious and derogatory, as attested by the manifold doctrines affirmed as facts today only to be repudiated tomorrow as fancies and follies; while its sinister influence upon medicine's special movements is evident in the sorry exhibition here witnessed of uncertainty, mutability, inconstancy. But therapeutics is the subject of our story—it is within this still more restricted department that we would trace the trail of the *bête noire*.

The fallacious principle under consideration, *post hoc, ergo propter hoc*, is none the less baleful because it is as a Lucifer fallen from heaven. It is a perversion or an abortion of the method of induction, thus attaching to the most important and potent instrument of progress in knowledge. It represents false, inaccurate, inconsequent inductive reasoning, and impressively signalizes the risks and dangers of advance by the logical route. It is a trite remark, but a true one, that anything may be proved by statistics; which merely means that induction should be carefully guarded. As Aristæus overpowered Proteus, so must it be subjected to an alert mastery—must be checked and guided, lest, capriciously changing form, it lead the explorer far astray. Hume contends that in the succession of natural phenomena nothing presents to us the idea of causality nor of the necessary bond between cause and effect. So that it requires nice discernment to distinguish consequences from coincidences. Said the great Coan himself, "Experience is deceptive and judgment difficult." Broussais avers, *J'ai pour principe de toujours me défier de l'expérience des esprits faux*. Bouchut declares, *Savoir observer n'est pas donné à tout le monde*.

In therapeutics our *bête noire* has been peculiarly and abundantly an origin of evil. Indeed, more often than truth is reached through genuine induction does this counterfeit of it lead to error. Oh! what a very flood of therapeutic whims and fancies sweeps on in perpetual flow! Embraced only to be discarded, the favorites come and go. To mere fads and fashions in healing, time and experience are inexorably fatal. But when or ever will this teeming progeny of the *bête noire* be denied begetting?

The notion, *post hoc, ergo propter hoc*, in reality

is entirely without value as a criterion in therapeutics. Reliance upon it neither establishes nor vindicates any practice. Application of it results in multifarious utility and absurdity. Recovery of the invalid does not in itself confirm the efficiency of a measure supposedly curative. Here it is negative rather than positive proof that counts. The test of cure is not in the fact that recovery occurs after the administration of a chosen medicine, but in the circumstance that without it recovery does *not* take place, or is deferred. Upon this point Bouchut says, *Toutes les pratiques ridicules qui se sont glissées dans la science n'y ont pénétré qu'à l'aide de ces mots; Cela réussit, l'expérience l'a démontré*. And again, *Si l'on tient compte des guérisons, tous les médecins ont ramené des malades à la santé*. But the coming of any means surely therapeutic or prophylactic has the ring and swing of triumph—is as the march of a conqueror, or as the onsurging of the imperious, resistless tide.

The injurious consequences of the therapeutic errors engendered by our *bête noire* are various and serious. Simplicity is sacrificed to complexity. In the temple of healing the vague, intricate, involved features of Hindu architecture replace the plain design, the clear cut lines, the stately symmetry of Greek art. Multiplicity precludes unity. The devils that possess the therapeutic body are not six nor a dozen; they are legion. Instability undermines permanency. Let Bouchut, who has written so lucidly and forcibly of the matter, again be quoted: *Il n'y a pas de médecin aujourd'hui capable d'accepter les trois quarts des opinions de Galien ou de Zoppyre, sur la matière médicale*.

Another dire consequence of the procreative activity of the *bête noire* is that in running to the false we frequently desert the true—relinquish the worthy in welcoming the worthless. Not only do fads and fashions not constitute nor promote progress in cure, but they are positively detrimental to it, because they detract attention from, and occasion abandonment of real progressive measures and methods. Iodine for erysipelas and opium for peritonitis are instances in point. These remedies, assuredly valuable in the cases cited, have after a period of eclipse come into their own again. After partial neglect and retirement during a generation their worth is being reasserted. With the opium treatment of peritonitis the name of Alonzo Clark is linked; and thereby hangs a lesson. It is always unwise and rash to ignore a statement deliberately and insistently set forth by a man like Alonzo Clark—to assume hastily and offhand that he does not know what he is talking about. At any rate, a safe rule with reference to the whole subject is the one formulated in this admonition of Saul of Tarsus: "Prove all things; hold fast that which is good."

Still another deleterious result of the formative and directing influence of our *bête noire* within the therapeutic field is the effect of the same upon the tone and ability of the doctor himself. To be misled is to be duped; to be duped is to be belittled; to be belittled is to be enfeebled. To see clearly and to decide precisely are the indispensable attributes of power in medicine. The *bête noire* beguiles, hoodwinks, deludes. It promises substance, and



yields phantoms. It offers faith and then betrays. it gives assurance of victory, and straightway accomplishes defeat. Of course, the very condition of operating in the fog with will-o'-the-wisps for guiding lights is conducive to a peculiar kind of personal enthusiasm or fanaticism which wins homage and patronage from certain classes of the laity. Ignorance and conceit are a wedded pair between whom divorce will never come. Not rarely is madness mistaken for inspiration. Ever is the fool an object of awe. So in medicine shallow egotism has its own strength of a sort. Even though there is not much of him, the doctor who believes in himself will be believed in by others. Self infatuation is the common starting point of the acclaimed wonder worker. But such lure has no appeal for the doctor at once honest and able. He would know things as they are, albeit such seeming retrenchment of the precincts of knowledge may discredit him in some quarters. Exact apprehension and comprehension of his power and usefulness will develop into modesty and humility; and this may mean the loss of prestige with people who lack perspicacity. No matter; he will, nevertheless, resolve to know what he knows—to know what he is doing, and what he is *not doing*; what he can do, and what he can *not* do. He will insist upon determining accurately how far he may be a puissant ally of Nature, and the line beyond which he becomes an audacious and dangerous supplanter.

Of the veritable agents of cure some act directly and immediately. These may be arranged in two groups—specifics and remedies. A specific largely or completely controls disease. A remedy favorably affects disease. Specifics are few, and remedies not numerous. But there are other instruments which indirectly promote healing—those which during the course of disease regulate the various organic functions. These form a larger class. These are the doctor's tools. Yet the careful doctor should not attempt to employ all of even these. With due regard to situation, occasion, circumstance, he should tactfully select. Then by sedulous study and practice, by trial and retrial, in the use of any given implement of them he should make himself proficient, skillful, adroit, until the man and the tool are one, like Ingomar and his sword. And of a well approved tool thus made his very own let no siren song charm him into forgetfulness nor neglect.

The proper attitude and procedure relative to the question of treatment of disease are as difficult as they are vital. Reviewing the mazy problems of therapeutics, Zimmermann declares once and again in purport that brain vigor to the measure of actual genius is required in their best solution. Yes; the healing art calls for genius—genius which can discern between the real and the seeming, between fact and sophistry—genius which is the gift of recognizing sterling progress. The ideal doctor is a man of free, far vision, and keen, discriminating judgment. As a therapist his merit will be liable to a dual test—a positive and a negative one. He will have to decide both what he should do, and what he may *not* do. What he should do, of course, will include the employment of known and proved specifics and remedies. But these are a meagre set. His

larger duty will be faithfully, tactfully, deftly to handle his tools. Of these he will have a sufficiency in number and in variety. Any one of them that does what he would have it do, will be as good as any other that no more than does the same thing. Let him not, like a fickle suitor, lightly discard the old love for the new. If he adopts this course he will have ample work before him, although, as he ought, he refuses to follow Celsus to the extreme of his contention, *melius est anceps remedium quam nullum*. Let physicians thus "keep the noiseless tenor of their way," heeding not the loud heralding of pretended marvels. They need have no fear of missing a real discovery. "For as the lightning cometh out of the east, and shineth even unto the west," so is the coming of a true remedy.

In the management of sickness, negative merit ranks high. It lacks brilliancy, has about it a pre-dominant Fabian quality; but it is solid and unexceptionable. It is a laudable ambition to attain signal rightdoing; yet not to be despised is the tribute, he has done no wrong. In the department of therapeutics overdoing is wrongdoing; activity here to the extent of harm is the reproach of medicine. Would the doctor escape such guilt, let him beware of the *bête noire*.

All along the therapist may test the efficiency of his personal work by comparison with the results of general practice. This he should conscientiously and assiduously do. Pausing thus to check, to orient himself, to take his bearings, not only absolutely but also relatively, if he finds that his average success is equal to the average success recorded as the outcome of enlightened effort in the field at large, then he should be satisfied; if he surpasses the common ratio, he may congratulate himself. Having proved that he is abreast or in advance of the professional body in attainment and accomplishment, he need not apologize for measures or methods. With his mortality rates speaking for him, he will not have to plead his own case. Gauging with such a standard his operations and endeavors, he will dare to be independent and original—to ignore fashion—to defy the toils of the *bête noire*. He will not be "tossed to and fro, and carried about with every wind of doctrine." He will not heedlessly follow the thoughtless throng to the worship of false gods of healing—impotent, ephemeral gods, which in number and variety outclass the gods of old Rome. But he will be a good, true, strong doctor. His work may not be dramatic nor spectacular; finer, nobler still, it will be the expression of power and virtue. And he will be content, knowing that worth is better than show, and feeling that rather than a mere refined and cultured counterpart of the African fetish doctor or the Indian medicine man, he would prefer to be forever a Tele-machos exploring earth and sea under the ægis of Pallas Athene, or a Numa in devoted discipleship sitting at the feet of divine Egeria within her grotto at the base of the Cælian Hill.

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**Cheyne-Stokes Breathing in Heart Disease.**—D. Gerhard recommends inhalation of oxygen for from five to twelve minutes, which is usually followed by a period of normal respiration.

## BORDERLINE CASES OF THE LOWER ABDOMEN.\*

BY HERMAN GRAD, M.D., F. A. C. S.,  
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In considering this subject I have reference entirely to the female abdomen. The subject divides itself into two groups, the acute and the chronic. In the acute cases the first pathological entity that arrests attention and needs to be differentiated in the borderline cases of the lower abdomen, is that of the disease of the appendix vermiformis. It is the atypical case of appendicular disease, where many of the objective signs and subjective symptoms are lacking with perhaps noncorroborative laboratory findings, with vague and indefinite previous history, as gathered from the patient and relatives, that we must be careful not to overlook. It is in these cases that our examination must be exhaustive, and we must not lightly dismiss the idea of the existence of disease because the symptoms are atypical. Appendicitis is a very frequent disease, and in affections of the lower abdomen the possibility of this pathological entity should not be lightly dismissed from the differential diagnosis. I know of no short cut road to the diagnosis of these borderline cases. The best mode of procedure to arrive at a diagnosis is to take into serious consideration every sign and symptom, spend sufficient time in their analysis, and weigh carefully their significance and their relative merits. This procedure will serve us well, and the time spent will be amply rewarded.

For example, muscular rigidity is a fairly reliable sign in appendicitis, and as a rule the rigidity of the right rectus is in proportion to the degree of peritoneal irritation, but in borderline cases the absence of rigidity should not lead us into the mistake by dismissing from our mind the possibility of appendicitis. This will hold true also of the laboratory findings. A high leucocyte count and a high differential count serve as corroborative evidence, but a low count does not necessarily exclude the possibility of appendicular affections. The very fact that the appendix is so often the seat of disease justifies us in not excluding this affection from our diagnosis when we are dealing with trouble in the lower abdomen. This is rightly so, and yet this very fact is often the cause of error. A case in point is a recent experience of my own.

CASE I. The patient, sixty-six years old, of some social prominence, the mother of a large and influential family, was taken ill quite suddenly with trouble in the lower abdomen. The diagnosis of appendicitis was established by three careful and conscientious practitioners of medicine, and I was asked to operate for appendicitis. At the consultation, the signs and symptoms presented by the old lady failed to dovetail into each other. For example, peritonitis was present. There was a temperature of 104° F., a leucocyte count of 16,000, with a differential count of eighty-six per cent. polymorphonuclear, but on careful palpation there was only a relative rigidity of the recti and an inflammatory mass about appendix was wholly absent. Bimanually a very hard and enlarged uterus was found, and although she was eight years past her climacteric, a profuse vaginal discharge was discernible. The enlarged organ was tender, and very gentle palpation brought out the fact that the tenderness was confined to the lower uterine segment.

These findings threw an entirely different light on the case. Twenty-seven years previously the patient was advised to have an operation for fibroid of the uterus. When I opened the abdomen a calcareous degenerating gangrenous fibroid with an active peritonitis was found and the appendix was entirely normal. Recovery followed a stormy convalescence. Here we had a borderline case with atypical symptoms of appendicitis. A careful analysis of the symptoms saved us from an error in diagnosis.

In chronic appendicular disease we also have borderline cases. There are a large number of chronic sufferers who have gastric and intestinal symptoms that have their origin in a reflex neurosis as a result of morphological changes in the appendix. Many cases of indigestion, constipation, malnutrition, flatulence, and general debility, with perverted secretory function of the alimentary tract, are cases where the focal point of origin of abnormal reflexes is the appendix. Experience has shown that the great sympathetic nervous system of the abdomen, the abdominal brain, so to say, is a mighty factor in the mechanism of normal secretion, excretion, assimilation, and metabolic changes that occur in the abdominal viscera. Abnormal nervous impulses arising at some focal point in the sympathetic nervous system will cause disturbance in the nervous mechanism which will affect reflexly organs and viscera at a point distant from the seat of disease. Thus, in chronic appendicitis we may have marked gastric symptoms, depending on a hypermotility or atony of the muscular mechanism, or hypersecretion or perversion of the secretory function. The same will hold true of the liver, kidney, and pancreatic function. These cases are borderline cases. These patients go from place to place seeking relief. The gastrologists, the neurologists, the electrotherapists are all consulted in turn, and if no relief comes, they drift into the hands of the various so called healers. After years of progressively steady pathological changes in the appendix, involution is complete, the nervous irritation subsides, and the patient gets well. The healer who happens to be the last one to have had the case in hand gets the credit of cure. While all this is true about the appendix, we are forced to admit that many of these borderline patients fall into the surgeon's hands to have their appendix removed, when in reality they should have been in the hands of a neurologist, stomatologist, or electrotherapist. The interpretation of the ailments of this class of cases is a difficult task, and in justice to the patient and ourselves we must make our examination a most searching one and bring our best diagnostic acumen to bear. An accurate diagnosis results in proper therapeutics which brings relief of symptoms, if not a cure. Errors in diagnosis drive these cases away from legitimate medical practice and into the arms of the so called "healers," of whom there are thousands.

In the lower abdomen of the female there is a variety of possible pathological entities in the so called borderline cases, and these pathological entities have their seat in the generative organs. The tissue changes occurring may be divided into four classes: 1. Those due to inflammatory reaction; 2, those due to pregnancy; 3, those due to neoplasms; 4, those due to traumatism. Under these

\*Read at a meeting of the Yorkville Medical Society, October 16, 1916.



four main groups we can classify every case in the lower abdomen, arising in the generative organs. In approaching these cases for the purpose of diagnosis, we may profitably ask ourselves, to which of these four classes the case under consideration belongs. If this is impossible, on account of the meagre or conflicting history, then there is nothing to do but to ferret out just what etiological factors are at work in this particular case. The cases most frequently encountered are of inflammatory disease of the generative organs. They are of two types, the gonorrheal and the pyogenic. These two types of infection frequently coexist or the pyogenic follows the gonorrheal. Each type of infection has its own particular life history. The gonorrheal infection spreads by continuity of tissue, while the other type spreads by lymphatic and blood streams. In the gonorrheal type of infection of uterine annexa, we have very palpable external evidence of the existence of the disease. We frequently have an associated urethritis, vaginitis, infection of the vulvovaginal or Skene's glands. The presence of such external evidence is, of course, a great help in arriving at a diagnosis. It must be remembered, however, that gonorrheal infection of the external genitalia remains dormant for many years, and while it is possible to demonstrate gonococci in the secretions of the infected glands, their presence does not necessarily mean that the disturbance in the abdomen is the result of the gonorrheal infection. It is quite safe to surmise, however, that the abdominal condition is one belonging to the class of inflammatory cases when the external organs are infected. Gonorrheal infection of the female genital organs has an interesting life history. The virulence of the infection, the degree of tissue changes, the acuteness of the onset, the chronicity of the inflammatory process are so variable in this disease that seldom are two cases of gonorrheal infection alike. In the majority of cases gonorrhea in the female is so mild and so insidious as to fail to attract attention. The suffering the infection entails is of the mildest kind and the symptoms are practically nil. Contrast this with the fulminating cases of gonorrheal infection. Scarcely the incubation period passed when the infected tissues throb and burn, the suffering is intense, the temperature rises, the systemic reaction is marked, and even in a few days the entire generative tract, from the vulva to the ovarian and pelvic peritoneum, is aflame with the infection, nor does the urinary tract escape. In former years, before the fulminating cases of gonorrheal infection were well understood, many an abdomen was opened during the acute stage, and what was found to account for the intense suffering of the patient? A very angry looking tube and an active peritoneal reaction. Operative interference invited fatal peritonitis, or at best the removal of such tubes resulted in a stormy convalescence with more or less breaking down of the abdominal incision, a long and tedious recovery, and a postoperative hernia into the bargain. We have learned to know better. These cases do better without operative interference in the acute stage, and under appropriate medical care, the acute symptoms subside, and operation becomes a

safe procedure during the chronic stages. These virulent cases of gonorrheal infection of the uterus and annexa are to be differentiated from acute pelvic disease of a type where immediate operative interference is called for during the acute stage, namely, cases of long standing, annexal disease with acute exacerbations. These cases with acute "comebacks" are safe operative risks; nothing is gained by waiting. These are the cases where with ablation of parts and thorough drainage above and below, we can get brilliant results. We can take a woman with this type of pelvic disease, who has been bed-ridden for months and years, and who is sick unto death, and by operative procedure make her once more a useful member of society. How can we differentiate these two classes of patients in the borderline cases? The differentiation at times is beset with difficulties. However, by taking a careful history, by having in mind the life history, by tracing back the histories, year by year, to the time of marriage or an early miscarriage, we can come to the conclusion whether the case is a primary infection or a chronic infection with an acute exacerbation. In the former it is best to delay operation during the acute stages; in the chronic cases operation is safe. The latter cases have multiple foci of pus in the pelvis which call for evacuation and drainage as well as ablation of tumified infected tissue, which can never regenerate and become functionally integral. There is still another type of acute affection of the lower abdomen belonging to the inflammatory class which often calls for differentiation, namely, acute salpingo-oophoritis and-metritis with pelvic peritonitis of puerperal origin and following septic abortions. The prognosis is bad, and operative interference has a high mortality. These cases have fever often for a long time, have very little tendency to subside, and are apt to be complicated by phlebitis, by metastatic abscesses, and various other sequellæ. The history of these cases readily differentiates them from the other. The abdomen becomes distended early in the disease, the recti are rigid, and the vaginal examination is quite characteristic. The vaginal fornices, the cul-de-sac of Douglas, become more boardlike and unyielding in a most characteristic manner, and the more chronic the case becomes, the more boardlike is the feel of the pelvic floor in a vaginal examination.

There are diseases encountered in the lower abdomen which have as their causes conditions connected with pregnancy, and in some of these cases the differentiation between these and those arising from other causes is not as easy as it seems. For example, the differentiation between a ruptured ectopic gestation sac and that of inflammatory reaction of the uterine annexa is quite difficult. This was illustrated in a recent case, and an error in diagnosis was avoided by a preliminary puncture of the cul-de-sac of Douglas.

CASE II. The patient, a woman of twenty-seven years, was taken ill with chills and fever and some pathological condition in the lower abdomen. A temperature of 103° F. and a corresponding rise of pulse was present. Peritoneal irritation was elicited on examination. Bimanually a mass was discovered in the pelvis. The menstrual history was vague; there had been irregularity in the menses on previous occasions. The last pregnancy had occurred six



years before when the patient was only twenty-one years old. The diagnosis of pelvic abscess was made. Leucocytosis was increased. There were 10,000 whites and eighty per cent. polymorphonuclears. A posterior section was decided on and this was performed. Much to our surprise, we found a ruptured ectopic gestation sac. A large mass which could not be removed from below was palpable, so it was decided to do a section. On opening the abdomen the large gestation sac in the right tube was ablated and the pelvis drained above and below.

Here was a borderline case where the history and physical findings all pointed to an inflammatory case, and while the inflammatory reaction was present, the important factor was the ruptured ectopic sac. Cases where symptoms of ectopic gestation and appendicitis exist calling for differentiation have come to many a diagnostician, and to differentiate the conditions is at times a difficult task. The tenderness at McBurney's point may be very marked, the rigidity of the right rectus quite pronounced, the temperature rise, the pulse rate, the blood findings may all harmonize with the conditions that come with an attack of appendicitis, and yet the affection may be in the right uterine tube.

Such a case has also fallen to my lot and the error of diagnosis led to an operation for appendicitis. When the abdomen was opened the findings were those of a ruptured ectopic sac. As I sat at the bedside of this particular patient the question of ectopic gestation arose between the attending physician and myself. We discussed the condition of the patient, and obtaining no confirmatory evidence so far as the history of menstruation was concerned, the diagnosis of ectopic gestation was abandoned and that of appendicitis adopted. A McBurney incision was made and on opening the abdomen the presence of free blood led us to the proper diagnosis. The posterior sheet of the right rectus was split up, the rectus retracted, and in this way access was obtained to the pelvis for operation and removal of the right tube.

Here was a case where the possibility of ectopic gestation was clearly held before our minds, and yet we dismissed it and favored a diagnosis of appendicitis.

There are other conditions which arise in connection with pregnancy that may call for differentiation between that and other affections. Pregnancy, for example, in abnormal or rudimentary uterine structures, interstitial pregnancies, or pregnancies in the horns of abnormal uteri. In these cases pain is a prominent symptom, and the differentiation between pregnancies in abnormal uteri and pregnancies in the normal organ is at times attended with difficulty, nor can a diagnosis of these cases be cleared up without a section. The differentiation between a ruptured ectopic sac and an interstitial gestation may obviously be impossible. There is, however, this to be said. In interstitial gestation the rupture occurs as a rule at a later date of pregnancy than in ectopic gestation, so that when rupture does occur the shock is greater and the loss of blood is more marked than in gestation in the tube. Nevertheless we should be very bold to try to differentiate between these two conditions as we stand at the bedside of our patient.

While the diagnosis of neoplasms of the generative organs is readily made, nevertheless there are borderline cases where the differentiation has to

be made between neoplasm and other affections in the lower abdomen. Fibroid tumor of the uterus, for example, is readily diagnosed, but when these neoplasms undergo pathological changes of various kinds of degeneration, the differential diagnosis becomes difficult. Furthermore, the differential diagnosis is difficult when the neoplasm, for example, one of the ovary, suddenly becomes twisted or its blood supply impeded. Twisting of the pedicle of an ovarian cyst, for example, may usher in a form of acute symptoms such as to defy the best diagnostic ability. The symptoms may be acute, may simulate those of a ruptured ectopic sac or of an acute suppurative process, or even those of a fulminating case of appendicitis. The peritoneal irritation is marked, prostration of the patient is extreme, and in some cases the shock is intense. Usually, however, the discovery of a neoplastic mass in the abdomen or pelvis points the finger and leads us to the proper diagnosis.

In a recent experience the history of a patient was so clear and so unmistakably that of a ruptured ectopic sac that no less than four diagnosticians confirmed the diagnosis of a ruptured ectopic gestation sac. When the abdomen was opened, a gangrenous neoplasm of the left annexa revealed itself. The pedicle was twisted several times in such fashion as completely to block circulation in the tumor. Furthermore, twenty months previously, the patient was delivered of a baby under normal conditions and with a normal puerperium. It is not an uncommon experience to diagnose fibroids of the uterus, and such a diagnosis is justifiable in those cases by the symptoms, and yet when the abdomen is opened, to the chagrin of the operator and the diagnostician, no fibroids are found, but an agglutinated mass of diseased uterus and annexa. The tubes and the ovaries are massed together by inflammatory organized tissue. Palpation gives the feel of multiple fibroids. The mass as a rule is insensitive, and an error of diagnosis is made because of lack of symptoms which would lead us to suspect inflammatory disease instead of a neoplasm. In the class of cases, where traumatism is a factor in the affections of the lower abdomen, the history will help in the differential diagnosis.

Spontaneous rupture of a gravid uterus, for example, may have to be differentiated in borderline cases of the lower abdomen, but here the history will help us. Rupture of a neoplasm such as an ovarian cyst, which comes by direct or indirect violence, may sometimes call for differentiation, and it might be difficult for the diagnostician to arrive at the proper diagnosis. These cases are, however, comparatively rare, and if an error in diagnosis does occur, the diagnostician cannot be blamed too severely. There is one other condition in the lower abdomen that I wish to call attention to; it may be of considerable concern to the diagnostician. The patients complain of severe and sudden attacks of pain in the lower abdomen, with symptoms of peritoneal irritation. I have reference to cases where the pain is due to rupture of Graafian follicles in abnormal ovarian structures. As a rule, the pain is sudden, comes on from ten to twelve days after menstruation, is attended by peritoneal irritation, lacks fever, and the diagnosis is sometimes difficult.

The question is often asked if the attack is not one of appendicitis or some other acute infective process of the lower abdomen. With careful questioning of the patient and gentle palpation appendicitis can be ruled out, and other infectious diseases be set aside. The symptoms promptly subside and in from twenty-four to thirty-six hours the patient is well again. I have had occasion to see such cases in consultation and by being on the lookout for them, especially in young women, I have often been fortunate in making the proper diagnosis.

Space will not permit even mention of the various diseases of the intestinal tract which may call for differentiation from borderline cases of the lower abdomen.

40 EAST FORTY-FIRST STREET.

## WHAT IS THE "CAUSE" OF DISABILITY?

### *A Medicolegal Question,*

BY WILLIAM RENWICK RIDDELL, LL.D., Etc.,  
Toronto, Ont.

In the Supreme Court of Ontario, a medicolegal case has recently been decided which will be of interest to many medical men.

Doctor Mitchell took out an accident insurance policy in the Fidelity and Casualty Company of New York; a few days thereafter, he was thrown from his berth in a Pullman car and sprained his wrist. The injury did not improve as expected owing to tuberculous infection; and it appeared to be permanent. The policy called for \$150 a week for total disability, "however long continued, if resulting from accident directly, independently, and exclusively of all other causes"; the company held that the accident was not the only cause and refused to pay. Doctor Mitchell sued and succeeded at the trial. The matter came to be decided in the Appellate Division of the Supreme Court, of which I have the honor to be a member.

I add here so much of my judgment as is not of interest to lawyers only:

"Riddell, J.:—This appeal involves the interpretation of a contract of very common occurrence. Were it a case of less importance, I should be content to adopt without further comment the conclusions of the learned trial judge, and so dismiss this appeal.

But the advance of knowledge raises and will continue to raise novel contentions: and what is a commonplace at one time becomes a matter of great controversy at another. Until very recently, the main ground of dispute of liability here would not have been thought of; or, if thought of, would have received scant consideration—but *tempora mutantur et nos mutamur in illis*.

The plaintiff, a doctor of medicine, a specialist in diseases of the eye, ear, nose, and throat, took out an accident policy with the defendants, an accident insurance company. In most accident insurance policies, the beneficiary is entitled to payment only for a limited time (usually one year or less), but this company finds its account in making its policies perpetual, that is, for the life of the patron who may be injured. No doubt, this forms a strong inducement to those desiring accident insurance, to prefer this company.

In the application, the duties of his occupation are described as "special work on eye, ear, nose, and throat," and the insurance was against "bodily injury sustained . . . through accidental means . . . and resulting directly, independently, and exclusively of all other causes in an immediate, continuous, and total disability that prevents the insured from performing any and every kind of duty pertaining to his occupation."

The plaintiff was thrown from an upper berth in a sleeping car and thereby sprained his wrist severely—it is not contended by the defendants that this was not an injury within the meaning of the policy—and, had the injury healed within a short time, no doubt the company would have paid the \$150 per week without demur.

But the injury did not heal, it is not yet healed, and it is doubtful whether it will ever be much improved—the company find themselves charged with an obligation to pay \$150 per week for years, perhaps until the death of the plaintiff; and hence they dispute liability.

Several medical men of eminence were examined at the trial: without at all reflecting on any other, it seems to me that the evidence of Doctor Anderson gives the most satisfactory explanation. He says that some time ago, probably some ten or fifteen years before the accident, there had been a tuberculous condition of part of the pleura, probably the apex of the left lung: any existing tuberculous mass had become encysted so as to leave no apparent disease—the patient would be quite well, wholly unconscious of any trouble, danger, or disease; and there would be no danger of another outbreak proceeding from the original disease.

But an accident happens, tissues are injured, a lessened resistance to the "germs" occurs, these, otherwise innocuous, find a *nidus* into which to intrude and in which to become active.

I can see no difference between this case and the case of an injury causing a break in the skin and thereby allowing some of the germs which are (practically) always and everywhere floating around, to enter and set up a diseased condition. How is a "lessened resistance" of tissues, without a breach of continuity of the skin allowing germs which may be in the blood to enter and set up or continue an inflammatory condition, different from a lesion of the skin allowing similar germs which may be in the air to enter with the same result?

Until a comparatively recent day, no one knew anything about the tubercle bacillus, and such affections as are now known (so far as such matters are known) to be due to the invasion of a bacillus were supposed to be due to exposure to the air. Would any one in that state of theory—knowledge if you will—say that the air was a contributing cause of the disability? And is the meaning of words to be changed by the change of medical theory?

We must interpret this document on common sense principles; no one could, when obtaining accident insurance, imagine that he was guaranteeing the company against the presence, accidental and temporary or otherwise, of tubercle bacillus or any other bacillus or spirillum in his system. We must interpret the language of this contract in its ordi-

nary and popular meaning—the use of language preceded scientific investigation.

That this disability has as a cause the accident, cannot be disputed. In a well known Scottish case a miner was, by reason of an accident to a pump, compelled to stand for some time in cold water, exposed to a current of cold air. This reduced his vitality and permitted the pneumococci which are (practically) everywhere, to overcome the resistance of the tissues; pneumonia set in and the man died. The arbitrator held that the pneumonia was caused by the occurrence; and, of the seven judges, six agreed with him—one only thinking that there must be some direct lesion. This case was approved in a case in the House of Lords. A miner was exposed to a cold current of air which “brought on pneumonia,” and it was held that the death was the result of the exposure.

I do not know of any difference between the case of a tubercle bacillus infection and that of a pneumococcus infection—it is said you cannot have tuberculosis without the former or pneumonia without the latter. And I can see no difference in law between an accident weakening the power of resistance of the tissues and allowing the pneumococcus to enter and an accident of another kind weakening the power of resistance of the tissues and allowing the tubercle bacillus to enter—the infection of either kind could not fairly be called a cause within the meaning of this policy.

It is to be noticed that in both the pneumonia cases, the pneumococci did not enter by any external lesion, but attacked the tissues in the same way as the bacillus in the case now under consideration.

The case of *Brintons Limited v. Turvey* contains much of value. A workman engaged in sorting wool contracted anthrax, which caused his death. “According to the medical evidence and theory,” an anthrax bacillus passed into his eye, thereby infecting him with that terrible disease, and causing his death. The County Court Judge held that the entry of the bacillus was an accident; his decision was affirmed by the Court of Appeal and the House of Lords. Lord Halsbury gives examples of what he would call accidents: “A workman . . . spills some corrosive acid on his hands; the injury caused thereby sets up erysipelas—a definite disease: some trifling injury by a needle sets up tetanus.” No one in the present state of medical science doubts that erysipelas and tetanus are germ diseases like tuberculosis, pneumonia, and malaria.

In answer to the argument or suggestion that the condition of the plaintiff's bodily system was a contributing cause, I asked, “Suppose the plaintiff were ‘a bleeder’—of the hemorrhagic diathesis, as the technical expression runs—so that a trifling lesion would produce (in the sense of being followed by) excessive hemorrhage, long continued, almost impossible to check, could it be argued that the diathesis was a contributing cause to the continued disability?” Surely such conditions of the body are conditions only (in the logical sense of the word) and not causes.

The appeal should, in my opinion, be dismissed with costs.”

All the four judges of the highest court in the

Province agreed that, while medically the infection was a cause of the disability, it should not be considered such in interpreting such a contract.

The case is interesting (if for no other reason) as showing that even courts of law, conservative as they are and must be, cannot avoid taking cognizance of the advance of medical science.

OSGOODE HALL, TORONTO.

## NARCOANESTHESIA.

By HENRY BEATES, JR., M. D.,  
Philadelphia.

The primary object of anesthesia, it is superfluous to remark, is to render patients unconscious of pain. From the present day viewpoint, it resolves itself into local anesthesia, in which consciousness remains unaffected, and general anesthesia, during which complete unconsciousness prevails. Too commonly has it been a conventional practice of operators, without attempt at intelligent differentiation, to resort to one anesthetic, ether, for all operations, and on the part of a few, occasionally, to chloroform. Because of certain injurious properties and effects, which experience has proved both ether and chloroform to possess, attempts have been made to secure an anesthetic which is free from these disadvantages. Hence we have ethyl chloride, ethyl bromide, penthal and nitrous oxide, and a resort to combinations, of which the best known is the old A. C. E. mixture.

The assertion that all anesthetics are more or less dangerous cannot be denied. Ignoring the arguments pro and con, chloroform, for illustration, is known occasionally to result in sudden death; sometimes by unheralded and abrupt cessation of the heart action which efforts fail to reestablish and, again, by unannounced, as it were, paralysis of respiration, which, as in the heart paralysis, finds the functional processes involved incapable of being reestablished.

Ether exerts a profound toxic effect upon the red blood corpuscles, which the pallor, well known to the ether anesthetist and surgeon frequently demonstrates. In addition, the action of ether upon the cortex, which is commonly witnessed in the struggles that are encountered, even when administered most skillfully, constitutes an objectionable effect. The frequency with which impressions remain in this type of patient, that sometimes threaten mental integrity itself, are matters of such common knowledge that it almost requires an apology for referring thereto.

There are many operations in which it is desirable that the patient, when emerging from the anesthetic, should not be subjected to the agony and distress which excessive or even mild vomiting occasions, to say nothing of the pronounced shock. Needless to remark, another very important matter is the disarrangement of structures, that retching and vomiting frequently threatens, that have been surgically placed in normal relationships, as in (inguinal) hernia, iridectomy, and cataract.

Reaction and recovery from serious surgical procedure, it must be borne in mind, are more or less



hindered by shock, as it is termed. Investigation has demonstrated that ether and chloroform anesthesia is followed by albuminuria in about one third of the cases and in a considerable number changes in the renal structure result, giving rise to casts that indicate parenchymatous lesions of a serious nature. The resort to spinal anesthesia, whereby the field of operation is rendered insensible to pain, although consciousness remains, has contributed much knowledge concerning shock, and has proved that where the mental makeup is such that the emotional side is not sufficiently influenced by knowledge of procedure, shock, which was formerly considered to be due to extensive operative manipulation, is largely mental and the result of anxiety, apprehension, fear, yes, and even terror, that for days frequently dominates the mind of the patient who is compelled to undergo a major operation. In a word, anxiety contributes to shock almost as much as, if not more than operative procedure, and if it is possible to eliminate this, the duty of the surgeon is apparent. Spinal anesthesia, then, has shown beyond question that major operations can be performed in those not of an hysterical mental temperament, without shock, although consciousness remains.

These and many other objections serve sufficiently to demonstrate the point to be made, to wit, that anesthesia should be affected by means that will secure unconsciousness and perfect freedom from pain, and, at the same time, exert a minimum of injurious effects. Here it may be remarked that, while unconsciousness to pain may be apparent, under such anesthesia as ether, for illustration, the nervous system itself, in contradistinction to the mind, suffers from the consciousness of pain almost as severely as though the patient was aware of the suffering which the operation would occasion. Thus it is evident that shock is of dual nature, in an etiological sense, and can be, as will be demonstrated, largely eliminated in so far as the psychological factors are concerned.

What is known as narcoanesthesia has been gradually evolved by the study and investigations of various operators, having in view the practicability of overcoming many of the objections briefly mentioned. The construction of narcoanesthesia embodies a knowledge of the physiological effects of certain medicaments which act synergistically. Thus, what one lacks in advantages is made up by others that complementally supply the deficiencies. The following plan has been adopted in a variety of operations now sufficiently large to enable a logical conclusion to be reached and submitted for consideration.

About two and a half or three hours before the time set for operation, the patient receives a hypodermic injection of 1/50 of a grain of scopolamine hydrobromide and one sixth of a grain of morphine. One half hour later, a second injection is administered and an hour later a third, which may or may not contain morphine, as the susceptibility of the patient is more or less apparent. At the time of the third injection an enema of two fluid ounces each of whiskey and spiritus aetheris compositus is given. By the time the hour for the operation has arrived, the patient is, as a rule, in a condition of complete narcoanesthesia. The face is more or less flushed.

Occasionally there is moderate pallor. The respirations resemble those of profound sleep and, because of the morphine and the susceptibility of the patient to its action, there may be a retardation of the respiratory rate to as low as ten or eight to the minute. There has been no material disturbance of the renal functions observed in any case; hence, experience proves that even with the coexistence of renal degenerative lesions narcoanesthesia is safe.

Operations upon the biliary tract, hernia, appendicectomy, pelvic operations of major type, such as hysterectomy, plastic work in the pelvic canal, operations upon the kidneys and rectum, constitute a group that may be most admirably subjected to narcoanesthesia and performed with that leisure that stands for the highest skill and greatest achievement of thorough surgery.

A practical point here to be emphasized is the fact that senile subjects seventy and eighty years of age are most readily anesthetized in this manner, and it is not uncommon for two injections of 1/50 of a grain of scopolamine hydrobromide and one sixth of a grain of morphine to be found sufficient. Under the relatively profound narcoanesthesia which this apparently small quantity of the drug produces, radical and extensive operations for mammary carcinoma have been in every sense successfully performed. It sometimes is necessary, and this seems to be determined by individual characteristics, to administer as high as five doses of the scopolamine hydrobromide and three, and even four, of the morphine. This, however, is exceptional and has been done by carefully watching the results and giving ample time to secure them. Thus a somewhat wide range of dose is shown.

In operations upon the eye, such as iridectomy, where for obvious reasons it is desirable to avoid postanesthetic vomiting, a few surgeons who have resorted to this method of inducing anesthesia report satisfactory results.

In operating in the abdominal cavity, it occasionally happens that there is a lack of relaxation of the external, internal, and transversalis muscles, which makes it a little more difficult than it otherwise would be to reach the field of operation, when deeply seated, and again because of this rigidity, which is only relative, however, a tendency of the intestines to protrude may prove annoying. In these cases a few whiffs of ether promptly overcome the difficulty and enables one experienced in narcoanesthesia to secure ideal results for ease of procedure, and at the same time to avoid the depressing effects of the ether, as well as the subsequent nausea and vomiting.

The patients sleep from three to seven hours after the operation and awaken, some without any discomfort whatever, the majority of them with a slight dryness of the throat and very exceptionally, slight vomiting. This latter postoperative symptom has only occurred twice in a series of more than two hundred cases, and was then only slight.

For operations upon the nose and throat, the degree of narcoanesthesia necessary to control the reflexes is so profound that, with the advantages of lessened secretion, the disadvantage of the necessity of having the patient watched for several hours after operation renders it an undesirable method to

rely upon alone. Recently therefore a mixed method, so to speak, has been tried. This consists in the single injection of the scopolamine and morphine, which, as a rule, renders the patient so indifferent to environment and surroundings that the ether can be comfortably administered and the operation completed with decidedly lessened nausea, vomiting, and shock.

Another use, which saves the patient much post-operative discomfort and pain, is the resort to one or two doses when removing large packs and drains from the operative field, for illustration, in the drainage of a nephritic or perinephritic abscess, where large quantities of gauze are to be removed; or again in a series of drains necessary in delayed appendectomy, in which we have enteroperitoneal adhesions and localized collections of pus, when removing the gauze and conducting postoperative treatment, an injection renders the procedure perfectly comfortable. For prompt relief of the suffering incident to simple and compound fractures, and for securing conditions most favorable for reduction and dressing, narcoanesthesia offers superior advantages.

Twice it has occurred after operation, for unexplained reasons, that there have been sudden symptoms of profound morphine toxemia; the respirations, reduced to four or less to the minute, and cyanosis in a moderate degree indicated the necessity for prompt measures to avert the threatening danger. Both instances necessitated the maintenance of artificial respiration and of such measures as are ordinarily necessary in acute morphine poisoning. The administration of caffeine or coffee by enema, the hypodermic injection of strychnine, and the intravenous administration of normal saline solution, plus time, enabled us to bridge over the impending crisis, if we may call it such, and the patients convalesced as though the accident had not occurred. In one of these instances it is doubtful whether or not a mistake had been made in the quantity of morphine advised, for obvious reasons, to be given alone; two injections did not have the somnolent effect which they usually have, and an additional dose of morphine was given to secure this. The other was a late manifestation of susceptibility to the remedy which seems to have been most unexpectedly precipitated. In some instances, after the full physiological effects of the remedies employed in inducing narcoanesthesia had been secured, there was still reflex consciousness, as it were; the patient opening the eyes, and, in one instance, raising the head and appearing to look about. At the time, it may be remarked there was no consciousness whatever, as questioning the patient, upon recovering normal conditions, proved. When this condition obtains, the administration of one twentieth of a grain of apomorphine hydrochloride, overcomes the difficulty in a few minutes. Experience enables us to judge whether or not this medicament is necessary. Frequently this synergistic drug will advantageously replace ether, used as above described, for securing finishing touches, so to speak.

The most conspicuous feature of this method of inducing surgical anesthesia is the testimony, without exception, of every patient that has been operated upon that he would no longer, if it were neces-

sary, hesitate to have an operation performed. To paraphrase one of them: "The nurse told me that you desired me to have a hypodermic injection. This was given. I became sleepy and scarcely knew that another injection had been administered. When I awoke it was night and it was with difficulty that I could be made to realize that the operation had been performed." Many so testifying had previously experienced operation under ether and approached the operation to be performed under narcoanesthesia with horror. There was no shock; the patient was comfortable, free from the annoyances of the stench and taste of ether and the nausea, vomiting, sweating, and prostration which are too commonly witnessed after the old routine method of the almost universally used anesthetic, ether.

One extremely important precaution, which must never be omitted when inducing narcoanesthesia, is, that an intelligent and experienced attendant must not leave the patient from the time of the first injection until consciousness or the reflexes which govern respiration have become reestablished. As in all anesthetics, there is danger of the epiglottis, tongue, or both, "being swallowed" and actual strangulation occurring. The air must be known to be passing in and out through the larynx. In other words, respiration must be unimpeded. It is the failure to observe this point that has resulted in some fatalities having been reported. The attendant, not being sufficiently enlightened to recognize that the air was not passing into the lungs, and mistaking the convulsive respiratory movements of the thorax for respiration, left the patient for a few minutes and returned to find the body warm, but dead.

An objection that may be advanced against narcoanesthesia is that it requires special watching, and, therefore, necessarily engages from one to three hours of the time of an attendant qualified to guard against possible accident. If this is done, from the patients' point of view, the horror of surgery and its consequent shock will be averted; and, from the doctors' viewpoint, an hour or two more of time may be consumed in conducting comfortably and safely any operation in the field above outlined. Dr. Wayne Babcock suggests the placing of a little wisp of cotton to the nostril. It serves as an indicator of the ingress and egress of breath, thus preventing mistaking the convulsive movements of strangulation for those of respiration. This simple device will avoid a very serious mistake on the part of the attendant having the care of a patient emerging from narcoanesthesia.

260 SOUTH SIXTEENTH STREET.

**Treatment of Osteomalacia.**—Lawrence Litchfield (*Pennsylvania Medical Journal*, December, 1916) outlines, as the rational procedure in a case of osteomalacia, an attempt to secure the best possible hygienic environments, a generous diet, rich in calcium and phosphorus, the avoidance or termination of lactation, the avoidance of pregnancy, adrenaline therapy and, if no improvement is noted, sterilization of the patient by the x ray. If this does not suffice, oophorectomy, followed by a return to the administration of phosphorus and the hypodermic use of adrenaline.

## THE PHYSICAL EXAMINATION OF PRISONERS ON ADMISSION TO PRISON.

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## INTRODUCTION.

At this time, when prison problems are much in the public mind, and are being discussed in terms of mental efficiency or feeble mindedness; when Binet-Simon tests, point scale examinations, and intelligence quotients seem to be signs of modern prison progress, and the *sine qua non* of juvenile delinquent reformation, a consideration of the physical fitness of the adult delinquent may seem like a reversion to the archaic. We present these statistics, however, as a reminder that this aspect of the prison problem, a knowledge of the physical condition of inmates, is as highly important as the determination of their mentality. Even a normal mind requires a healthy body to attain its highest efficiency. How necessary, then, in studying the individual delinquent, that we should endeavor to obtain the physical health survey as well as the intelligence quotient.

While many investigators of prison problems have been dazzled by the opening up of a bright vista, in our recently acquired knowledge of methods for sorting out the feeble minded, the prison physician cannot lose sight of the other, the physical side of the problem, which offers considerable incentive from the fact that, while feeble mindedness cannot be cured, physical health may be restored.

*Object.* The object of these examinations, aside from the outlining of individual treatment, has been twofold.

1st. To determine, as accurately as possible for statistical purposes, the actual physical condition of the convicted men at the time of their admission to prison.

2nd. To obtain an idea of the amount of the medical and surgical treatment that would be required to restore these men to the most efficient healthful conditions.

*Scope.* It is not a complete medical survey of the prison population, but is limited to those admitted during one single year, and does not include those who are already present. Nor does it represent the total amount of medical and surgical work that is required of the medical staff, since it does not comprise the illnesses, injuries, or pathological conditions that arise after these men have been admitted. Indeed, it would be almost impossible to make a complete medical and surgical survey of a population that is constantly fluctuating, as at this institution, where the number arriving during the year exceeded one thousand, and the number departing approximated nearly that figure.

*Basis.* The basis of this compilation is the records obtained in the routine entrance physical examinations of all inmates admitted to Auburn Prison during the fiscal year of October 1, 1914, to September 30, 1915. This includes, not only the men admitted directly from the courts, but also those transferred from other prisons and reformatories

as well as those returned for violation of parole or previous escape. During the year there were 1,025 admissions, as follows:

From State Courts	364	36	per cent.
From Sing Sing Prison	593	58	per cent.
From Clinton Prison	33	3.5	per cent.
From violation of parole	39	3	per cent.
From escape	2		
From Elmira Reformatory	1		
From Dannemora State Hospital	1		
From Great Meadow Prison	1		
Total	1025		

*Time of examinations.* These examinations are made within a day or two after admission, often on the same day, though on the occasion of a large draft from another prison, which may consist of as many as fifty or sixty men, a week or ten days may elapse before the completion of the examinations.

*Method.* The routine examination is comprehensive and as complete as the usual insurance examination given at a physician's office. The outline of the examination is as follows:

1. General inspection.
2. Stigmata of degeneracy.
3. Alimentary system.
4. Respiratory system.
5. Circulatory system.
6. Genitourinary system.
7. Cutaneous system.
8. Glandular system.
9. Nervous system.
  - A. General.
  - B. Special senses.
    1. Eyes.
    2. Ears.
10. Articular and muscular.
11. Deformities.

The patient is stripped, first to the waist, then later completely, so that direct inspection and examination may be made of the whole body. Urinalysis, hemoglobin estimations, examination of blood and pus stains, blood counts, and other tests that can be rapidly performed are made at once, as indicated, to complete the initial examination. Simple interrogation alone is never depended upon for any part of the examination, but is accompanied by inspection and other forms of inquiry as may seem necessary, to determine any pathological condition. Of course, no assertion is made of absolute accuracy of diagnoses, since many of those admitted require further observation to determine their exact condition, so that the tabulations represent the conditions presented to the examiner on the first examination. This series of examinations has been made by one and the same examiner.

*Place.* The routine examinations have all been made in the privacy of the physician's office, no one else being present except the physician's clerical or laboratory assistant.

*Examiner.* The examiner is the prison physician who has been making similar examinations for nearly ten years.

*Character of subjects.* Those examined are all male adults, ranging in age from eighteen to over eighty years, sentenced for a wide variety of crimes; comprising all classes, from the accidental first term criminal to the recidivist of deliberate choice; representing nearly all occupations, races, and religions, and grading mentally from the medium grade imbecile to those capable of conducting a business or practising a profession.



**Method of classification.** As a result of the examinations, the subjects have been graded into three groups, according to the state of health, good, fair, or poor. Such classifications are not made from the medical standpoint purely, but represent working ability as related to the institution, but not necessarily corresponding to their previous mode of living or occupation before admission to prison. Such classification is admittedly arbitrary, but useful as well as necessary.

Total number admitted	1025	
Those in fair health	880	78 per cent.
Those in poor health	147	14 per cent.
Those in poor health	260	8 per cent.

Not examined because of early transfer to another institution	1017	
	8	

**Tabulation.** We have adopted the method of enumerating the pathological conditions discovered, in the order of frequency, under each physiological system, and in the following tables these defects are found arranged in such manner, while the number of subjects showing each condition is tabulated in the columns under their classification of health, good, fair, or poor, with a column added for the totals. The data obtained under No. 1 of the outline, General Inspection, related largely to general appearance and degree of bodily nourishment and did not readily lend themselves to tabular form. Regarding No. 2, Stigmata of Degeneracy, it seemed to the examiner wiser to withhold these data until they can be studied in relation to mentality as well as physical condition.

## ALIMENTARY SYSTEM.

	Good.	Fair.	Poor.	Total.	Percent.
Carious teeth	451	91	38	580	0.570
Constipation	204	43	23	270	0.263
Indigestion	165	39	18	222	0.218
Hemorrhoids	67	11	11	89	0.087
Enlarged spleen	52	11	7	70	0.068
Inguinal hernia	25	4	4	33	0.032
Scrotal hernia	7	2	11	20	0.019
Ventral hernia	2	2	2	6	0.006
Pyloric alveolaris	20	5	6	31	0.030
Contracted liver	16	8	2	26	0.025
Jaundice in ano	4	1	1	6	0.006
Syphilitic mucous patches	0	0	7	7	0.007
Rectal prolapse	2	0	0	2	0.002
Subacute appendicitis	0	2	0	2	0.002
Chronic appendicitis	0	1	0	1	0.001
Syphilitic condylomata	0	1	0	1	0.001
Ulcer of mouth	0	0	0	1	0.001
Ischioanal abscess	0	0	1	1	0.001
Oxyuris vermicularis	0	0	1	1	0.001
Tuberculous enteritis	0	0	1	1	0.001
Recovering from recent abdominal operation	0	0	1	1	0.001
Total	1022	222	130	1374	

## Operations Needed.

Hernia	50
Hemorrhoids	89
Fistula	6
Prolapsus	2
Abscess	1
Total	148

## RESPIRATORY SYSTEM.

	Good.	Fair.	Poor.	Total.	Percent.
Hypertrophic rhinitis	197	43	17	257	0.252
Deviated septum	174	36	19	229	0.225
Chronic pharyngitis	151	36	20	207	0.203
Enlarged tonsils	134	18	7	159	0.156
Pulmonary tuberculosis:					
Active	0	3	25	28	0.027
Suspects	62	52	13	127	0.124
Atrophic rhinitis	60	16	6	82	0.080
Ulceration of nasal septum	44	7	4	55	0.054
Spur on nasal septum	45	7	2	54	0.053
Bronchitis	26	6	2	34	0.033
Laryngitis	10	0	1	11	0.010
Perforation of nasal septum	10	0	1	11	0.010
Nasal polypus	7	0	1	8	0.007
Asthma	3	2	3	8	0.007
Corvza	3	2	0	5	0.004
Acute tonsillitis	2	1	0	3	0.002

## RESPIRATORY SYSTEM (Continued).

	Good.	Fair.	Poor.	Total.	Percent.
Anosmia	2	1	0	3	0.002
Chronic pleurisy	0	2	0	2	0.001
Pleurisy with effusion	0	0	1	1	0.000
Aphonia	2	0	0	2	0.001
Nasal synechia	0	2	0	2	0.001
Adenoids	1	0	0	1	0.001
Perforation of soft palate	0	1	0	1	0.001
Total	942	235	122	1299	

## Operations Needed.

Tonsillectomy	100
Nasal resection:	
Turbinate or septum	250
Removal of spur	54
Removal of senecchia	2
Removal of polypus	8
Removal of adenoids	1
Aspiration of pleural effusion	1
Total	416

## CIRCULATORY SYSTEM.

	Good.	Fair.	Poor.	Total.	Percent.
Tachycardia, without other cardiac signs	31	11	7	49	0.048
Hemic murmur	34	9	4	47	0.046
Arteriosclerosis	13	20	14	47	0.046
Myocarditis	4	17	3	24	0.023
Aortic stenosis	3	7	3	13	0.012
Mitral regurgitation	0	6	6	12	0.011
Cardiac hypertrophy, without other cardiac signs	3	4	2	9	0.008
Cardiac arrhythmia, without other cardiac signs	0	0	0	6	0.005
Pulmonic stenosis	2	2	0	4	0.003
Aortic regurgitation	1	1	1	3	0.002
Cardiac dilatation	0	1	2	3	0.002
Tricuspid regurgitation	0	2	0	2	0.002
Tricuspid and mitral regurgitation	0	2	0	2	0.002
Aortic stenosis and regurgitation	0	0	1	1	0.001
Pulmonic stenosis and mitral regurgitation	1	0	0	1	0.001
Mitral stenosis	0	1	0	1	0.001
Total	98	83	43	224	

## GENITOURINARY SYSTEM.

	Good.	Fair.	Poor.	Total.	Percent.
Varicocele	25	9	0	34	0.033
Acute gonorrhea	0	0	9	9	0.008
Chronic gonorrhea (gleet)	0	19	0	19	0.018
Phimosis	13	1	0	14	0.013
Orchitis	6	3	0	9	0.008
Testicle incompletely descended	5	1	0	6	0.005
Enlarged prostate	5	0	0	5	0.005
Hard chancre	0	0	4	4	0.003
Incomplete circumcision	2	1	0	3	0.002
Chancroidal ulcers	0	1	2	3	0.002
Atrophied testicle	1	0	1	2	0.001
Herpes	2	0	2	4	0.004
Chronic nephritis	1	1	0	2	0.001
Hydrocele	0	1	2	3	0.002
Diabetes mellitus	0	0	1	1	0.001
Syphilitic ulcer on scrotum	0	0	1	1	0.001
Hydrocele of spermatic cord	0	1	0	1	0.001
Cancer of penis	0	1	0	1	0.001
Retracted frenum	1	0	0	1	0.001
Supernumerary opening of urethra	1	0	0	1	0.001
Total	63	38	24	125	

## Operations Needed.

Varicocele	17
Circumcision	17
Enlarged prostate	6
Hydrocele	3
Cancer of penis	1
Retracted frenum	1
Total	45

## CUTANEOUS SYSTEM.

	Good.	Fair.	Poor.	Total.	Percent.
Acne vulgaris	29	3	2	34	0.033
Syphilitic skin eruption	18	3	4	25	0.024
Eczema	10	2	3	15	0.014
Pediculi pubis	8	0	2	10	0.009
Varicose veins, lower extremities	6	0	3	9	0.008
Scabies	4	3	0	7	0.006
Lipoma	1	1	1	3	0.002
Alopecia areata	2	1	0	3	0.002
Urticaria	1	2	0	3	0.002
Ringworm	2	1	0	3	0.002
Tinea versicolor	2	0	1	3	0.002
Sebacous cyst	1	1	1	3	0.002
Pilonidal sinus	1	0	1	2	0.001
Furunculosis	2	0	3	5	0.004
Erdema, lower extremities	1	0	1	2	0.001
Eruptions, undiagnosed	1	0	1	2	0.001
Wounds, unhealed	2	0	0	2	0.001
Acne rosacea	1	0	0	1	0.001
Condylomata	0	0	1	1	0.001
Varicose ulcer	0	0	1	1	0.001
Axillary abscess	0	0	1	1	0.001
Total	92	17	23	132	

## CULANEOUS SYSTEM (Continued).

Operations Needed.					
Lipoma	1				3
Sclerosed cyst	1				3
Axillary abscess	1				1
Total					7

## GLANDULAR SYSTEM.

	Good.	Fair.	Poor.	Total.	Percent.
Enlarged cervical	259	52	27	338	0.332
Enlarged epitrochlear	154	32	13	199	0.195
Enlarged inguinal	135	29	10	174	0.171
Enlarged thyroid	138	2	2	22	0.021
Enlarged supraclavicular	5	1	1	7	0.006
Enlarged submental	0	0	1	1	0.000
Enlarged axillary	0	0	1	1	0.000
Total	574	116	55	745	

## Operations Needed.

Cervical adenectomy	50				
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## NERVOUS SYSTEM—GENERAL.

	Good.	Fair.	Poor.	Total.	Percent.
Epilepsy	9	4	3	16	0.015
Chronic alcoholism	7	1	1	9	0.008
Nervous symptoms following head injury	5	3	0	8	0.007
Chorea	4	1	2	7	0.006
Exophthalmic goitre	3	2	0	5	0.005
Speech defects	4	1	0	5	0.004
Neurasthenia	3	3	0	6	0.005
Hysteria	4	0	0	4	0.003
Symptoms of drug withdrawal	3	1	0	4	0.003
Traumatic neuritis	2	0	3	5	0.002
Cerebrospinal syphilis	1	0	2	3	0.002
Facial neuralgia	3	0	0	3	0.002
Facial paralysis	2	1	1	4	0.003
Insomnia	2	0	1	3	0.002
Mental depression	0	0	3	3	0.002
Nystagmus	1	0	0	1	0.000
Depressed fracture of skull (no symptoms)	1	0	1	2	0.001
Locomotor ataxia	0	0	1	1	0.000
Hysterical paralysis, arm and leg	0	0	1	1	0.000
Progressive muscular atrophy	0	0	2	2	0.001
Total	54	19	18	91	

Operations Needed.<sup>1</sup>

Goitre	3				
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## NERVOUS SYSTEM: SPECIAL SENSES; EYES.

	Good.	Fair.	Poor.	Total.	Percent.
Defective vision (by tests for visual acuity, not including negotiations enumerated below)	235	54	20	309	0.303
Strabismus	38	5	1	44	0.043
Chronic conjunctivitis	23	5	3	31	0.030
Acute conjunctivitis	14	0	0	14	0.013
Follicular conjunctivitis	2	1	1	4	0.003
Corneal scar	8	2	0	10	0.009
Optic atrophy, one eye	2	4	1	7	0.007
Optic atrophy, both eyes	0	0	1	1	0.000
Chalazion	1	1	0	2	0.001
Blepharitis	1	3	0	4	0.003
Trichiasis	2	2	0	4	0.004
Trachoma	0	2	1	3	0.002
Ptoxis	2	1	0	3	0.002
Taumat's blindness, one eye	0	2	0	2	0.001
Traumatic cataract both eyes	0	0	1	1	0.000
Melchiorian cyst	1	0	0	1	0.000
Syphilitic iritis	0	1	0	1	0.001
Interstitial keratitis	0	1	0	1	0.000
Total	332	83	29	444	

## Operations Needed.

Strabismus	25				
Chalazion	1				
Pterygium	3				
Trichiasis	3				
Melchiorian cyst	1				

Total	37				
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## NERVOUS SYSTEM: SPECIAL SENSES; EARS.

	Good.	Fair.	Poor.	Total.	Percent.
Otitis media, chronic	31	10	3	44	0.046
Impacted cerumen	50	7	7	70	0.068
Retracted membrane	5	1	1	7	0.006
Perforated membrane, with no discharge	0	0	0	0	0.000
Deafness, marked in both ears	6	0	0	6	0.005
Deafness, marked in one ear	1	0	0	1	0.000
Total	160	18	11	189	

## Operation Needed.

Mastoid	25				
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## ARTICULAR AND MUSCULAR.

	Good.	Fair.	Poor.	Total.	Percent.
Chronic articular and muscular rheumatism	113	27	19	159	0.156
Rheumatism, lumbago	16	0	0	22	0.021
Rheumatism, sciatica	5	0	0	5	0.004

<sup>1</sup>In the cases of head injuries, while no indications were found for operation, at time of admission, a later and more complete study and observation might show that in some an operation would be of benefit.

## ARTICULAR AND MUSCULAR.

	Good.	Fair.	Poor.	Total.	Percent.
Syphilitic joint pains	18	4	0	22	0.021
Traumatic joint stiffness:					
Ankle	8	0	0	8	0.007
Elbow	7	2	0	9	0.008
Hip	0	2	0	2	0.002
Wrist	0	0	1	1	0.000
Knee	5	2	0	7	0.006
Finger	5	1	0	6	0.005
Shoulder	3	2	0	5	0.004
Chronic luxation:					
Shoulder	1	0	0	1	0.000
Thumb	0	1	0	1	0.000
Rupture oficeps	0	1	0	1	0.000
Tuberculous kneejoint	0	1	0	1	0.000
Syphilitic periostitis	1	0	0	1	0.000
Muscular atrophy, arm	0	1	0	1	0.000
Paralysis—partial, recovering from hemiplegia	0	0	1	1	0.000
Total	194	50	21	265	

## Operations Needed.

Tuberculous kneejoint	1				
Periostitis	1				

Total	2				
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## DEFORMITIES.

	Good.	Fair.	Poor.	Total.	Percent.
Curvature of spine.					
Kyphosis	6	2	4	12	0.011
Scoliosis	5	3	2	10	0.009
Hipjoint disease	0	1	1	2	0.001
Bow legs	1	0	0	1	0.000
One leg shortened (result of fracture)	1	0	0	1	0.000
Deformities due to amputations:					
1 finger	13	1	2	16	0.015
2 fingers	2	2	0	4	0.003
1 fingers	1	1	0	2	0.001
1 toes	1	0	0	1	0.000
1 leg	3	0	0	3	0.002
Ankylosis of elbow joint	1	0	0	1	0.000
Resection of elbow joint	0	0	1	1	0.000
Hammer toes	0	0	1	1	0.000
Rheumatoid arthritis, upper extremities	0	0	1	1	0.000
Total	36	10	12	58	

## Operation Needed.

Hammer toes	1				
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## SUMMARY OF DEFECTS FOUND.

	Good.	Fair.	Poor.	Total.	Percent.
Alimentary system	1022	222	130	1374	
Respiratory system	942	235	122	1299	
Circulatory system	98	83	43	224	
Cutaneous system	63	38	24	125	
Glandular system	571	116	55	742	
Nervous system:					
General	54	19	18	91	
Ears	312	83	20	415	
Eyes	108	18	11	137	
Articular and muscular	194	50	21	265	
Deformities	36	10	12	58	
Total	3512	891	488	4891	

## Summary of Number of Operations Needed.

Alimentary system	148				
Respiratory system	416				
Genitourinary system	45				
Cutaneous system	7				
Glandular system	50				
Nervous system—general	3				
Nervous system—special senses, eyes	37				
Nervous system—special senses, ears	25				
Articular and muscular systems	2				
Deformities	1				

Total	734				
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The foregoing lists, it will be observed, do not include dental work, of which there is a vast amount indicated, as over half of the total number of men admitted had carious teeth; nor do they include re-fracture and fitting of glasses for at least 200 prisoners.

## CONCLUSIONS.

1. The solution of the medical problem of the prison lies, to a great extent, in the recognition and treatment of pathological conditions at the time of admission of each inmate.

2. The medical staff of the prison, consisting of only two physicians, is much too small to take care of this immense amount of work. As a matter of

fact, a staff of two is inadequate to perform a major operation.

3. There should be provided an adequate general medical and surgical staff, as well as specialists in the various branches.

4. This work could best be accomplished through a central clearing house to which all prisoners should first be committed for individual examination, study, diagnosis, and treatment, before being assigned to any particular institution.

### VISCERAL AMEBIASIS\*

#### *With Report of an Unusual Case.*

By ALEXANDER KLEIN, M. D.,

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AND A. I. RUBENSTONE, M. D.,

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In the literature comparatively few instances are recorded of lesions in which amœbæ were demonstrated that were not associated with or occurred as sequelæ of dysentery. Undoubtedly some lesions of amebic origin are not discovered because of lack of routine microscopical examination of fresh specimens of pus in the absence of dysenteric history. This may account for the dearth in reported cases of lesions in other organs of the body. Several authors have reported finding amœbæ in the blood. That visceral amebiasis may be present without a previous history of dysentery is now conceded by many investigators. Craig cites as an example Buxton's case of a woman with amebic abscess of the liver, at the Philadelphia General Hospital, in which no trace of previous intestinal disease was demonstrated at autopsy. Flexner, Kartulis, and Doflein report lesions adjacent to the oral cavity in which apparently pathogenic amœbæ were demonstrated. Artault describes finding amœbæ in a lung abscess. Lynch reports a case of submaxillary tumor in which he found amœbæ. Some observers found amœbæ in association with malignant growths notably that referred to by Schaudinn in peritoneal carcinoma with ascites reported by von Layden. Ijima records peritonitis with endothelioma in which he observed an ameba, but his statements concerning these parasites have not been confirmed. Smith and Weidman report amœbæ found in various tissues of a stillborn child; also in a syphilitic infant dying of pneumonia. The case we take the liberty of reporting is as follows:

CASE. J. Z., Russian, forty-nine years old, cigar maker, married, who was admitted to the Mount Sinai Hospital, October 31, 1915, complaining of gnawing, dull pain in the right buttock, and occasionally pain in the right knee. His family history was negative. Past medical history: Measles during infancy, and gonorrhea at twenty-two years of age. Denied intestinal trouble at any time during his life. Had lived in Southern Russia until fourteen years ago, when he came to New York, and six years ago moved to Philadelphia, where he resided since, having never sojourned elsewhere. Smoked moderately, did not consume alcoholic beverages. Present illness began about three months ago, with dull aching sensation deep in his right buttock. He spent several weeks in a local hospital without relief and finally went home. Gradually locomotion be-

came more difficult until he was unable to walk without assistance.

Physical examination: Patient presented an anxious expression, pinched features, sunken cheeks showing signs of emaciation. Mucosa markedly anemic, skin moist and warm. Fingers and toes clubbed. No edema. A large movable, slightly resistant mass was outlined over the right buttock, giving it an appearance of extreme fullness. Slight fluctuation elicited. Local examination: Reflexes normal, head, eyes, ears, nose, and neck presented nothing of interest. Most of the teeth were missing, those present in bad condition. Pyorrhea alveolaris and gingivitis marked. Chest: All bony prominences marked, left supraclavicular and infraclavicular fossæ deep. Slight scoliosis of the spine to the right. Expansion poor, respiration abdominal in type. Right lung: Showed slightly diminished tactile and vocal fremitus at the base and dry rales at upper lobes; also harsh respiratory murmur. Left lung: Dullness and harsh respiratory murmur over the upper lobe anteriorly; lower lobe showed a pleuritic friction rub and a few moist and dry rales. Heart: Feeble sounds, rapid and irregular. Abdomen negative. Upon admission temperature was 99° F., and fluctuated between 99° and 100° throughout the entire course of illness, until his terminal infection increased it to 103° six days before death. Respirations were 24 and pulse 82. Systolic blood pressure varied throughout the illness between 125 and 110 mm. Hg. Urine showed no abnormalities in quantity or quality throughout the illness, except for traces of albumin during the last few days. Blood: Hemoglobin, seventy per cent.; red blood cells, 3,610,000; white cells, 13,200; polymorphonuclears, eighty-five per cent.; small mononuclears, twelve per cent.; transitional, one per cent; eosinophiles, two per cent. Widal, malaria, and Wassermann tests negative on repeated examination. The sputum was thin, scanty, and mucopurulent, many Gram positive and negative organisms, especially *Micrococcus catarrhalis*, some long chain streptococci and leptothrix. Tubercle bacilli were not demonstrable. Fresh specimens were frequently examined and no amebas were found. Examination of the pyorrheal pockets disclosed myriads of amœbæ and a few *Trichomonades hominis*, associated with the usual bacterial flora accompanying them. X ray findings, by Dr. George Rosenbaum: Chest: Left side threw a shadow resembling fluid, probably due to a thickened pleura. Right side showed some nodules near the apex. Pelvis: Above and to the inner side of the pelvis, from the acetabulum to the right sacroiliac synchondrosis was a mass of fluid consistence. It also showed much iliac bone absorption in this region.

A needle was inserted deeply into the mass in the right buttock, and six ounces of fluid were easily withdrawn. This fluid was yellowish brown in color, moderately viscid, very turbid, and was immediately removed to the laboratory for examination. Fresh preparations under cover glass showed with a one sixth inch objective: Some polymorphonuclear and mononuclear leucocytes, much cellular debris, and fragmented blood cells, as well as larger cells, many of them in motion. These cells ranged from twenty to fifty microns in diameter and showed typical ameboid movement, which in some was very active. They consisted of a clear ectosarc, glassy in appearance, and a granular endosarc in which could be seen small grayish particles and occasionally fragments of, or whole red blood cells, as well as one or more vacuoles. The pseudopodia were blunt and broad and somewhat elongated, and very few cells exhibited more than one projection at a time. Motility was marked in a great many and sluggishness in a few. A few of these organisms were smaller in size, probably not more than ten to twenty microns in diameter, consisting of much granular material, few vacuoles, and giving the typical appearance of encysted forms. A nucleus was not observed in the majority of parasites studied, but in a few a very small peripherally situated body in the endosarc, oval in shape, was observed. We could not establish to our satisfaction that this body was a nucleus or some ingesta of the parasite. On staining dry smears with Hastings and Giemsa's stains as well as the ordinary dyes, the same general characteristics were observed, but no distinct nuclear chromatin could be demonstrated. Puncture of the left chest wall was performed, and upon deep insertion of the needle, five ounces of fluid were aspirated. This fluid was decidedly more brown in color than that removed from the buttock. Examination revealed it to be of the same character and the findings were identical, only that it

\*Read and specimens presented before the Philadelphia Pathological Society, May 11, 1916.



contained more epithelial elements and red blood cells. Amœbæ were present and presented the same characteristics as in the other fluid. Some of the fluid obtained from both abscesses was injected per rectum into guinea pigs (unfortunately no kittens) and also sprinkled over the food. Some animals were also inoculated in the inguinal region with this fluid. The animals manifested no illness and were soon well. Cultures of the fluid on serum and blood media both aerobically and anaerobically were sterile. In an attempt to obtain, if possible, complement fixation with this pus, some of it was repeatedly washed with sterile physiological saline solution, and finally the sediment, after several hour's shaking, was used in diluted form as antigen. The single unit hemolytic system was used, and half the anticomplementary dose of the antigen employed. No fixation occurred with the patient's serum up to 0.2 c. c. Although the patient presented neither symptoms nor history of intestinal disturbance, his rectum was carefully examined with negative results. Repeated examinations, both by passing a rectal tube and examining the particles that came away, and also the fresh stool after a saline purge, failed to disclose amœbæ.

The patient received, beside general care and treatment, emetine, both hypodermically and by mouth and by injection into the two cavities. By November 18th, after several tapplings during which a total of thirteen ounces of fluid were removed from the chest and eleven from the buttock, the patient was improved, having lost most of his pain in the buttock and no longer complaining of pain in the chest. Physical findings were of the same character. On November 24th the patient again began to complain of pain in the chest, and there was increasing tenderness in his right buttock. The patient consented to operation on the buttock only, which was performed by Dr. N. Ginsburg, who found a cavity below the gluteal muscles involving part of the iliac bone posteriorly which was necrosed. The cavity contained necrotic tissue, a few blood clots, and about ten ounces of fluid of the same character as described. Following the operation the patient was somewhat relieved, but weaker, the pain in the chest continued, and the dyspnea grew worse. On December 24th the temperature suddenly rose to 103° F.; he complained of severe pain in the chest, dyspnea became very marked, accompanied by sweats and prostration. Heart sounds were muffled, and there was frequent asystole. Upon physical examination pericarditis with effusion was diagnosed, he refused surgical intervention, became rapidly worse, and death ensued on December 31st, after an attack of pulmonary edema.

Permission was granted for partial autopsy and the following was found. The pericardium was distended, containing 125 c. c. of yellowish gray thin pus; visceral and parietal layers were deeply injected, and a fine fibrinopurulent membrane covered it. This fluid was made up of polymorphonuclear pus and long chain streptococci; culture showed hemolytic streptococci. The heart showed cloudy swelling, the right lung and the pleura were free, there was some congestion at the base, and several healed fibrous nodules at the apex. The left pleura was greatly thickened and adherent, especially at the upper half, where at some points it was three mm. thick. Upon incision of the lung, there was found a cavity which extended through the lower portion of the upper, and the upper portion of the middle lobe, about ten by six cm., not connected with the larger bronchi. It was filled with a reddish brown

fluid, and contained shreds of necrotic tissue; the wall was ragged with many shaggy projections of shreds of connective tissue and necrotic lung extending into the cavity. The cavity showed no connection with either the pleura or pericardium, nor with any other of the adjoining structures. Surrounding the cavity the lung was markedly edematous and grayish, with many small pin point necrotic foci. Stained sections of the lung immediately surrounding the cavity revealed epithelial cells which showed great swelling and granular degeneration, and many deep seated pigmentary infiltrations. The capillaries were injected. Closer to the abscess cavity were noted diffuse necrotic areas, and at points infiltration with mononuclear leucocytes.

The intestines were carefully examined and no signs of present or of past inflammation were detected. The liver was slightly congested and somewhat enlarged. The spleen and pancreas were normal. The kidneys showed slight congestion. Exploration of the operative site in the buttock revealed a cavity about the size of a fist, involving the iliac bone near the synchondrosis, at which point the bone was ragged, and there was an opening five by six cm., forming a hole in the ilium. The cavity had no connection with the psoas or peritoneum. It contained a grumous fluid with several small blood clots and necrotic bone tissue. Sections of the wall revealed great infiltration with polymorphonuclear and mononuclear and red blood cells, with many necrotic areas, as well as a few of the parasites previously described.

#### CONCLUSIONS.

The parasites found in the abscesses of this patient seemed in nearly all characteristics to conform to the species definitely established by Schaudinn, in 1903, as *Amœba dysenterica histolytica*. This amœba had been thoroughly investigated by Kartulis, Councilmann and Lafleur, Strong, and others. Schaudinn's work has been amply confirmed by such investigators as Craig and Hartmann. In the European district from which our patient originally came it was thoroughly studied by Hlava, and in this country it has been found in many States, including New York and Pennsylvania. In the absence of any other etiological factor we must conclude that these amœbæ were the causative agents in the production of these lesions, and the unique situation of these lesions leads us to think that the distribution was most probably hematogenous. We can only speculate as to the original focus of the infection, remembering the condition of the patient's mouth.

We are indebted to Dr. R. C. Rosenberger and Dr. Allen J. Smith for their kindly interest in the case and for confirming the parasitic nature of the cells.

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321 SOUTH ELEVENTH STREET.  
1704 EAST MOYAMENSING AVENUE.

## A FOREIGN BODY IN THE AORTA,

BY LOUIS G. KAEMPFER, B. S., M. D.,  
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The sudden onset of cough in a person previously well, especially if it occurs while he is eating, is a fact of such significance that no alert physician can be excused for overlooking it or underestimating its gravity. If the cough persists, either with or without dyspnea or cyanosis, and at first, at any rate, without fever or expectoration, it points in such an unmistakable way to the diagnosis of a foreign body, usually in the trachea but sometimes in the esophagus, as to be almost pathognomonic.

The patient often does not remember whether or not there was anything in his mouth at the time that the coughing spell began, and a child—most of these patients are children—is either too young to tell, or fear of punishment causes suppression of the information. It is the duty, then, of the medical attendant to give due consideration to this possibility when confronted by such a problem. By submitting such a patient to prompt endoscopic examination a life may be saved.

In the laryngological service at the Mount Sinai Hospital, where the material is extraordinarily rich in this special field, it is not uncommon to see these cases. Patients who absolutely deny that a foreign body could have been swallowed or inhaled, when it has been removed and shown to them, will recall some incident, unimportant at the time, which would have made the diagnosis unequivocal. It is to show the folly and danger of relying upon the patient's word in this class of case that the following is reported:

CASE. George S., eight months old, a healthy, normal, breast fed baby, was brought to the Mount Sinai dispensary (pediatric department). The mother stated that the baby had never been ill before and had suddenly begun to cough. There were no other symptoms. The child never had a rise in temperature. He was treated for the cough for four weeks without its getting either very much better or very much worse. Apparently no stress was laid upon the manner of the onset of the cough. Suddenly, the child became acutely ill and vomited a quantity of clotted blood. There were no food particles. About an hour later, the child was brought to the hospital. The mother absolutely denied the possibility of the child having swallowed anything.

An abstract of the examination made at the time of admission: Well nourished, pale baby; crying and acutely ill; no meningeal signs. Breath sounds over the entire chest exaggerated; few moist rales heard; no alteration of the percussion note. Heart sounds feeble and not clearly heard; pulses rapid and of poor quality. Extremities cyanotic and cold. Abdominal examination negative.

The child was fluoroscoped and a collar button was seen behind the upper part of the sternum. It had a spherical head which pointed downward and a little to the left. The broad base was uppermost. About an hour later, the writer esophagoscoped the patient. It was done without anesthesia, as owing to the child's perilous condition haste was a desideratum.

Direct laryngeal examination showed an entirely normal larynx. The tube was introduced into the esophagus without difficulty, the child being on its back with the head supported over the edge of the

table and the neck in partial extension. The child's body was held by two assistants, one holding the arms and torso, the other the legs.

At its entrance the mucous membrane of the esophagus appeared normal. A short distance down the picture changed. The tube entered an area deep red in color in the midst of which a portion of the edge of the base of the collar button was visible. It was grasped with the foreign body forceps and gentle traction was made in an attempt to dislodge it. The button did not move. It appeared to be firmly held by the surrounding tissues. During this time the child's condition, though very poor, was as good as it had been at the beginning of the operation. Stronger traction was now made, whereupon breathing stopped immediately. The tube was at once withdrawn and artificial respiration was employed. After a few minutes, breathing was restored. The baby was cyanotic and the pulse was scarcely perceptible. The heart beats were poor in quality and 240 a minute. Further attempts to remove the button were deferred until the following day.

During the night, about nine hours after the operation, the child became suddenly dyspneic and died. Death was in all probability due to pressure upon the pneumogastric, as in cases of retroesophageal abscess.

The following day, about twelve hours after death, the body was esophagoscoped by Doctor Yankauer, who removed a quantity of clots and found that the button had ulcerated through the wall of the esophagus and into the aortic arch. The head of the button acted as a plug to close the dehiscence. The hemorrhage evidently took place at the moment of penetration.

The conclusion to be drawn from this case is obvious. Had the presence of a foreign body been considered earlier, and the child fluoroscoped, the diagnosis would have been made before the patient was moribund and its life would have been saved. This brings us again to the sudden onset of the cough in the absence of other symptoms. Had that fact been given due weight by the physician who first saw the child, the fatal outcome undoubtedly would have been avoided.

616 MADISON AVENUE.

**Filtered X Rays in Treatment of Fibrous Bands and Adhesions.**—A. Winkelried Williams (*Brit. Med. Jour.*, December 2, 1916) states that the value of x rays in the treatment of keloid and hypertrophic scars of the skin suggested their use for the relief of fibrous bands and adhesions resulting from bullet wounds. Filtered rays from a hard tube were applied to such bands in several cases with most excellent results, producing prompt softening of the scar tissue, increase in range of motion, and removal of the symptoms which had resulted from the compression of nerves and vessels in scars. In one of the cases the rays produced favorable results at first, but the cessation of their use was followed by a return of hardening and contraction of the scar tissue so that surgical interference was required.

# Our Readers' Monthly Prize Discussions

## Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CLXXVII.—How do you treat delirium tremens? (Closed.)

CLXXVIII.—How do you treat acne vulgaris? (Answers due not later than January 15, 1917.)

CLXXIX.—How do you treat eczema in children? (Answers due not later than February 15, 1917.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

*The prize of \$25 for the best answer to Question CLXXVI has been awarded to Dr. Robert T. Morris, of New York city, whose paper appeared on page 24.*

### PRIZE QUESTION NO. CLXXVI.

#### THE TREATMENT OF COLLES'S FRACTURE.

(Concluded from page 28.)

*Dr. Louis Neuvelt, of New York, remarks:*

In the treatment of all fractures of the wrist, radiography should be a part of the routine both for diagnosis and treatment. Taken before the reduction of the fracture, skiagrams aid in the diagnosis by giving pictures of the conditions and relations of the broken ends of the bones much more accurately than can possibly be obtained by palpation. As a result, greater accuracy is obtained in the treatment. Many a sprain is in this way found to be in reality a fracture. Fluoroscopy alone is misleading. The arm should be photographed stereoscopically, or skiagrams should be taken in two directions, anteroposteriorly and laterally.

After immobilization, we can tell whether the correct position of the fragments has been secured without removing the dressing, and the patient is spared unnecessary and painful manipulation and etherization. A picture showing intractable fragments may decide in favor of an operation.

By availing himself of good x ray plates, the physician frees himself from possible future malpractice suits, which too frequently follow. In fact, the courts have recently decided that any one treating fracture cases without the use of the x ray is culpable.

Reduction of the fracture should be accomplished as soon as possible, preferably under anesthesia, either partial or complete, as considerable force is necessary to effect reduction, especially in the impacted cases. To reduce a Colles's fracture, the operator clasps the patient's hand in his own, palm to palm, and with the other hand he grasps the wrist at the site of fracture. An assistant should make counterextension from the fixed elbow, while the operator makes forcible traction on the hand, at the same time inclining it to the ulnar side and making pressure on the fragments. The reduction can be felt as the deformity becomes corrected. The head of the ulna will return to its normal position and again become prominent on the back of the hand. When the reduction is complete, allow the hand to rest without support to determine whether the deformity recurs; if there is no recurrence, the wrist may be immobilized.

Plaster of Paris molded splints (anterior and posterior) are the most desirable for the purpose of immobilization. Ready made or wooden splints should not be used, as they cause widening of the wrist. Three to four inch wide bandages are used. The posterior splint should extend from the heads of the metacarpal bones to a little above the middle of the forearm. Measure the above mentioned distance on the bandage, running it back and forth making eight to ten layers, and firmly incorporate the bandage by pressure. Cut out a piece of the dorsal splint where the ulna touches it, to prevent undue pressure. In the same way make an anterior splint, again measuring the distance between the head of the metacarpal bones and a point a little beyond the middle of the forearm. The splints should be padded with a layer of sheet wadding, with retention pads at the seat of fracture if necessary.

The hand and forearm should be kept in the position of semipronation, with the hand adducted. While the plaster is still soft, apply a firm bandage. The fingers and thumb should be left free and movable, and the arm is supported in a sling, so adjusted as to receive the whole weight of the arm. The ends of the sling should cross in front of the neck. The hand should be free from the upward pressure of the sling. The patient should be seen again within the first twenty-four hours, to correct any swelling that may be caused by a too tight bandage. Every three days the pads and bandage are removed and the arm carefully inspected, to avoid circular constriction. The pads are so placed as to maintain the fragments in their proper alignment. The patient should be warned that pain and swelling during any part of the treatment are a signal for a consultation with the physician.

At the end of the first week, discard the anterior splint and secure the posterior splint with three zinc oxide adhesive plaster straps, one at each end of the splint and one at the seat of fracture. Apply a pad over the fragments to the anterior surface, secured with a roller bandage.

Gentle massage and active and passive motion of the fingers, hand, wrist, and forearm are given during the second week. In the third week, the dorsal splint may be shortened, and the amount of active and passive motion increased. During the third or fourth week, the splint may be removed, and the wrist supported by a zinc oxide adhesive plaster dressing applied as follows: Apply two or three



layers of a gauze strip about four inches wide (double), and then five or six layers of the zinc oxide plaster of the same width around the wrist, and support with a sling. This dressing can be worn for one or two weeks, after which all dressings are removed, except a simple bandage. The forearm should always rest in a sling on the ulnar side of the hand, unsupported, and slightly adducted.

If after two or three weeks there is malunion, the bones should be refractured to correct the deformity. If even this procedure is of no avail, operative interference becomes necessary as a last resort.

*Dr. Max Soletsky, of New York, states:*

The lower end of the radius is, after the ribs, the most frequently fractured bone in the body. Colles's fracture is a fracture of the lower end of the radius, from one third to three quarters of an inch above the articular surface. It is usually produced by a fall on the palm of the hand and causes a displacement of the lower fragment posteriorly, the styloid process of the radius rising to a higher level, with the addition sometimes of a fracture of the styloid process of the ulna.

It is treated by first reducing the fracture according to the following method (see Treatment of Colles's Fracture, by Doctor Hoag, in *NEW YORK MEDICAL JOURNAL*, November 13, 1915): The injured wrist is held dorsum upwards, the surgeon's thumbs on the dorsum of the lower fragment, the index fingers in front of the lower fragment, and the other fingers in the patient's palm. The patient's wrist is held stiffly and the forearm is hyperflexed at the point of fracture in order to break up impaction, then, traction being made by the fingers in the patient's palm, the forearm at the point of fracture is hyperextended (dorsally flexed) and the lower fragment pushed into place, the overlapping thumbs preventing overcorrection. The fracture is reduced preferably under general anesthesia. The styloids are then measured in order to make sure of reduction, and the forearm and hand, extended and in ulnar deviation, are put up in moulded plaster of Paris splints. The splints are made in the following manner: Two pieces of cotton flannel three inches wide (for the adult) and reaching from the metacarpophalangeal articulations to within two inches of the elbow are covered about one quarter of an inch thick with layers of bandage impregnated with plaster of Paris previously wet with water. The splints are then applied one anteriorly and the other posteriorly and bandaged on with a gauze bandage to allow the water to evaporate quickly. The hand and forearm are held in the correct position, in extension (dorsal flexion) and ulnar deviation, until the plaster of Paris has hardened, and then the forearm is placed in a sling. The fingers are left free and are to be manipulated, otherwise they become stiff. An x ray picture should be taken to ascertain the position of the fragments.

Hot air baking daily with the splints on may be begun during the second week. During the third week it may be combined with massage, gentle at first, gradually increasing in amount and force.

The splints are left on for the baking and removed one at a time for massage. First the posterior splint is removed, leaving the anterior one in place, then the posterior one is replaced after massage, the forearm with both splints in position turned, the anterior splint is removed and replaced after the massage is completed. Baking and massage are done every other day. During the fourth week the posterior splint is discarded, the anterior one alone being replaced. At this time active and passive motion is begun. After the fourth week even the anterior splint is discarded and the patient is advised to do light work for a time, gradually doing more as the wrist grows stronger. The patient continues to obtain baking and massage until complete function is restored. This generally takes from six to eight weeks.

*Dr. Vern W. Embree, of Sioux City, Ia., asserts:*

In the treatment of Colles's fracture I first examine the injury under the x ray, taking a transverse and an anteroposterior view; then under surgical anesthesia, by crepitation and abnormal mobility, I confirm my x ray interpretation. While the patient is still under complete surgical anesthesia, I make hyperextension to loosen the fragments and the dorsal periosteum; secondly I make longitudinal traction to separate the fragments, and lastly I make forced flexion to get them into position. I next place the hand in extreme adduction. Then I proceed to cleanse the forearm, wrist, and hand with soap and water if the injury is quite sensitive, otherwise I do this before starting the anesthesia. After drying thoroughly I wrap a thin layer of absorbent cotton or roller flannel around the forearm, wrist, and a portion of the hand, being very careful to have the thickness uniform throughout. Then I place the plaster of Paris bandage in lukewarm water, and remove when the bubbles cease to rise, and apply quickly with a uniform thickness from just below the elbow to a point on the hand opposite the base of the extended thumb. In this way there is no immobilization of the fingers. The hand is placed in extreme adduction. I use a quick setting bandage and in a few minutes the cast is hard and firm. I now make an anteroposterior and transverse x ray picture to be sure the bone is properly approximated. I place the arm in a broad muslin sling, after having wrapped a gauze bandage around the plaster cast.

If there is considerable bruising of the tissues with swelling at the time of setting the fracture, the cast after twenty-four to thirty-six hours may become somewhat loose; if so I cut the cast preferably on its anterior surface throughout its length and trim off a portion of one or both edges, then I draw the two free edges together and hold in place by applying a two and a half inch gauze bandage. Likewise if the injury has been so recent that when set the maximum of swelling has not taken place, or if the cast should become uncomfortable, I cut it longitudinally and by forcibly spreading I can relieve the pressure and not endanger any segments of the fractured radius.

At the end of ten days after setting the bone I

remove the cast, and besides cleansing the forearm, hand, and wrist with alcohol, I also move the wrist. At the end of a week I again remove the cast and do not replace it. After cleansing the parts thoroughly I examine the wrist to take note of its function.

*Dr. Frederick G. Miller, of New York states:*

The most essential step in the treatment of Colles' fracture is the complete reduction of the deformity. Failure to do so is bound to be followed by permanent deformity, stiffness of the wrist and fingers, and often a useless hand.

Reduction is accomplished by traction and over-extension of the wrist in order to separate the fragments, and release them from the possibly torn periosteum. Then by forced flexion and manipulation the fragments are brought into normal apposition.

The forearm and hand are held in supination and well padded splints applied. It depends upon the condition of the deformity before and after reduction whether an anterior or posterior or both forms of splints are used.

I prefer using an anterior or palmar splint extending from the elbow to the wrist joint, and a posterior or dorsal from the elbow to the fingers' tips. These are held in place with adhesive strips or turns of a bandage. Sometimes it may be necessary to place extra padding on the extensor surface of the wrist over the upper end of the lower fragment, and on the flexor surface over the lower end of the upper fragment, held in position by adhesive strips; this I do when I feel there may be a chance of the fragments slipping out of place.

The forearm is placed midway between supination and pronation, and suspended in a sling. Always try to keep the thumb and fingers as free from bandaging as possible, and commence passive motion on the third day. Also remove the splints on the third day, sponge the skin with twenty-five per cent. alcohol, dry, dust with talcum powder, and reapply the splints. Repeat this every second day for the first two weeks and every third or fourth day for the following ten days. Begin passive motion of the wrist at the end of second week. On about the twenty-fourth day union is quite firm, and I remove all splints and encourage the full use of the hand and wrist.

*Dr. W. C. Cauble, of Brooklyn, writes:*

Make a careful diagnosis of the injury by examination, preferably under anesthesia, and by comparison with the other arm.

Reduce the fracture by traction and by manipulation of the parts to insure a breaking up of the impaction, which is necessary to avoid deformity.

With the arm midway between pronation and supination, to secure the best relations between ulna and radius, make strong traction on the hand, and by manipulation being assured of reduction, apply gauze pads anteriorly and posteriorly, securing them by adhesive tape not too tightly drawn. The anterior pad should be the heaviest to protect the ulna from deformity. Next apply two light, well padded splints, using care to trim out the anterior one to prevent pressure on the thenar

eminence of the thumb, and secure them by a snug fitting roller bandage. Place the arm in a position between pronation and supination in a sling, avoiding pressure on the hand. If possible get an x ray picture to see the results secured.

In one week begin gentle massage and passive motion of the fingers. At the end of the second week disperse with the posterior splint and shorten the anterior one. Now use gentle massage and passive motion of the hand and wrist if union is firm. After three weeks one can usually disperse with the splints and dress with pasteboard or leather strips and a roller bandage. After all dressings are left off a leather wrist support, at least three inches wide, may be worn with comfort.

## Abstracts and Reviews

### EFFICIENCY AND INEFFICIENCY: A PROBLEM IN MEDICINE.\*

By PEARCE BAILEY, M. D.,  
New York.

Dr. Pearce Bailey said that at the risk of saying something that everyone knew, he wished to hazard a definition of efficiency as production which secured a full output in the shortest time with the least effort and which reduced waste to a minimum. In America it had attained its ideal almost exclusively in industry, where it had reached a high degree of perfection; it produced and conserved. Employers of labor were finding it more and more advantageous to see to it that those who worked for them were well, prosperous, happy, and, of course, temperate. But industrial efficiency considered only its own end. It had no concern with general public welfare and considered the employee only in so far as he was a working unit.

Real efficiency embraced much more, for it was not limited to the perfection of certain specialized groups of carefully selected individuals, but concerned the welfare of the whole heterogeneous people. Its aim, and indeed its obligation, was to do for the entire community what industrial organizations did for themselves and their chosen associates. Its task required a more careful planning than those of industry, because, while industry picked its own men and could in no way be held responsible for them, a nation was bound to make provision not only for the capable, but, just as inevitably, to ensure some opportunity for those who could not fully provide for themselves. The foresight with which a nation accepted this problem and protected all of its varying classes and put opportunity in their way determined whether or not that nation was really efficient. It was inseparable from practical government and economics, but it was also a problem for medicine, if that term were used to include all the sciences which had to do with man as a working machine, a machine of varying construction and liable to be put out of repair. Medicine must come more and more to the front as a helper and guide in meeting this great modern problem.

\*Summary of a lecture delivered at the Academy of Medicine, New York, January 4, 1917.

A hint as to how the plan might be worked out could be had from the experience of industry where one of the medical sciences, psychology, had come forward recently to meet certain industrial difficulties, especially that of the determination of vocational fitness of candidates for employment, for time lost in getting men who did not suit was very costly. The basis of the tests used were those invented by Binet and Simon. Other tests were used to determine higher grades of mental capacity in persons for whom the Binet tests were too elementary. These vocational tests had hardly been used long enough to justify a final opinion of their full usefulness, but the results of them had attained a reasonably high percentage of agreement with the employers' opinions of the candidates examined. The mental examination of proposed employees had only recently been added in certain industries to the physical examinations, and together they formed a stiff barrier of exclusion which made it inevitable that large percentages of those seeking employment were rejected at the outset and were thus thrown back on the community.

A street railway company in New York in the past twenty-nine months, out of 82,031 candidates for employment examined only physically, rejected 13,173, or 16.5 per cent., the chief causes being hernia, varicocele, varicose veins, flat feet, heart and lung conditions. All candidates for work in a large life insurance company in this city, except for such positions as those of cleaners, printers, laborers, waitresses, kitchen help, elevator men, engineers, foremen, and porters, had to attain seventy-five per cent. in mental testing before being passed on for physical examination. Of 1,443 candidates mentally tested, 604 passed; that is, more than half failed. The number examined physically in one year was 1,125; of these 841 were approved medically, 108 were postponed, and 148 were rejected.

What was to become of the large number of persons deemed incompetent for first class service? They must not only smother their first disappointment, but must make a new adjustment by finding employments which made less exacting demands on physical and mental capacity. These employments not being forthcoming, or not paying well enough for support, many of these individuals became alcoholic, insane, or criminals, and ended up by being supported by the State. Industry could not be blamed for these results. It was less a question of responsibility than common sense which dictated that society make some provision beforehand. It would be easy to prevent many of these failures which showed a glaring defect in American methods of education. The many people who grasped at what they could never attain, or at what they would be certain to fail, would have been far better off if they at the outset had correlated their aims with their capacities.

Some idea of the terrible sacrifice of human usefulness and the burden in money put on the State by those of its people who did not produce was furnished by the records of charity and correctional institutions and commissions. In the State of New York, with a population of nine and one half millions, there were nearly three hundred thousand

persons who were registered every year as unable to take care of themselves, either by reason of physical disability, mental defects, or criminality. For every one of these there probably were in addition three or four who had escaped registration. Accompanying the money loss to the State entailed by these failures there came a deterioration in character which mortgaged future values. The workman who lost his job because he was not good enough for it, the boy who went to college and had to leave it, the young man pushed into some industrial enterprise at which he failed had not only lost time and money, but also had impaired his chances of succeeding at something else. Even if failure was not absolute, by keeping on at something at which he could never really succeed, he never got in harmony with his work and missed the elation which adapted labor brought; he was assailed by two sullen enemies of efficiency, namely, discouragement and discontent, for he realized that he did not obtain for himself and from others the respect necessary for his happiness and believed that he might have done better things under different conditions. Work was more than production; it was the means of self expression, the great adjuster between the individual and society.

It would seem then that the time had come to study more intensively the human element in labor, and to recognize at the outset that all men did not belong to Class A. All branches of human endeavor proved this to be true. It was time that national policies should recognize that hopes of economy, of effectiveness, and of national peace depended on the success with which it was able to provide suitable employment for men of all grades of capacity, and the first great task was to analyze and sort them. In spite of the fact that all men were not equal and that none could be free, the agreeable delusion of equality and liberty was still the cherished ideal of America. The fact that this belief in the right of every person to dispose of himself as he pleased resulted in substandard men, in the inevitable waste and deterioration in inebriety, in alcoholism, in pauperism, crime and insanity, seemed to escape observation.

It seemed now one of the greatest obligations of medicine to reconstruct public opinion in these matters and to show that the efforts of lawmakers in the way of decreasing the opportunities for temptation, as in prohibition and in punishing seasoned offenders, did not meet the full issues and could never attain the maximum good for mankind. It was for medicine to show that efficiency in human affairs, just as surely as in industry, depended on developing and improving the material, and that a primary condition of this was to know the material.

One of the first points to be made clear to the minds of the public was that physical disease offered fewer obstacles to national efficiency than did defects or disorders of mentality. It was not intended to slight the importance of physical examinations, especially when made in youth for the purpose of controlling disease tendencies at their beginning, nor to minimize the social significance of tuberculosis and especially of syphilis, which was so prone to disable the nervous system. But the physical dis-



cases were neither so widespread nor so disastrous to character as mental impairments.

Of the various methods which would be called into use in planning for mental preparedness, applied psychology should perhaps be mentioned first. It dealt with the purely intellectual aspects of personality as opposed to the emotional ones; its methods were reasonably speedy and furnished surveys of material without prohibitive expense. It had shown in the past few years the high percentage of feeble-mindedness in the schools and had pointed out the necessity of graded classes. It showed the wide distribution of mental inefficiency in clerical operatives and in the experiments of Professor Ternan, of Leland University, it showed in a general way how mental ability was distributed in those early age periods at which all reconstruction, to be effective, must be begun. In these experiments the general intelligence of 1,000 unselected school children was analyzed; sixty per cent. had average intelligence, fifteen per cent. were above the average, and fifteen per cent. were dullards, or dull normals; six per cent. to seven per cent. comprised the actually feeble-minded. The large bulk of sixty per cent. was composed of those who did fairly well under simple requirements, but their usefulness to themselves and others when out in the world would largely depend on the way they were guided and helped. These tests did not indicate the social usefulness of the individuals; this was not to be determined by tests of intelligence as this might be gained by other qualities, such as moral traits, personal appearance, influence and opportunity, and the emotional attitude of the individual toward himself and to the world. Herein lay the chief practical criticism of Professor Ternan's experiments. In addition, some possessing superior intelligence were handicapped by such qualities as moodiness, feelings of injustice, ideas of reference, and dreamy idealism, all of which were obstacles and sometimes absolute bars to success in life, but none of them were to be detected by the ordinary methods of normal psychology. When it came to an estimate of the personal equation, psychiatry could furnish a far more accurate estimate; it determined the actual value of qualities; it singled out the defects in character, and it estimated the chances of permanency of energy expended in any direction; it lay bare not only the mind but the heart.

The practical task which psychiatry had before it concerned the determination of vocational fitness, which was still a vexed question. But this had already been undertaken in the Boston Psychopathic Hospital in an effort to establish a rational attitude toward delinquents. Doctor Glueck had established at Sing Sing a clinic where the records showed that fifty per cent. of the inmates there were so handicapped mentally and physically that under given conditions they would always commit crimes.

Whoever invented the term education had an idea of it which had to a certain extent been lost to view. Etymologically, education meant to draw out, to develop something the individual had in him; but the present educational methods seemed based

rather on the idea of putting something in, more or less irrespective of what was being put in. The present methods neglected the personality of the individuals educated, while the plain fact was that education was only of use in so far as the total personality was of a character to make use of it. The real purpose of education was the upbuilding of character, the transmutation year by year of the feral propensities with which a child came into the world into cooperated and directed forces. Without this transmutation of the infantile primitive impulses into an adult coordinated selfcontrol, the individual remained against or outside social order. And psychiatry, from dealing with those who for some reason had lost, or had never obtained a grasp on reality and who were out of sorts with society, was in a position to identify the way this had happened and to suggest the remedies most likely to prevent its happening.

An example of the opposite of what education was intended to inculcate was furnished by the disease dementia præcox, which was in reality a deterioration of character. As this disease progressed those qualities which made for success were dropped off one by one. The patient, instead of being selfrestrained, became impulsive; he had sudden outbursts of temper; he refused and resisted whatever was offered to him; he was apathetic and fearful; he was suspicious and attacked those about him. There was a resumption of the affectations, grimaces, and mannerisms which should not persist after early childhood. All his behavior was the direct opposite of what it was the real purpose of education to foster. Education should view with concern the persistence of any of these characteristics beyond the time of their normal disappearance, and the presence of several of them in an individual made it important to check their further development. Sometimes an alienist was put to it to distinguish between a badly brought up child and a case of dementia præcox.

Education should have for its purpose the detection of all persons so inclined and should institute special methods for their training. It was in connection herewith that a military service was of so much benefit to a country. There was little general interest in the psychological way of looking at these things. To bridge over this general lack of public interest an institution was suggested where adolescents should be examined for the purpose of determining individual efficiency. It would have the advantage of selfsupport and there physical and mental examinations would be made which would embrace the life history of the individual. Complete records would be kept and at the end of one, or three, or five years these records would be compared with how the individual turned out.

What was needed now was a general dissemination of these views among the public at large and among educators, a great psychological representation in educational matters, and a close cooperation between alienists and psychologists and the other groups, economists, sociologists, and statesmen, who were working toward the same end, though on different lines.

# Dietetics, Alimentation, and Metabolism

## Food and Food Preparation, in Health and Disease

### FOOD AND EFFICIENCY.

BY MARTHA TRACY, M. D.,  
Philadelphia.

Professor of Physiological Chemistry, Woman's Medical College,  
Pennsylvania.

(Concluded from page 127.)

#### VIII—PRACTICAL DIETETICS.

The knowledge thus far gained by physiologists as to the daily food requirement of man in terms of proteins, carbohydrates, fats, salts, and vitamins, is of little value to the practical dietist or to the public, unless the facts can be translated into units of everyday experience, meat, potato, bread, butter, etc. It is no uncommon occurrence to meet people of superior intelligence, who may be familiar with the chemical nomenclature, entirely unaware of the true nutritional value of foods as offered in the market or at the table, because uninformed as to the presence in such foods of the essential constituents. The uneducated public is completely and pitifully ignorant in this regard.

That the average individual is appreciative of information along these lines is indicated by the intelligent interest shown by the employees of the New York Board of Health, in the data as to the fuel value of the foods offered, which is furnished on the bill of fare in the restaurant organized for their benefit under the direction of Dr. Charles F. Bolduan.

Professor Lusk's suggestion that the manufacturers of canned foodstuffs might well be compelled by law to include on the labels information as to the quantity of protein and total calorific value of the food contained therein, is deserving of serious consideration. Such a procedure would be of enormous value in educating the general public.

Elaborate and accurate analysis of common foods are now available in tabulated form for those who have time and opportunity for their use, and constitute the essential sources of reference on this subject. Among the most important are the following: *The Chemical Composition of American Food Materials*, Atwater and Bryant; *Bulletin No. 28*, U. S. Department of Agriculture; *Food Values*, Edwin A. Locke. D. Appleton & Co.; *Analysis and Cost of Ready to Serve Foods*, F. C. Gephart, Introduction by Graham Lusk, Press of American Medical Association, 1915.

Such tables are, however, somewhat unwieldy for everyday use by the housewife, and the complexity of the matter presented is usually sufficient to discourage a beginner. The following comparatively brief tables, the data for which are taken chiefly from Locke's book, seem to me to place the facts essential for the home caterer in a relatively simple and accessible form.

Bearing in mind the two main requirements for the the daily diet, namely, that it shall contain approximately 65 grams of protein with 2,500 total

calories, or 75 grams of protein with 3,000 total calories, these tables have been made to include only data as to the weight of protein and the total fuel value of the foodstuff. Since multitudes of figures are in themselves a bewildering to one unaccustomed to their use, it is believed advisable to eliminate as many unessential figures as possible.

In tables as brief as these, undoubtedly there will frequently be noted the omission of a vegetable or a dessert, or other food article which is desired for a particular menu, but by reference to the Locke or Gephart tables such an article can be looked up as occasion demands and added in its proper place according to the amount of protein and total fuel value. Thus, according to the family tastes, the tables may be enlarged from time to time.

In order to bring together portions which are comparatively uniform as regards protein or fuel content, the portion as described by Locke is in some instances modified by a qualifying word, large or small, and the analytical figures changed by a corresponding definite percentage increase or decrease. Wherever this has been done the sign (†) is placed before the name of the article. Thus the quantities suggested for a portion are approximate only, but, it is believed, are sufficiently uniform to constitute a basis for every day planning of the household meals. A little larger portion on one day will undoubtedly be balanced by a smaller portion on another day, and great accuracy is not necessary. A weekly ration of 17,500 calories is without doubt quite as satisfactory as a daily ration of 2,500 calories for seven days.

In using these tables the following simple rules will readily lead to the combinations of food materials which will supply the nutritive requirements and add the desirable variety to the daily menus.

1. For the heaviest meal of the day—dinner—select one article from each of Tables I, II, and III.
2. For luncheon, or supper, select one article from each of Tables II, III, and IV.
3. For breakfast select one article from each of Tables III, IV, and V.
4. Add together the protein values and determine what addition of protein is needed to complete the daily requirement.
5. Add together the total calorific values, and to this total add 600 calories, which will be incidentally taken during the day in accessories, as sugar, cream, butter, sauces, etc. (Table IX). Determine what fuel value must be added to bring the total for the day up to the requirement.
6. Supplement the protein and fuel as may be indicated by the necessary additions, according to taste, and to any meal desired, of articles from one or more of Tables IV to VIII.
7. Do not let the daily protein run above 75 grams for any length of time. The total fuel value

of the food may run above 2,500 or 3,000 calories without harm, especially in cold weather, unless one tends to become excessively fat.

8. Remember that the total fuel value of the ration must be increased if very active or severe muscular work is to be done, and see to it that such active worker receives double or triple portions of the food articles provided.

9. After the occasional feast day, which will do no harm to a vigorous digestive tract, eat a little less for a day or two until the weekly balance is struck.

By such use of the tables a general appreciation of the nutritive value of the common foodstuffs will be acquired in a remarkably short time, and the housewife in planning the meals for the day, or the individual selecting his or her own food in a restaurant, will by second nature, or with an educated common sense, find no difficulty in meeting the nutritive requirements without special thought as to protein or calories.

TABLE I.

Meats, Poultry, Fish.  $\frac{1}{2}$ -modification of Locke's "portion."  
High Protein Foods—Only one article from this table should be served at a meal, and preferably only once a day.

FOOD ARTICLE SECTION A	PORTION	PROTEIN GRAMS	TOTAL CALORIES
†Beef, roast	1 small slice	Rough average 265 cal.	Rough average 265 cal.
Beef, steak	1 slice		
†Chicken, fricassee	large helping		
†Lamb, roast	1 slice		
Lamb, chops	1 average chop		
†Mutton, roast	1 slice		
†Ham, boiled	large slice		
†Turkey, roast	small slice		
†Salmon	large helping		
†Mackerel	double helping		
SECTION B			
Beef, scraped (round)	4 in. pat.	Rough average 21 grms.	Rough average 130 cal.
†Chicken, roast	small helping		
Mutton, chops	1 chop		
Mutton, boiled	1 slice		
†Pork, roast	small slice		
†Pork, chops	1 large chop		
Veal, roast	1 slice		
Bluefish	small helping		
Codfish	average helping		
Halibut	average helping		
Spanish mackerel	average helping		
†Clams (long)	10 clams	Rough average 100 cal.	Rough average 100 cal.
†Crab, hard shell	1 large crab		

TABLE II.

Green Vegetables.—Low fuel and protein value (exception, corn).  
Valuable for salts, vitamins, and bulk. At least one article from this table should be included in the day's ration.

FOOD ARTICLE	PORTION	PROTEIN GRAMS	TOTAL CALORIES
Squash	2 heap. tablesps.	1.3	Rough average
Spinach	2 heap. tablesps.	2.1	55 cal.
Tomatoes, raw	1 average size	2.4	
Tomatoes, cooked	3 heap. tablesps.	1.2	Rough average
Asparagus, canned	average helping	1.8	20 cal.
Beets	2 heap. tablesps.	1.6	Rough average
String beans	1 heap. tablesps.	0.7	7 cal.
Carrots	3 heap. tablesps.	0.5	140 cal.
Cabbage	1 heap. tablesps.	0.6	
Cauliflower	2 heap. tablesps.	1.0	
Turnips	2 heap. tablesps.	0.4	
Corn, green boiled	1 ear	3.5	

Any of the above articles used as salad with mayonnaise dressing will be increased in fuel value by 187 calories.  
Cream sauce added in serving any of the above articles will increase the fuel value by 91 calories.

TABLE III.

"Starchy" vegetable foods. High fuel value (carbohydrate).  
Low Protein.—Only one article from this table should be used at a meal.

FOOD ARTICLE	PORTION	PROTEIN GRAMS	TOTAL CALORIES
Potatoes—white		Rough average 3.5 grms.	Rough Average 140 cal.
Baked	1 medium size		
Boiled	1 medium size		
Creamed	1 heap. tablesps.		
Mashed	3 heap. tablesps.		
Potatoes—sweet boiled	1 small size		
Rice, boiled	1½ heap. tablesps.		
Macaroni, boiled	3 heap. tablesps.		

TABLE IV.

Foods containing moderate protein of animal origin.

Two articles from this table may be used at the same meal, but preferably not with articles from Table I.

FOOD ARTICLE SECTION A	PORTION	PROTEIN GRAMS	TOTAL CALORIES
Egg, boiled	1 egg	Rough average 7.2 grms.	Rough average 150 cal.
Egg, raw	1 egg		
Milk, skimmed	1 glass		
Butter milk (from churn)	1 glass		
American cheese	1 cu. in.		
Cream cheese	1 cu. in.		
Chicken sandwich	1 sandwich		
Ham, fried	average portion		
Sardines, canned	3 fish		
Oysters, raw	5 oysters		
Whole milk		Rough average 7.2 grms.	Rough average 150 cal.
Omelette, 3 eggs	1 omelette		
	3 tablesp. milk		
	1 heap. teasp. butter.		
	average helping		
Meat stew	2 heap. tablesps.	Rough average 300 cal.	Rough average 300 cal.
Custard pudding	2 heap. tablesps.		
Sausage, country	large sausage		
Bacon	2 slices		
Ham sandwich	sandwich		
Cream toast	slices with 5 tablesps. sauce		
Macaroni, baked with cheese	1 tablesp.		
†Custard pie	1 pie		
Mince pie	1 pie		

Section B.—Foods containing moderate protein of vegetable origin. Two articles from this table may be used at the same meal. Useful with or without articles from Table I to raise the protein ration up to the requirement.

FOOD ARTICLE	PORTION	PROTEIN GRAMS	TOTAL CALORIES
Baked beans, canned	3 heap. tablesps.	Rough average 7.2 grms.	Rough average 300 cal.
Lima beans	2 heap. tablesps.		
Green peas	4 heap. tablesps.		
†Peanuts	10 nuts		
†Brazil nuts	2 large nuts		
†Pecans	2 large nuts	Rough average 300 cal.	Rough average 300 cal.
Walnuts	6 nuts		
Cocoa	1 cup		
1 heap. teasp. cocoa.			
1 heap. teasp. sugar			
34 cup milk			
1 tablesp. cream			

TABLE V.

Breadstuffs and Cereals—High fuel value (carbohydrate) with low protein.

Section A.—Breadstuffs. Useful additions to every meal in twice and three times the portion given.

FOOD ARTICLE	PORTION	PROTEIN GRAMS	TOTAL CALORIES
Corn bread	1 slice 3x4x½ in.	Rough average 3.0 grms.	Rough average 100 cal.
White bread, baker's	1 slice 3x4x½ in.		
White bread, homemade	1 slice 3x4x½ in.		
Vienna roll	1 roll		
Biscuit, homemade	1 biscuit		
Graham bread	1 slice 3x4x½ in.		
Whole wheat bread	1 average slice		
†Graham crackers	3 crackers		
†Saltines	8 crackers		
†Butter crackers	6 crackers		

Section B.—Cereals. Only one article from this table should be used at a meal.

FOOD ARTICLE	PORTION	PROTEIN GRAMS	TOTAL CALORIES
†Oatmeal, boiled	3 heap. tablesps.	Rough average 2.8 grms.	Rough average 100 cal.
Shredded wheat	1 biscuit		
Indian meal mush	3 heap. tablesps.		
Hominy, boiled	2 heap. tablesps.		

Sugar and cream on cereal will add 250 calories.

TABLE VI.

Nutritious Soups—High fuel value due to carbohydrate and fat. Low protein. Useful to increase the fuel value of any meal. When one of these is selected a fruit dessert is desirable.

FOOD ARTICLE	PORTION	PROTEIN GRAMS	TOTAL CALORIES
Mock turtle soup	4 oz.	6.2	Rough average
Chicken soup, homemade	3 oz.	9.1	55 cal.
Bean soup, homemade	4 oz.	3.8	
Cream soups:			
Asparagus	4 oz.	3.4	
Celery	4 oz.	3.0	Rough average
Corn	4 oz.	3.7	125 cal.
Potato	4 oz.	2.8	
Tomato	4 oz.	2.8	
Pea	4 oz.	2.0	
		6.2	

Note.—Clear soups are of low fuel value, and useful merely as stimulants to flow of digestive juices.



TABLE VII.

Desserts—Protein negligible to moderate. Fuel value high (carbohydrate). Useful food articles to bring the fuel value of day's ration up to the requirements.

FOOD ARTICLE	PORTION	PROTEIN (GRAMS)	TOTAL CALORIES
Tapioca pudding	3 heap. tablesps.	5.8	Rough average 165 cals.
Ice cream	2 heap. tablesps.	5.2	
Doughnuts	1 doughnut	2.4	
Fruit cake	1 Slice 2½x4x½ in.	1.4	
Sugar cookies	3 cookies	2.3	Rough average 275 cals.
Apple pie	½ pie	3.9	
Squash pie	½ pie	5.8	
Bread pudding	2 heap. tablesps.	5.5	
Indian meal pudding	2 heap. tablesps.	9.0	Rough average 275 cals.
Orange ice	2 heap. tablesps.	6.0	
Gingerbread	1 Slice 2½x1 in.	3.4	
Chocolate layer cake	1 average slice	4.3	

TABLE VIII.

Fruit—Fuel value high to moderate (carbohydrate), protein negligible. Useful additions to any and every meal on account of organic acids, salts, and vitamins.

FOOD ARTICLE	PORTION	PROTEIN (GRAMS)	TOTAL CALORIES
Banana	1 average size	1.5	Rough average 135 cals.
Grapefruit	½ large size	2.3	
Apple, baked	1 large apple	0.6	
Apple sauce	2 heap. tablesps.	0.2	
Crabberries, stewed	2 heap. tablesps.	0.7	Rough average 85 cals.
Rhubarb, stewed	2 heap. tablesps.	0.4	
Apple, raw	1 average size	0.4	
Cantaloupe	¼ average size	1.4	
Orange	1 average size	1.5	Rough average 45 cals.
Peach	2 average size	1.2	
Pear	1 average size	0.7	
Blackberries	3 heap. tablesps.	1.3	
Strawberries	4 heap. tablesps.	1.0	Rough average 45 cals.
Raspberries	3 heap. tablesps.	0.8	
Pineapple	2 slices	0.4	

TABLE IX.

Accessories—Moderate to high fuel value (carbohydrate or fat), negligible protein. Commonly used additions to every meal, and can usually be expected to add 600 calories or more to the day's ration without particular calculation. C—Carbohydrate. F—Fat.

FOOD ARTICLE	PORTION	PROTEIN (GRAMS)	TOTAL CALORIES
C-Sugar, loaf	1 cube	29	
Loaf	1 domino	25	
C-Granulated	1 heap. teaspoon	41	
C-Honey	1 tablesp.	101	
C-M Maple syrup	1 tablesp.	88	
C-F-Cream sauce	1.3 tablesps.	91	
F-Olive Oil	1 tablesp.	121	
F-Mayonnaise dressing	1 tablesp.	187	
F-Cream, average	1 tablesp.	54	
Heavy	1 tablesp.	72	
Whipped	1 heap. tablesp.	81	
F-Butter	1 average ball	110	

There are a number of considerations which require some further discussion. Note particularly that the foods of animal origin are conspicuous as the chief protein containing foods. Next to these in protein content are the leguminous vegetables, peas and beans, and the nuts. Cereals contain small but useful quantities of protein, but in the so called coarse vegetables and the fruits, this food element is usually present in such minute amounts as to be practically negligible.

The animal foods offer their high fuel value, as is shown in the tables to the presence of fat. Some vegetable foods also contain fat in abundance, as olive oil and nuts. The vegetable foods for the most part, however, owe the high fuel value, noted in potatoes, rice, and other cereals, macaroni, bread, and sweets, to the presence of the carbohydrates, sugar, and starch which is changed to sugar in digestion.

You may ask, if I like meat and eggs and milk better than vegetables and bread, and the protein in these foods can be used for fuel, why should I not eat more meat and burn it instead of carbohydrates? The answer to this lies in the fact that, as already shown, protein contains nitrogen and phosphorus and sulphur. The body needs these, as we have noted, in small amounts for tis-

sue building purposes, but the nitrogen, phosphorus, and sulphur taken in excess of the tissue building needs, yield very little energy on oxidation. Only the carbon and hydrogen parts of the protein are useful as fuel, so that the first work of the body upon the excess of protein is to break off the nitrogen, phosphorus, and sulphur, and oxidize these elements to a condition in which they can be passed to the kidney for excretion. The kidneys then will have to do a great deal of unnecessary work to get rid of these waste products and may undergo a chronic inflammation due to the abnormal strain.

Certain persons, furthermore, are particularly susceptible to the toxic effect of the nitrogenous waste products, such as the so called purin substances of which uric acid is an example, and which are derived chiefly from the meat foods. Retention of excess of uric acid in the body accompanies symptoms which we designate as "gouty," and individuals liable to the development of these conditions may find it necessary to cut down the protein of the food to considerably less than seventy-five grams a day, and to eliminate entirely the meat foods, which are conspicuous "purin formers."

Certain diseases of the skin, also, eczema and psoriasis, characterized by scaly eruptions, have been shown to be related to excess of protein in the diet. We must bear in mind, in addition, the important consideration that animal foods are relatively expensive, and while a certain proportion of animal protein is extremely desirable, it is poor pocketbook economy, as well as poor physiological economy, to eat too largely of these substances. Carbohydrates and fats are just as satisfactory fuel and their use is not open to the above objections.

But some one may say, I do not like meat at all and prefer to eat only vegetables; why cannot I take all the protein I need in vegetable form? It must, however, be remembered that vegetable proteins are less like the proteins of our tissues than are proteins of animal origin. Many of them are deficient in certain of the essential building stones, the aminoacids, and consequently we must take more of them to supply adequately our needs in this respect. The large amount of vegetable food that would be necessary to furnish enough protein would contain too much carbohydrate. These foods are bulky and the appetite is lost before the needed amount is consumed, the digestion of so much is difficult, and there is danger of bacterial fermentation and uncomfortable gas formation in the intestinal tract. A strict vegetarian runs one of two risks: he is in danger of disturbing digestion by excessive bulk of vegetable food, this being unavoidable if he is to secure sufficient protein; or he is in danger of not supplying adequate protein to keep the body tissues properly repaired. The experience of many physicians indicates that those persons who maintain a strict vegetable diet are less resistant to infections, and are less well able to endure the effect of an anesthetic if a surgical operation becomes necessary than are those whose tissues are well reinforced by adequate protein from animal sources. Eggs and milk can, if desired, take the place of meat, and in using the food tables here given in such cases two articles or more

from Table IV may replace one article from Table I in the dinner menu. Eggs and dairy products are obviously not of vegetable origin, and an individual who adds these to the dietary is not a vegetarian, though often popularly so called.

Cooking is of considerable importance in bringing foodstuffs into an edible and appetizing condition, and in rendering the nutritive substances more accessible to the digestive juices. Bacteria and parasites are usually killed by cooking also. There may, however, be considerable loss of food material in the cooking process, and this should be more generally appreciated and guarded against. It has been shown,<sup>1</sup> for example, that as much as thirty-seven per cent. of the fat, and sixty-seven per cent. of the inorganic salts will be found in the water in which meat has been boiled; and that when meat is roasted as much as fifty-seven per cent. of the fat and fifty-seven per cent. of the salts may be found in the drippings. The use of the broth and the drippings in soup or gravy will save these materials. Potatoes may lose thirty-eight per cent. of the inorganic salts, and carrots may lose forty per cent. of the nitrogenous matter and twenty-six per cent. of the sugar, on boiling. <sup>2</sup>As the vegetables are important sources of inorganic salts, calcium, and iron, and phosphorus, the possibility of this loss should be borne in mind and the vegetable broths used in soup when possible. Potatoes when baked do not lose their nutritive value in this way.

The differences in digestive capacity of normal individuals constitute still another factor to be reckoned with in selecting the daily ration, and the existence of real physiological idiosyncrasies against, or antipathies to, certain foods, must be recognized by the physician and the general dietist, and must be given serious consideration in every dietetic plan and recommendation.

In conclusion, it is to be borne in mind that the facts and suggestions here collected are presented from the point of view of the nutritional requirements of a normal vigorous adult leading a more or less active life. Thus a normal digestive capacity is assumed, and no attempt has been made to suggest food articles particularly suited to the less vigorous digestive capacity of young children or of invalids. Dietetic prescriptions to meet such conditions are more properly included elsewhere.

When, however, we have succeeded in arousing the interest and securing the cooperation of every normal adult, not only in understanding the relation between food and efficiency, but in practising the principles thus learned, we shall find fewer persons with subnormal digestive capacity, and we shall have made a tremendous stride in preventive medicine.

**Cocoanut Oil.**—Oil expressed from the cocoanut and then refined and neutralized is being used more and more not only to replace fats, but cotton seed oil as well, for frying foods. It is also used as a substitute for animal fats such as butter and margarine. It is a clean, appetizing product and is easily digested.

<sup>1</sup>Griffiths and Mojonier, Bulletin No. 141, U. S. Department of Agriculture.  
<sup>2</sup>Snyder, Frisby and Bryant, Bulletin No. 43, U. S. Department of Agriculture.

**A Lesson in Dietetics from the Dog.**—Dog fanciers have long noted that when a house dog begins to get fat and wheezy, it is likely that it has been attacked by a stubborn skin disease. In such a case they cut down the diet and increase the open air exercise, thus relieving the overburdened body of poisonous substances.

The sin of gluttony is common and therefore much condoned, but, like every other violation of Nature's laws, has a penalty. Fat inefficiency, sluggish mentality, the reddened nose, the pimpled face, certain of the chronic skin eruptions, and much fatigue and nervousness are due to abuse of the digestive apparatus. Rich, indigestible foods in large quantities, highly seasoned to stimulate the jaded palate, are forced into a body already rebellious from repletion. Exercise is largely limited to walking to and from the table, and bodily deterioration proceeds rapidly. Many on overfed dyspeptic, suddenly dragged by the stern hand of circumstances from a life of physical ease and plenty and forced to work out of doors, suddenly discovers that his semiinvalidism has gone, that a chronic skin derangement of many years' standing has disappeared, and that a new vigor and zest of life has been given to him.

Not every one can spend his whole time in the open air, but a certain amount of exercise and plain wholesome food in amount not exceeding the body's needs, can be had by almost every one. Simple moderate diet and exercise make for health.

**The Use of Large Quantities of Fruit Juice for Atrophic Infants.**—H. B. Gladstone (*Practitioner*, November, 1916) says that fruit juice can be taken to the extent of a pint daily with immediate benefit to a dyspeptic atrophic infant under one or two years of age. A carefully selected predigested food, low in albumin and fat and high in sugar, will then be both digested and absorbed and result in gain of weight. At first a loss of weight must be expected, but, by the end of the first week, this usually is regained. Unless the juice is followed by a diet scientifically adapted to a weak digestion, it does no permanent good. The juice acts partly on account of its acid reaction, rendering the bowel unsuitable for germs growing in an alkaline medium. It has a tonic, cleansing effect on the mucous membrane of the digestive tract, and is a diaphoretic, diuretic, and general alterative. It supplies an attractive drink, enjoyed by all babies, containing ten per cent. of soluble carbohydrate food, removes the irritability and restlessness of the child, promotes quiet sleep, and renders the digestive organs able to digest and absorb a light diet. Two parts of orange to one of apple juice, diluted with one quarter the quantity of water, seemed to give the best results. When oranges are unobtainable, melon and apple juice has been used with somewhat less good results. Strawberry, cherry, raspberry, and banana juices have been taken and enjoyed by babies without bad effects, and it is probable that any fruit juice would succeed, provided that the acid fruits were not used in too large a proportion. When oranges are out of season, it may be well to add a small quantity of lemon juice to the sweeter fruit juices, to supply the necessary acidity.

# Editorial Notes and Comments

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

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Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JANUARY 13, 1917.

## BRAINS AS AN ASSET

It is a remarkable fact, with the general endorse-  
ment accorded in recent years to the necessity of  
physical examinations, and the wide latitude given  
to boards of health in the enforcement of recom-  
mendations for the identification and control of  
contagious diseases, that the public has acquired so  
little insight into the defects and disturbances of  
intelligence as factors in social unrest and ineffi-  
ciency. The government spends large sums for the  
prevention and detection of the purely physical dis-  
eases, but it spends practically nothing for the study  
and prevention of mental diseases and intelligence  
defects. The proof of the wide distribution of men-  
tal incapacity is to be found on every hand, and  
large amounts have to be paid out for the late re-  
sults of insanity and criminal tendencies. It would  
seem only commonsense for a government to look  
this matter in the face and to attempt to determine  
whether something could not be done earlier to make  
the list of its delinquents and dependents smaller in  
number.

In his address at the annual meeting of the New  
York Academy of Medicine, on January 4th, Dr.  
Pearce Bailey drew attention to these matters, using  
the attitude of industrial enterprises toward its em-

ployees as an example for the government to emulate  
in regard to its people. Industry rejects the unfit  
at the start. A government cannot reject them, but  
it can at least recognize them and make special pro-  
vision either for their education, their partial em-  
ployment, or their early custodial care. So far this  
idea has received recognition only by the establish-  
ment of graded classes in the schools. The same  
principles should be applied to the mental disorders  
as those now coming into use for mental defects.  
This can only be done when the public realizes more  
fully how much psychiatry has to offer in the way  
of solving national problems. It can be a great aid  
in the helping of vocational choice for the partially  
fit, it can detect criminal tendencies at the outset, and  
in this way lead to the prevention of a great deal  
of crime, and its principles must be incorporated in  
the practical aspects of education if education is  
going to be of value to the person educated. In  
fact, it would seem as though an immediate recog-  
nition by educators of psychiatric principles would  
be the surest way of diminishing the ravages of in-  
sanity in this country. As there are substandard  
classes in the schools, so there should be a recog-  
nition of children predisposed to insanity, and even  
showing some of the symptoms of insanity in early  
youth, who should have special training and spe-  
cial drills. It is confidently predicted that such man-  
agement of predisposed children would keep many  
of them from ultimately becoming insane.

There are only three psychopathic hospitals for  
the insane in this country, and only three psychiatric  
institutes. The total budget is less than \$50,000 a  
year. This is scant provision for a problem which  
runs into the hundreds of millions. The government  
would permit no such neglect of investigation if  
cotton or wheat were concerned.

## THE TREATMENT OF DIABETES BY ALIMENTARY REST.

Prolonged fasting, as a treatment for diabetes mel-  
litus, otherwise known as the Allen treatment, is  
largely employed throughout the world. This man-  
ner of treatment appears to have met with a great  
deal of success, speaking generally. In the *Practi-  
tioner*, November, 1916, are three papers dealing  
with the starvation treatment of diabetes, one of  
which is by Dr. P. J. Cammidge. He points out  
that the treatment of diabetes mellitus by prolonged  
fasting was suggested by the experimental investiga-  
tion of von Mering and Minkowski, who conclusively  
proved in 1889 that the pancreas exerts an impor-



tant control over carbohydrate metabolism. However, the hopes aroused by this discovery that therapeutic measures for the relief of diabetes would follow, have been doomed to disappointment until a comparatively recent date, when Thiroloix and Jacob in 1912 and Allen in 1913 pursued investigations in this direction. The first named investigators found that in suitably prepared animals, the onset and progress of the glycosuria of diabetes can be hastened by overfeeding with carbohydrates. Allen went further in the investigation of the matter and first published his results in 1913.

The details of the treatment and the underlying principles are sufficiently well known to American medical readers and therefore, some of Cammidge's points will be only briefly considered. He lays stress on the fact that education of the patient is always an important part of any form of dietetic treatment, and, in the case of the fasting treatment of diabetes, is essential. In order, then, that this intelligent cooperation may be gained, the aims of the treatment and the means by which they are maintained should be clearly explained, and the diabetic should be instructed subsequently in the more important points concerning the properties and functions of different classes of food materials. Cammidge has found that a considerable number of patients do better when they are allowed to get about and occupy themselves than when they are kept in bed.

According to his way of thinking, one of the weaknesses of the Allen treatment, is the manner in which the diet is regulated entirely by the presence of an abnormal sugar content in the urine and blood. This does not furnish a reliable guide to protein tolerance, for although sugar is formed in the metabolism of proteins, and while this may be passed unutilized in the urine in some cases of diabetes, a large excess of protein food over what is really needed may be taken without there being any glycosuria in many instances. Cammidge is of the opinion that the effect of such an excess is to raise the level of metabolism, promote avoidable waste, and throw unnecessary work on the liver and kidneys, which are already defective and working under difficulties in more cases than is generally supposed. He considers that better and more permanent results will be obtained from the fasting treatment, if the nitrogen loss in the urine, is taken as the chief guide in fixing the amount of nitrogenous food than if attention is solely confined to the appearance of sugar in the urine. In reviewing the effects of the Allen treatment, Cammidge holds that while this method is the best form of treatment at present available for cases of diabetes of the acute and subacute types, it must not be concluded that it is an easy road to a cure, or that it can be used indis-

criminately in all cases in which reducing substances are passed in the urine. Cases for the fasting treatment must be carefully chosen, for all patients do not do well on the method. Moreover, the fact must always be borne in mind that fasting is after all only preliminary treatment to the task of adjusting the diet to the patient's defective powers of metabolism. The medical attendant, therefore, must have an accurate knowledge of food values and of the composition and use of foods, if he is to treat diabetes or any disease successfully by dietetic measures.

#### VITAMINES AND BACTERIAL GROWTH.

Almost every one is now more or less familiar with the existence of that ill defined group of accessory food substances called by Funk, vitamins. Their varied roles in the maintenance of normal nutrition and the promotion of normal growth in animals and man are rapidly being defined, so that we now have a group of diseases which are generally recognized as resulting from the deficiency of one or another of these accessory substances. That vitamins, however, may be of importance in the growth of such simple organisms, biologically, as bacteria, has not heretofore been considered, except perhaps by an isolated worker here and there.

Some very recent observations made by Martin Flack (*Brit. Med. Jour.*, November 18, 1916) therefore, are of considerable interest in connection herewith. In the course of an extensive series of experiments designed to determine the growth requirements of the meningococcus, certain media were elaborated which seemed to give the best conditions for the artificial cultivation of these organisms. Flack found that the addition of a sterilized extract of pea flour to the best of the media greatly favored the growth and multiplication of the organisms. This material, however, did not have any effect upon prolonging the period of life of the organisms in artificial cultures. If, however, an extract from the wheat grain was added in place of the pea flour extract the life of the organisms was greatly prolonged. In this case the growth and multiplication of the organisms were not enhanced.

Both pea flour and wheat germ are known to be rich in vitamins, and the observations just recorded could not be attributed to the presence of any other substances contained in either of these materials. The differences in the effects of the two were striking, and the only explanation forthcoming was that the pea flour contained a vitamin which was essential to the growth of the meningococcus and which was capable of greatly enhancing it without influencing the viability of the organism. The vitamin

of the wheat germ also influenced growth, but in a different way, prolonging the vitality. The conclusion is obvious that the two vitamins are distinct, at least in the biological sense. Their chemical constitution, as is the case with the other vitamins, is not known.

Although seemingly of minor importance in themselves, these observations are of great significance, for they open up a new field of bacteriological research which may be of inestimable importance. It would scarcely be going too far to suggest that as a result new and valuable knowledge might be gained for the bacterial therapy and the treatment, specific or otherwise, of certain microorganismal diseases.

### THE ACCURACY OF DEATH CERTIFICATES.

There exists, unfortunately, too great a tendency to treat lightly, or even facetiously, the problem of making a complete and accurate return to the health authorities of the cause of the death of patients. This is especially true among those of us who have to do with a large number of indigent or public patients during the year, physicians to the poor, the resident or visiting physicians of almshouses, insane asylums, and other institutions. This is not to be taken to mean that the patient was neglected during life, but when all that is possible has been done for him before death there is a temptation to close up the case by writing in the death certificate a cause of death which we know by experience will be accepted by the health department without question and let it go at that, even though we entertain a secret doubt as to the accuracy of the diagnosis. The usual character of such cases, too, contributes to this state of affairs. In many of our aged patients in almshouses the flame of life burns so feebly that it is easily jostled out and our knowledge of geriatrics is so nebulous that it is often difficult to determine the cause.

The writer of this recalls one able, though venerable physician, who was head of a charitable organization in which he worked for a time. This doctor was fond of quoting the ancient dogma of the French physiologist about life resting on a tripod; he held in consequence that immediate cause of death should either be the cessation of breathing, apnoea, or the stopping of the heart, syncope, or the paralysis of the nervous system, coma. Hence the medical certificates which were filled out by the internes and signed by him showed a startling lack of variety in the content of the space reserved for the immediate cause of death, however variegated they might be regarding the space above that. In cases of doubt he was accustomed

to question the physicians under him carefully as to whether coma, or apnoea, or syncope occurred first, which was a poser in the not infrequent instances when death took place while the interne was struggling with a refractory pair of trousers in a dark room, in a desperate endeavor to make himself sufficiently presentable to venture out into the wards.

It is the custom of statisticians from other countries, particularly Germany, to ridicule the vital statistics of this country, and, however jingoistic we may be along other lines, we are forced to admit that their criticisms are not groundless. It is not too much to hope that at some future date there may be a national health department and uniform laws governing registration of all kinds. In the meantime steps are being taken to standardize causes of death; the most intensive work is being done by a committee appointed by the Section on Vital Statistics of the American Public Health Association in September, 1915. This committee has held nine meetings since that time and in a recent *Public Health Report*<sup>1</sup> has published the result of its thorough study of the 189 causes of death given in the International List. Of these, seventy-six are recommended for separation as unreliable unless verified by autopsy or supported by specific observation or laboratory proof. These seventy-six include such well known diseases as malaria, influenza, syphilis, general paresis, epilepsy, pericarditis, and appendicitis. In their report they also consider each one of the 189 causes in detail, commenting on whether or not it should be accepted without verification, what terms should be included under it, and what terms usually included under it should be classified elsewhere.

Their whole report, which is easily procurable from the Government Printing Office at Washington, D. C., for a nominal price, should be read by every physician. It is impossible to estimate the amount of good which would follow the universal application of care and accuracy to the filling out of death certificates. Certainly the field of preventive medicine would be greatly enriched and the health, industrial, and life insurance companies would have their usefulness to humanity greatly extended.

### TREATMENT OF ACUTE CARDIAC FAILURE BY INTRAVENOUS INJECTION OF STROPHANTHIN.

There occurs a fairly large number of cases of cardiac failure, in which, if the heart rate is not reduced rapidly, the outlook is hopeless. These are emergency conditions and must be treated by heroic

<sup>1</sup>The Accuracy of Certified Causes of Death. Its Relation to Mortality Statistics and the International List. *Public Health Reports*, September 22, 1916.

measures, as half way measures, that is, a gradual slowing of the heart's action, in the vast majority of instances would be useless. In the *Liverpool Medico-Chirurgical Journal*, No. 69, 1916, Dr. John Hay recommends in the treatment of these urgent cases the intravenous injection of strophanthin in doses varying from 1/500 to 1/50 of a grain. He summarizes the important points as follows: 1. Acute cardiac failure is due in many cases to the onset of auricular fibrillation in hearts already handicapped by disease. 2. It has been proved that of all drugs the digitalis group is the most potent in regulating such hearts. 3. The onset of the cardiac failure is sometimes so sudden and the downward progress so rapid that oral medication may prove too slow to be of any service. 4. At times the patient's stomach will not tolerate any member of the digitalis group, and a vicious circle is set up which ends in the death of the patient. 5. In such cases strophanthin injected into a vein produces immediate definite slowing of the heart, with rapid amelioration of the patient's condition, and without doubt has saved many lives.

## News Items

**Change of Address.**—Dr. Frank R. Starkey, from Philadelphia to Suite 812-815, Kresge Medical Building, Detroit, Mich.

**United Hospital Fund of New York.**—Members of the Bankers and Brokers Auxiliary of this fund have donated \$20,045.

**To Study Health Conditions in South America.**—The International Health Board is planning to make a survey of conditions of life among the people of Argentina and Uruguay. Dr. Richard M. Pearce, John Herr Musser professor of research medicine at the University of Pennsylvania, will sail on this mission on January 15th.

**A Sanatorium at Atlantic City Planned.**—It is reported that plans are under consideration for the erection of a sanatorium at Atlantic City, N. J., at a cost of about \$1,000,000. Dr. Emory Marvel is said to be behind the project and has been assured unlimited support. Several sites along the beach are under consideration, and as soon as the plans have been perfected further announcement will be made.

**St. Mark's Hospital, New York.**—Announcement is made by the president of the board of managers, Dr. Benjamin T. Tilton, that this hospital, which is situated at 177-181 Second Avenue, has added to its holdings by the purchase of the corner property at Eleventh Street and Second Avenue, adjoining the present hospital property. It is planned to make use of this enlargement of the hospital for the care of private patients.

**West Philadelphia Medical Association.**—The following officers were elected at a recent meeting of this association: President, Dr. William S. Newcomet; vice-president, Dr. Charles E. Price; secretary, Dr. Henry G. Munson; treasurer, Dr. Edmund L. Graf. Dr. A. L. Bishop, Dr. S. A. Brumm, Dr. George F. Levan, and Dr. Justus Sinexon were elected additional members of the board of directors to serve for three years.

**Yorkville Medical Society.**—A stated meeting of this society will be held on Monday evening, January 15th, at the Aschenbroedel Club, 144 East Eighty-sixth Street, New York, under the presidency of Dr. Adolph Schoen. The program will consist of a symposium on gonorrhea, as follows: The Genitourinary Viewpoint, by Dr. L. Sasover; the Gynecological Viewpoint, by Dr. Arthur Stein; the Orthopedic Viewpoint, by Dr. Sigmund Epstein; the Sociological Viewpoint, by Dr. M. Rabino-witz. The discussion will be opened by Dr. Frederick B. rhoft.

**The Examination of Cancer Tissue by the Health Department.**—At the request of the Department of Health, the budget for 1917 provides for the services of one pathologist for the purpose of examining specimens of tissue for cancer diagnosis. The work will be under the direction of the Bureau of Laboratories and will be undertaken as soon as certain important details can be arranged. When this is done announcement will be made in the *Weekly Bulletin* of the department as to how and where the specimens are to be sent.

**Registration of Births and Deaths.**—In 1913 the legislature of the State of Arkansas passed a law providing for the appointment of local registrars of births and deaths by the State registrar of vital statistics and for the payment of local registrars by the counties on certification by the State registrar that prompt reports had been made to him. The Supreme Court of Arkansas has decided that under the constitution of the State the counties can not be required to pay the local registrars, as they are considered to be State officers. This feature of the law has therefore been declared unconstitutional.

**Insanity in Massachusetts.**—One person in every 257 in Massachusetts is suffering from some form of mental disease and is under observation, according to the first annual report of the Commission of Mental Diseases, the successor to the old State Board of Insanity. The report states that the number of these persons is increasing so rapidly that accommodations are necessary for 658 more patients and 114 more nurses. On October 1, 1916, there were 18,710 persons under the supervision of the Commission, of whom 15,049 were insane, 2,876 feeble-minded, and 670 epileptic.

**Doctor Biggs to Study Tuberculosis Situation in France.**—Dr. Herman M. Biggs, New York State Commissioner of Health, has been granted a leave of absence to go to France to make a survey of the tuberculosis situation behind the trenches, to study measures for its relief, and to ascertain along what lines American assistance may be made most effective. This work is being undertaken by the Rockefeller Foundation. Dr. Linsley R. Williams, Deputy Health Commissioner, will act as commissioner during the absence of Doctor Biggs.

**A Department of Ophthalmology at Bellevue.**—An ophthalmological service has been added to the other departments of Bellevue Hospital, New York. It is situated in the new surgical pavilion but is entirely distinct from the rest of the hospital, having its own operating, examining, and dressing rooms, a staff of attending surgeons, special interns, and nurses; its capacity for the present will be fifty beds. The service is in charge of Dr. Charles H. May, attending surgeon, who will have as his principal assistants Dr. Julius Wolff and Dr. John M. Wheeler.

**Free Dental Clinic for Children.**—Announcement is made by the New York College of Dentistry that it will hold a free clinic at 205 East Twenty-third Street on Saturday afternoons, at which children between the ages of seven and fourteen years may have their teeth cared for without charge. Dr. Thomas Darlington, formerly Commissioner of Health and now professor of anatomy at the college, said that the institution would have ninety chairs available for this new work. The clinic is the only free one for children now maintained by a dental college in this city.

**Sweeping the Sidewalks.**—At a recent meeting of the Board of Health of the City of New York, a new section was added to the Sanitary Code, regulating the sweeping and cleaning of sidewalks. This section holds householders responsible for the cleanliness of their sidewalks. All dirt must be swept up and removed; sweeping into the gutters is prohibited unless the sweeping be done between six and eight in the morning. This section of the code was adopted in response to numerous complaints from citizens concerning the filthy conditions of sidewalks in many parts of the city and after conference with the Street Cleaning Commissioner. In its enforcement, the Department of Health will cooperate with the Department of Street Cleaning.



**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, January 15th, Clinical Association, Woman's Hospital Medical Society, Society of Normal and Pathological Physiology, Blockley Medical Society; Tuesday, January 16th, West Branch of the County Medical Society; Wednesday, January 17th, County Medical Society (business meeting), Section in Otology and Laryngology of the College of Physicians; Thursday, January 18th, Section in Ophthalmology of the College of Physicians, Northeast and Southeast Branches of the County Medical Society; Friday, January 19th, Jefferson Hospital Clinical Society.

**National Association for the Study and Prevention of Tuberculosis.**—The next annual meeting of this association will be held in Cincinnati, Ohio, May 9th, 10th, and 11th, under the presidency of Dr. E. R. Baldwin, of Saranac Lake, N. Y. Dr. W. S. Rankin, of Raleigh, N. C., and Dr. James Alexander Miller, of New York, are vice-presidents of the association, and Dr. Henry Barton Jacobs, of Baltimore, is secretary. The chairmen of the various sections are: Dr. Roger S. Morris, of Cincinnati, clinical section; Dr. Paul G. Woolley, of Cincinnati, pathological section; Dr. Charles P. Emerson, of Indianapolis, advisory council, and Mr. Frank H. Mann, of New York, sociological section.

**Universal Military Training Endorsed by Heads of Medical Schools.**—The deans of ninety-five medical schools of the United States met in Washington, D. C., recently at the invitation of Secretary of War Baker to discuss plans for cooperation with the Council of National Defense, and adopted a resolution declaring that a system of universal military training would be "of great benefit to the health, development, and proficiency of the youth of this land in both peace and war." The resolution also petitioned the Secretaries of War and the Navy to supply each medical school with an instructor in military sanitation and medicine, beginning not later than February 1, 1917, in return, promising that such instruction would be made an obligatory part of their courses. The resolution was introduced by Dr. Victor C. Vaughan, dean of the medical school of the University of Michigan.

**The Trudeau School of Tuberculosis.**—The second term of this school opened on Wednesday, January 3d. The course lasts six weeks, closing on Saturday, February 10th, and the third course will begin during the month of June. These courses are arranged for physicians who desire to study tuberculosis intensively, and to perfect themselves in diagnosis, including institutional methods. Both clinical and laboratory instructions are provided. The fee for the six weeks' instruction is \$100 with \$10 additional for incidentals. A limited number of fellowships will be granted each year to qualified workers, preferably those who are or may have been under treatment for tuberculosis. The aim will be to give preference to graduate students, but undergraduates and nonmedical students are eligible. A detailed prospectus and information about the school will be sent upon application to the director, Dr. Edward R. Baldwin, Saranac Lake, N. Y.

**Institutions Must Report Puerperal Septicemia and Suppurative Conjunctivitis.**—Hereafter the Department of Health will prosecute violations of that section of the Sanitary Code which requires reports from institutions of all cases of puerperal septicemia and of suppurative conjunctivitis under their care.

Section 91 of the Sanitary Code is as follows: "It shall be the duty of the manager or managers, superintendent, or person in charge of every sanitarium, day nursery, convalescent home, home for children, reformatory, training school, boarding school, hospital, dispensary, or other institution for the care or treatment of persons, in the City of New York, to immediately report or cause to be immediately reported to the Department of Health, the name, age (so far as can be ascertained), and residence of every person received therein or treated thereat who is affected with puerperal septicemia or suppurative conjunctivitis, with the name of the disease with which such person is affected, and it shall be the duty of every physician in the said City to immediately make, or cause to be immediately made, a similar report to the said Department relative to any person found by such physician to be so affected, stating, in each instance, the name of the disease with which such person is affected. Every such manager, physician, and officer shall also report the name and address of the physician or midwife in attendance at the time of the onset of the disease, which information it is hereby made the duty of every institution herein specified to obtain and record among its records.

**Personal.**—Dr. Simon Flexner, director of laboratories of the Rockefeller Institute for Medical Research, New York, has been elected foreign associate member of the Paris Academy of Medicine.

Dr. Philip Skrinka, of St. Louis, Mo., announces that he is planning to establish a monthly medical journal, the name of which will probably be *Medicine and Surgery*. The first issue of this periodical will probably appear some time in February.

Dr. Wmifred Viers, of Ottawa County, Kansas, is the first woman to be chosen coroner in the State.

Dr. E. G. Whinna, of Philadelphia, has been reelected, for the twenty-second consecutive year, physician in charge of the Philadelphia Home for Infants.

Dr. M. J. Couret, of New Orleans, has resigned, as pathologist to the Charity Hospital.

**The Medical Association of the Greater City of New York.**—A stated meeting of this association will be held in Du Bois Hall, New York Academy of Medicine, Monday evening, January 15th, at 8:30 o'clock, under the presidency of Dr. Thomas S. Southworth. Dr. John Herbert Claiborne will read a paper entitled *Some Remarks on a Case of Stuttering in a Boy Relieved by Reversal of Manual Dexterity, with Remarks on the Subject of Symbol Amblyopia*, which will be discussed by Dr. Edward Livingston Hunt, Dr. S. Philip Goodhart, Dr. Edgar Steiner Thomson, Dr. James Ramsay Hunt, and Dr. James Garfield Dwyer. Dr. George Livingston Brodhead will read a paper on the *Treatment of Abortion*, which will be discussed by Dr. Herman J. Boldt, Dr. Austin Flint, Dr. Frank Richard Oastler, Dr. John Osborn Polak, Dr. Brooks H. Wells, Dr. Leroy Broun, Dr. Abraham J. Rongy, Dr. Arthur Stein, and Dr. Thomas H. Cherry.

**College of Physicians of Philadelphia.**—At a meeting held on January 3d the following officers and elective committees were chosen by the college for the year 1917: President, Dr. Richard H. Harte; vice-president, Dr. William J. Taylor; censors, Dr. James Tyson, Dr. William W. Keen, Dr. George E. deSchweinitz, and Dr. Thomas R. Neilson; secretary, Dr. Francis R. Packard; treasurer, Dr. John B. Roberts; honorary librarian, Dr. Frederick P. Henry; committee of publication, Dr. G. G. Davis, Dr. Thompson S. Westcott, and Dr. Walter G. Elmer; library committee, Dr. Francis X. Dercum, Dr. George W. Norris, Dr. Astley P. C. Ashhurst, Dr. Charles W. Burr, and Dr. William Pepper; committee on Mutter Museum, Dr. Henry Morris, Dr. George P. Müller, and Dr. George Fetteroli; hall committee, Dr. John K. Mitchell, Dr. Thomas H. Fenton, Dr. B. Alex. Randall, Dr. E. Hollingsworth Siter, and Dr. J. Norman Henry; committee on directory for nurses, Dr. Thomas G. Ashton, Dr. Frederick Fraley, and Dr. Arthur Newlin.

**Implied Warranty in the Sale of Foodstuffs.**—An interesting decision of the Supreme Judicial Court of Massachusetts is published in the issue of the *Public Health Reports*, for December 22, 1916. A Massachusetts man and his wife were made ill by eating pork, and they brought suit for damages against the dealer who sold the meat. The court stated the facts as follows: "His wife (the wife of the purchaser) acting as his agent, left to the defendant the selection of the meat, and paid for it at the current price for sound, wholesome pork chops. . . . The defendant Freshman undertook to make the selection so left to him. The meat was cooked, and was eaten by the plaintiff and his wife, and both were made sick."

The law of Massachusetts applicable to the case was stated in the opinion as follows: "Where the buyer at a shop relies on the skill and judgment of the dealer in selecting food, and it is made known to the dealer that his knowledge and skill are relied on to supply wholesome food, he is liable if it is not fit to be eaten; while, in case the buyer himself selects provisions, the dealer's implied warranty does not go beyond the implied assertion that he believes the food to be sound." The court decided that the husband was entitled to damages, but the wife could not recover because "the only sale was that made to her husband through her as his agent," and "there was no contractual relation, and hence no warranty," between her and the defendant.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### SODIUM BICARBONATE IN GASTRO- INTESTINAL DISORDERS.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 35.)

The effect of sodium bicarbonate administration on the secretory functions of the stomach has in the last twenty years been the subject of considerable discussion, and from time to time diametrically opposite views have been expressed. The time of administration, dose, and preexisting state of gastric secretion as compared to the normal have all been brought forward as factors influencing the effect of the drug on the secretion of hydrochloric acid. Linossier and Lamoine, supported by Robin and Mathieu, maintain that sodium bicarbonate, in its direct action, is an excitant of hydrochloric acid secretion under all conditions and in any dose—admitting also, of course, that acid already present in the stomach is neutralized by the drug. Another widely held view is that, while small doses excite secretion, large doses depress it. The drug is, moreover, supposed by many to excite secretion particularly when given before meals, while depressing it when given with or after meals. On the other hand, Bickel and Pawlow, from widely quoted experimental work, have been disposed to consider sodium bicarbonate a depressor of gastric secretion when given before meals. Finally, some have held the drug to be a secretory excitant in hypochlorhydria and a depressant in hyperchlorhydria, thus proving useful under both conditions; while Hayem, on the contrary, has attributed to it the property of making both these conditions worse.

In researches published in 1908, and including both experimental and clinical observations, Linossier and Lemoine showed that the conflict of opinions referred to has been due in part to faulty observation of results in previous experimental work, insufficient account having been taken of the time after administration at which the observation of the effect of the drug on secretion was made. The bicarbonate at first neutralizing the acid already present in the stomach, tests made during this early period would give the impression of a diminished secretion, evidence of increased secretion appearing only in a later phase, after the acidity, partly neutralized by the alkali, has had time to return to normal. Study of the acidity by repeated tests throughout the period of gastric digestion is thus necessary if a proper appreciation of the effect of the drug is to be obtained. Stress is also laid on the necessity in animal experiments of administering the bicarbonate, not alone, but in conjunction with food, in order to approximate the conditions under which the drug is clinically used. Under these circumstances, using a Pawlow miniature stomach in a dog, they found the amount of gastric juice increased by 145 per cent., i. e., more than doubled, after administration of sodium bicarbon-

ate. The percentage of acid in the gastric juice was, moreover, augmented from 0.468 to 0.483 per cent., the activity of the pepsin, however, being reduced by about one half, owing to its dilution in the increased amount of secretion. Experiments in human subjects, in which the gastric contents were examined at hourly intervals after a test meal, varying doses of bicarbonate having been administered one hour before the meal, gave similar results. The observation one hour after the meal showed only a slight increase of total hydrochloric acid over the control, but the two and especially the three hour observations showed a marked difference. At the three hour observation the total acidity, 0.80 in the control, rose to 1.72 in the experiment in which one gramme of sodium bicarbonate, and to 2.85 in that in which five grammes of sodium bicarbonate had been given, while the free acid rose from 0.1 to 0.6 and 1.7, respectively.

Another fact claimed to have been ascertained in these researches is that the sensitiveness of the stomach to sodium bicarbonate varies inversely with the percentage of hydrochloric acid present in the gastric secretion of the subject under observation. Thus, in hypochlorhydria, small doses of sodium bicarbonate suffice to increase acid secretion, whereas in marked hyperchlorhydria even large doses fail to do so.

The experiments referred to are held by Linossier and Lemoine to disprove the earlier contention of Bickel that sodium bicarbonate has no stimulating effect on gastric secretion, the observations of the latter having been made without regard to the action of food in initiating this secretion. Their results, from the standpoint of clinical application, are supported by such authorities as Wegele, Jaworski, Huchard, and Fiessinger. Describing the manner of administration of the drug in cases where an effect of this kind is desired, Linossier urges attention to the period of time elapsing between the ingestion of the drug and the time at which the maximal increase of acidity will occur. This period varies according to the dose of bicarbonate given, the greatest acid percentage occurring two hours after a seven and one half grain dose, three hours after a fifteen grain dose, and four hours after a seventy-five grain dose. Where pronounced secretory weakness exists, a seven and one half grain or somewhat larger dose is to be given just before the meal, while if the weakness is less marked, a fifteen grain or larger dose is to be administered about an hour beforehand. Huchard sometimes used even smaller doses than Linossier, e. g., four grains. He advised against continuing this form of medication longer than two or three weeks, but held that lasting improvement in secretion would follow such a course of treatment. Hayem specifies the usefulness of this action of sodium bicarbonate in cases of accidentally diminished acid secretion, as by drugs (such as atropine). It seems clear, however, in view of the scant attention so far paid



to the use of sodium bicarbonate in question, that the drug is of far less value in states of diminished than of excessive acid secretion (the latter to be discussed in a succeeding issue). A fact to be borne in mind is that, according to the observations of Linossier and Lemoine, where acid secretion is increased, there is no concomitant excitation of pepsin secretion. The increase of acid secretion is doubtless favored by giving the bicarbonate freely diluted in water, the latter itself having been shown to excite the production of gastric juice.

(To be continued.)

**The Care of Nursing Women.**—Arthur H. Kettner (*Medizinische Klinik*, October 29, 1916) states that the care of the bowels during the last days of pregnancy and the beginning of the period of lactation is often erroneous, and due to a mistaken conception of the conditions prevailing. It must be borne in mind that many women, especially those with their first child, incline to eat very sparingly toward the inception of labor, and take food which leaves little residue so that their constipation is more or less physiological. Further, immediately after delivery the intestines are relieved from a prolonged period of congestion and are in need of a physiological rest. Finally, the blood is then directed from the pelvis to the region of the breasts. The general practice is to administer castor oil or salines so as to secure a movement of the bowels every day. This practice is harmful in that it does not permit the rest physiologically demanded by the intestine, because it withdraws the blood from the breasts, where it is most needed, and hence delays or prevents the onset of lactation, and it is often unsuccessful on account of a relatively empty intestine. The only safe and rational plan is to promote the emptying of the large intestine when this is needed by the use of bland enemas. Where, however, there is a real constipation under such circumstances the best plan for its correction consists in the proper regulation of the diet, and the prescription of regulin to aid the sluggish intestines. The nutrition of the nursing woman is a second field in which many errors are made. One of the commonest of these is the prescription of very large quantities of milk. Such a practice invariably leads to digestive disturbances, loss of appetite and a revulsion for food. The proper plan is to give the woman a full normal diet in frequent small feedings, provide an abundance of fat in the form of olive oil and butter, allow not over one liter of milk daily, and give half a liter of other fluid, preferably in the form of plain water. As soon as the woman is able to be up she should exercise in the fresh air, and her meals ordered regularly as in health. It is neither desirable nor beneficial to attempt to make the mother gain weight during the period of lactation, but we should be content with seeing that she maintains her weight. The third point of importance is the care of the nipples and breasts. The nipples should be hardened before labor by daily bathing with cold water, sponging with alcohol, and daily exposure of the breasts to the open air for a short time. Salves and other similar preparations should

not be applied as they tend to make the infant refuse the breast. Small fissures should be cared for at once by cleansing and the application of pure alcohol, or by touching with a silver nitrate stick. When they form or when symptoms of mastitis are beginning the child should not be taken from the affected breast as this tends to produce milk stasis and to aggravate the condition.

**Optochin in Croupous Pneumonia.**—E. Becher (*Medizinische Klinik*, October 29, 1916) states that this drug was given orally in doses of 0.25 gramme every four hours to twenty cases of pneumonia with the most excellent results. When begun on the first day of the disease the average time to the disappearance of fever was under two and one half days; when begun on the second day it was a little over three and one half days; and the time grew longer the later in the disease the drug was started. No ill effects from the drug were noted except slight tinnitus in a few cases, and nausea and vomiting in two others. This latter occurrence prevented the use of the drug in these two cases and they ran the usual course. Two cases of pneumonia were not affected by the drug at all; one was due to a streptococcus, the other was a bronchopneumonia. Aside from the prompt reduction of fever, the drug reduced the frequency of complications, prevented serious manifestations on the part of the heart, and mitigated the general course of the disease.

**Pulse and Blood Pressure Changes in the Soldier in Action.**—Briscons and R. Mercier (*Bulletin de l'Académie de médecine*, November 21, 1916) collected the following data in healthy subjects: Temperature, 98.6° F.; respiration, twenty-four; pulse, 69; diastolic pressure, 122, and systolic pressure, 170. In a group of twenty-one sick soldiers the corresponding figures were 98.6° F., 26, 96, 119, and 168, while in twenty-five slightly wounded men they were, 99.7° F., 27, 90, 115, and 163. By similar tests they were able to secure diagnostic information in a group of twenty-two men who had been, or asserted that they had been, without apparent external wound, injured by the explosion of a shell close at hand. Though apparently all alike, these cases could be divided, according to the results of the tests, into three groups: 1. Those sustaining a contusion, having been partly buried by the explosion or struck by clods of earth; these gave results comparable with those in the slightly wounded men already referred to, viz., pulse, 93, and pressures, 121 and 175. 2. Those sustaining a true concussion, due to the compression of air; these showed acceleration of the pulse to one hundred and a distinct diminution in the differential or pulse pressure, the diastolic pressure being 135 and the systolic 165. 3. Those sustaining merely an emotional shock, showing a normal pulse rate and approximately normal diastolic pressure (100), in spite of an apparent marked angor and respiratory acceleration. By these tests it is held practicable to differentiate those suffering from true concussion, necessitating withdrawal of the subject from action, from those less seriously affected. The characteristic test findings of true concussion developed immediately after the explosion and were still present twelve hours later.



**Angina pectoris.**—S. E. Munson (*Illinois Medical Journal*, November, 1916) considers that it is not sufficient to treat the symptoms of the attack, but that food, digestion, assimilation, kidney, and bowel functions must be watched as well as work, worry, insomnia, and overindulgence in eating and alcohol. Nauheim baths help some cases, while digitalis is of value where there is impaired myocardial function with either hypotension or hypertension. Iodides are without benefit except in suspected syphilis. In the attack amyl nitrite pearls may be of service, as may nitroglycerin, but morphine gr.  $\frac{1}{8}$  p. r. n. is more efficient than any other drug and it may be combined with atropine, especially if there is suspected cardiac ischemia from coronary involvement. Hot applications to the precordia with hot drinks are of value.

**Hypophyseal Extract in Diabetes.**—Guiseppe Vigevano (*L'Ospedale Maggiore*, September 30, 1916) states that experiments made by him on dogs showed that both the whole extract and that of the posterior lobe of the hypophysis have a marked and constant antglycosuric as well as antidiuretic action. Further that these actions are completely dissociated and constitute two independent phenomena. The antidiuretic action is ordinarily maintained only during the actual administration of the extract and the dose varies from .30 to .45 gram of the fresh gland in twenty-four hours. The extract of the whole gland is more powerfully antglycosuric in action than that of the posterior lobe. The diminution of the amount of glucose in the blood is in constant accord with the lowering of the glycosuria, while the diminution both of polyuria and glycosuria is always accompanied by an increase in the twenty-four hour elimination of urea. In cases thus treated there is always a lessening of thirst, hunger, insomnia, and toxic symptoms, while the general strength is much improved. Arterial pressure seems to have no influence on the progress of cases treated by the hypophyseal extract.

**Tendon Repair without Actual Suture.**—W. Fletcher Stiell (*Practitioner*, December, 1916) questions: "Why does a tendon, when severed by trauma arising in the course of daily employment, fail to heal without suture, while if it has been divided by the surgeon's tenotome it invariably undergoes firm union in the course of six or eight weeks?" This led him to treat a number of cases of accidental division of tendons on lines similar to those employed in the aftertreatment of surgical tenotomy, and he has found it to be essential that four important details should be present at one and the same time. If any one is absent it is risky to do without a suture. He confined his efforts mainly to the extensor tendons of the fingers and thumb. These points are: 1. It is of the utmost importance that the injured finger should be kept in a position of hyperextension for at least three weeks. This may be secured by an aluminum splint on the palmar aspect of the hand and finger, fixed by strapping. 2. It is necessary that the actual skin cut should have fairly close approximation of its edges, or, at least, the laceration must not be too extensive to render good apposition possible by means of skin stitches only. 3. It is inadvisable to employ drainage, first,

because it tends to remove the necessary and beneficial blood clot from between the ends of the divided tendon; second, because it provides one more possible entrance for microorganisms. 4. Absolute asepsis is essential, at least as regards the tendon sheath. Slight suppuration confined to the skin wound may be followed by a perfect functional result, provided that the tendon sheath is uninvolved. If these four points are strictly observed primary union will invariably occur between the divided ends of the tendon without any tendon suture, and will usually give a better result.

**Treatment of Tabes.**—Morris Grossman (*Interstate Medical Journal*, November, 1916) divides the treatment into causative and symptomatic. In causative treatment five methods may be used, intramuscular injections of mercury, intravenous injections of salvarsan, Ravaut's intradural injection of salvarsan, the Swift-Ellis intradural injections of salvarsanized serum, and Byrnes's intradural injections of mercurialized serum. In symptomatic treatment pain is met with in eighty-five per cent. of all cases and should at first be controlled if possible by dry heat, counterirritation, light cauterization, massage, and tight bandaging. If pain still persists, aspirin, antipyrin, sodium salicylate, pyramidon, and codeine may be tried, with morphine as a final resort. Bladder disturbances, present in eighty per cent. of cases, may be improved by small doses of strychnine and ergot to tone up the bladder wall, but where there is marked retention with decomposition of urine hexamethylenamine and bladder irrigations are indicated. Ataxia, found in seventy-five per cent. of cases, is best treated by reeducation, either by Frankel's or Maloney's method. Educational exercises are divided into breathing and relaxation, coordinated movements, and balancing.

**Chronic Suppurative Otitis media in Tonsil and Adenoid Work.**—Harvey M. Becker (*Annals of Otolaryngology, Rhinology, and Laryngology*, June, 1916) believes the diseased tonsil capable of causing numerous otitic suppurations, which are incurable so long as the offending tonsil is permitted to remain unmolested. For this reason, he begins his treatment of suppurative otitis by a thorough cleansing of the tonsillar fossae and the epipharynx. Immediately following the tonsillar operation, the canal of the affected ear is cleansed of all discharges, and the condition of the tympanum and the middle ear cavity determined, as far as possible. Free access to the tympanic end of the Eustachian tube is necessary for the efficacy of the treatment. If this advantage cannot be obtained as the result of partial or total destruction of the drum, a free posterior incision is made, gentle aspiration produced with a Siegle otoscope, and the canal again thoroughly dried. A five per cent. alcoholic iodine solution is then freely introduced into the canal and permitted to flow into the middle ear cavity and down the Eustachian tube by the favorable position of the head, occasionally assisting the proper application of the solution, when necessary, by the pressure and suction of the otoscope. A firm packing is inserted in the canal to prevent the passage of air, and is retained for about forty-eight hours, when it will be found usually that the discharge has ceased.

**Amebic Conjunctivitis.**—James M. Parrott (*Charlotte Medical Journal*, December, 1916) describes a form of chronic conjunctivitis to which he has given the name of amebic conjunctivitis. The symptoms are those of a chronic conjunctivitis. On examination the sclera is cloudy and on extreme retraction of the lower lid with the eyeball rolled upward a milk like injected fold is detected at the scleral attachment of the conjunctiva. The diagnosis is made by detecting the entamoeba in the conjunctival discharge. The treatment consists in the installation of zinc sulphate solution, careful treatment of the gums, and the use of ipecac solution in the mouth. All the cases treated showed pyorrhoea alveolaris. No cures have been observed, although the conjunctiva has been cleared of the entamoeba and the symptoms have been ameliorated.

**Fasting.**—C. D. Spivak (*Colorado Medicine*, December, 1916) emphasizes the importance of fasting as a therapeutic measure in diseases of the digestive canal, this representing the employment of rest for diseased conditions in other portions of the body. Such physiological rest for the digestive tract can best be secured by placing the patient in bed, the adjustment of a suitable, very low diet, and the application of hot poultices. In severe cases the diet should be left out and no food at all be allowed. This total fasting may be continued without harm for many days, usually with much benefit. A moderate amount of discomfort will be caused the patient for the first day or two, but after that he will not suffer from hunger or the desire for food. Where nutrition is necessary enemas may be given. Except in the more severe cases the rest in bed may be dispensed with and the patient be allowed up. In cases of gastrointestinal disturbance the first thought should be toward the restoration of a normal condition by Nature's best remedy, rest.

**The Adrenal Reaction in Antityphoid Vaccination.**—M. Loeper (*Presse médicale*, October 19, 1916) writes concerning six cases of vascular disturbance noted in soldiers after vaccination against typhoid. On the evening of the day on which the first injection had been given, or on the next day, these subjects turned pale, and showed accelerated breathing, a small and even uncountable pulse, sometimes with cyanosis of the lips and finger tips beneath the nails, and with cold hands. Accompanying phenomena included malaise, marked general weakness, cramps in the legs, thighs, and lumbar regions, and sometimes diarrhea, nausea, and even vomiting. The blood pressure was found greatly lowered. Slight fever occurred. This condition persisted a day or two, or in the more severe cases up to four or five days, such cases showing cyanosis of the nose and malar eminences, oliguria, slight albuminuria, temporary hepatic enlargement, and pulse irregularity. These manifestations are to be ascribed to heart weakness, the result of adrenal insufficiency. Twenty-six out of thirty soldiers showed a distinct reduction in blood pressure, in some cases attaining 40 mm. Hg. on the day following the first vaccine injection. Most cases of toxic and infectious hypotension being now admitted to be of adrenal origin, Loeper is disposed to maintain that the condition following typhoid vaccination,

whether of slight or marked severity, arises similarly. Injection of large doses, e. g., one c.c., of the vaccine in guinea pigs almost constantly caused congestion and even hemorrhages in the adrenals, in the absence of all change in other organs. The therapeutic test also afforded evidence of the adrenal origin of the disturbances clinically noted, administration of one or two mgms. of adrenaline by the oral or subcutaneous route causing prompt improvement in the cases in which it was tried. The remedy proved likewise of prophylactic value, no hypotension following vaccine injections in two soldiers already exhibiting low blood pressure, after one mgm. of adrenaline had been given. Even the weakness frequently noted was absent in these cases, in spite of the appreciable febrile reaction which followed the injection. Loeper counsels blood pressure estimation as a routine preliminary to vaccination, and cautions against inoculating greatly fatigued subjects until a period of rest has been imposed.

**Treatment of Hookworm Disease.**—W. C. Billings and J. P. Hickey (*Journal A. M. A.*, December 23, 1916) state that the practice of using thymol has been the general one for this condition, but recently better results have been reported from the administration of oil of chenopodium. This oil was tried in a series of patients to compare the results with those after thymol, and it was found much more satisfactory. Thus in 300 cases treated with thymol, seventy-four per cent. were cured with one course, fifteen per cent. required two, and nearly one per cent. needed as many as six courses for cure. With chenopodium no patients required more than two courses of treatment, and eighty-seven per cent. were cured with a single course. The plan of treatment adopted was to give sixty mils of a saturated solution of magnesium sulphate at 7 a. m. and ninety mils of a saturated solution of sodium sulphate at 7 p. m. The following morning, beginning at 7 o'clock, fifteen drops (approximately 0.35 mils) of oil of chenopodium were given on sugar and the dose repeated at 9 and 11 a. m. At 1 p. m. eighteen mils of castor oil with two mils of chloroform were administered, followed in half an hour by thirty mils of plain castor oil. A cup of tea was allowed at 2 p. m. The chloroform was given as it seemed to have a marked synergistic action with the oil of chenopodium. The doses of oil of chenopodium were as follows: Aged six to seven years, five drops; eight to nine years, seven drops; ten to eleven years, ten drops; twelve to fifteen years, twelve drops, and sixteen years and over, and under sixty years, fifteen drops, measured from an ordinary medicine dropper. For the corresponding age groups the doses of chloroform used were, in minims: Eleven, twelve, fifteen, twenty, twenty-five, and thirty. A stock mixture of castor oil, containing two mils of chloroform and eighteen of castor oil, was kept, and the doses measured therefrom with respect to the chloroform desired, the whole being made up to twenty mils with plain castor oil. By this plan of treatment no toxic or unfavorable effects of chenopodium were observed. The effect of treatment was controlled by examination of the stools six days after the course of treatment.

**Diphtheria Carriers.**—Sophie Rabinoff (*Journal A. M. A.*, December 9, 1916) reports the trial of almost every method of local treatment advocated, including the application of silver nitrate, organic silver preparations, formaldehyde, iodine, iodized phenol, spraying with cultures of staphylococcus, *Bacillus pyogenes aureus*, *Bacillus bulgaricus*, and *Bacillus acid lactici*, and the use of kaolin. Some results were apparently obtained with each method, but they were no better than those encountered in a control series of untreated cases. The only method which seemed to be of any certain value in the resistant cases was the surgical removal of the tonsils and adenoids.

**Arsenobenzol by Mouth.**—Jay Frank Schamberger, John A. Kolmer, and George W. Raiziss (*Journal A. M. A.*, December 23, 1916) state that after proving that arsenobenzol could be administered orally to animals experimentally infected with trypanosomiasis with safety and with good therapeutic results, this method of administration was tried in thirty human cases of syphilis in its various stages. The results were satisfactory so far as the effects on the lesions were concerned, and no ill effects or disturbing symptoms were produced other than mild digestive disturbance in a relatively small proportion of cases. The dose was thirty mgm. three times daily, and had to be continued for many weeks. The most satisfactory form for its administration was found to be in the following mixture:

R Arsenobenzol .....	0.03
Sodii hydrosulphitis .....	0.015
Bismuthi subgallatis .....	0.12

which was given in gelatin capsules treated with formaldehyde to prevent their solution in the stomach. The sodium hydrosulphite was added to prevent oxidation of the arsenobenzol.

**Treatment of Wound Infection.**—John O'Connor (*Brit. Med. Jour.*, December 2, 1916) states that after using almost every method and antiseptic suggested he has long practised the treatment of seriously infected wounds along lines which have given him the best of results. His treatment consists in converting the wound into an open surface and the use of a counter opening where necessary. When a counter opening is required for drainage it is made quite large and the wound is held open by the insertion of one or two large drainage tubes which are frequently changed to prevent their retaining any of the infected secretions. Whether superficial or deep the wound is treated by irrigation every four hours with a hot solution of peroxide of hydrogen of the strength of sixty mils to the liter, followed instantly by an irrigation of hot phenol solution containing fifteen mils to the liter. Compresses, wrung dry from hot bichloride of mercury solution, are then applied. Combined with these measures the patient is kept absolutely quiet and at rest in the open air and the wounded part is immobilized upon a suitable splint in such a way as to permit of the irrigations without disturbing the fixation. The irrigation is done by pouring the solutions over the wound from a pitcher to secure a forceful and large stream of fluid. By such treatment the worst wounds should take on a healthy appearance and begin to heal in a very few days.

**Minor Emergency Surgery.**—N. C. Speer (*Journal Kansas Medical Society*, December, 1916) reports a number of methods of procedure which give the best results with the least consumption of time on the part of either patient or physician. A sharp pointed knife proves better than a regular spud for the removal of foreign bodies embedded on the cornea. Four per cent. cocaine is the best for ocular anesthesia, and the discovery of foreign bodies is facilitated by the use of a jeweler's magnifying glass, and the removal of local congestion by the instillation of epinephrin. Deep contusions with concealed hemorrhage are best treated by incision and evacuation of the blood. Severely bruised nails on the great toes or the thumbs should be removed at once both for the relief of pain and for prompt recovery. For all lacerations the immediate application of tincture of iocine, without the use of any water, and the cleansing of the surrounding skin with gasoline should be the routine, followed by the suture of the wound. Superficial burns and abrasions are treated by the immediate application of camphorated oil dressings which are not to be changed frequently. Open air treatment, under a single layer of gauze elevated from the surface by a cofferdam, hastens healing in more extensive cases. Infections of the hands and fingers are best treated by prolonged application of Bier's hyperemic methods, which can be accomplished with rubber bands or common elastic webbing. Incision and gauze drainage is required even in the absence of evidence of abscess formation.

**Pellagra.**—M. L. Tisdale (*Jour. Florida Med. Ass.*, November, 1916) asserts that prevention should be attempted by the prescription of proper hygienic and dietetic measures, particularly the ingestion of a sufficient amount of protein food and the avoidance of highly milled grains. When the disease has developed the treatment must be largely symptomatic. It is well to isolate the patient, preferably in a shaded tent rather than in a brilliantly lighted room. Carbohydrates should be largely eliminated from the dietary and proteins given in abundance. Where nausea, vomiting, and diarrhea are troublesome the diet should be restricted to liquids such as milk, broths, and fruit juices. Later solid foods, such as lean meat, fruits, and vegetables can be introduced slowly. Constant rectal and subcutaneous administration of salt solution is of help in the diarrheal stages and seems to aid in the elimination of toxic substances. Simple or medicated hot or cold baths may be given, but exertion on the part of the patient must be avoided when they are prescribed. If possible the patient should be sent to a cool climate, particularly if his is a chronic recurrent case. Among the drugs which have proved useful are: The intestinal antiseptics such as calomel, betanaphthol, and salt; the arsenical preparations such as small doses of neosalvarsan or of sodium cacodylate after the skin lesions have subsided; and for the skin lesions ointments of balsam of Peru, zinc oxide, or betanaphthol. When the skin has become raw, tar, zinc oxide, or salicylic acid ointments are the best. In general the best results will be obtained if pellagrins are treated in hospitals rather than at their own homes.



# Miscellany from Home and Foreign Journals

**Geographic Distribution of Amebiasis.**—A. H. Sanford (*Journal A. M. A.*, December 23, 1916) reviews the results of stool examinations on a very large series of patients, showing that the occurrence of infection with *Entamoeba histolytica* is not at all uncommon among residents of the north temperate regions. The observations also show that in such regions the infection may often occur and run a chronic course with the production of few or no symptoms, rendering the host a carrier and a source of danger to the community. About forty per cent. of such cases, however, gave histories of constant diarrhea and thirty-three per cent. of intermittent diarrhea. The importance of examining the stools for amebae in patients from the cooler climates is, therefore, considerable.

**Comminuted Fracture of Humerus from Muscular Action.**—N. Howard Mummery and P. L. Giuseppe (*British Medical Journal*, December 9, 1916) report an interesting case of a muscular, apparently healthy soldier, thirty-three years of age, who sustained a comminuted fracture of his right humerus from muscular action alone. He elevated his right hand, in which he held a dummy hand grenade weighing two pounds, suddenly and with a jerk to the level of and behind his shoulder as a preliminary to throwing. At the end of the movement he felt his arm break and it fell to his side. X ray examination and operative inspection showed the existence of four separate fragments. At autopsy, following death from other causes, the findings were confirmed and the bone was found to present no evidences of previous disease or abnormality.

**Hereditary Syphilis Causing Chronic Invalidism.**—Henry Farnum Stoll (*Journal A. M. A.*, December 23, 1916) writes that the importance of hereditary syphilis as a cause of chronic invalidism is emphasized by the results of an intensive study of approximately one hundred families. The diagnosis of syphilis when the disease makes its appearance twenty years or more after infection is often difficult on account of the total absence of typical symptoms and physical signs, its insidious onset and development, and the customary absence of a positive Wassermann reaction. These facts have combined to make the correct diagnosis relatively uncommon. It is often possible only through an intensive study of the family history for evidences of syphilis. A family history of the occurrence of tabes or paresis justifies a diagnosis of syphilis; a probable diagnosis is warranted from a history of aneurysm, aortic disease, or death from sudden heart failure or apoplexy before the age of fifty; and possible evidence of syphilis is given by a history of cardiovascular or renal deaths up to the age of sixty years. The family history should include the more immediate collateral relatives. As to the symptoms in the subject under consideration, these may be of almost any type, are usually of insidious development and long duration, and usually have not been controlled or alleviated by previous treatment. Several illustrative case histories are given in detail.

**Late Syphilis.**—Udo J. Wile and Joseph A. Elliott (*Journal A. M. A.*, December 23, 1916) report that a critical study of 120 cases of the late manifestations of syphilis brought out strongly the fact that the occurrence of these was largely dependent upon the inadequacy of previous treatment. In only one of the cases had the patient had what would be considered as efficient treatment, and nearly half of the whole number had had no treatment at all. The one efficiently treated case was an instance of precocious malignant syphilis. The study also brought out the fact that the oral administration of mercurial pills, as still commonly practised, was wholly inefficient to control the disease. Over thirty per cent. of the late manifestations occurred within four years from the time of infection. In a group of efficiently treated syphilitics observed for four years, ninety per cent. have had no late manifestations, and the majority were serologically cured.

**Elementary Forms of Delirium of Persecution.**—Jean Lépine (*Bulletin de l'Académie de médecine*, November 21, 1916) refers to the prevailing view of persecutory delirium as one of the most obstinate and hopeless varieties of mental disorder. Numerous clinical observations have suggested that the condition becomes established in a gradual way, the subject showing first a period of general anxiety—actually an expression of psychic depression—in the course of which appear illusions and delirious interpretations, repetition of these finally leading to hallucinations. Little thought of the possibility of a period in which treatment might prove successful has been indulged in, except in the few cases in which a surgical operation on a diseased part of the body has been known to cause sudden disappearance of the delirium. Of late he has met with a number of instances of delirious interpretations and even hallucinations, arising from external circumstances or organic disorder in a predisposed, psychically depressed subject, in some of which recovery took place, while in others delirium of persecution became established. Since the beginning of the war, moreover, he has had under observation many cases of actual persecutory delirium, some of which have completely recovered under treatment. Exposed to an unusual stress through war conditions, such subjects, all predisposed by a highly emotional mental constitution, passed into a persecutory delirium much more rapidly than is normally the case. Transferred at once to completely different conditions, i. e., removed from the depressing action of danger, insomnia, watching at night, and artillery concussion, they sometimes regained their mental balance. This is taken as showing that it is the persistence of the causes which is responsible for the incurability of the latter under ordinary circumstances. Like toxic psychoses, delirium of persecution requires early treatment, and can in this way doubtless be cured in some cases. Removal from harmful influences is, to be sure, less difficult to accomplish in those subject to military discipline.

**Angle of Dropping Pipette.**—R. P. Garrow (*Lancet*, November 18, 1916) contributes a brief note to illustrate the accuracy of measurements by drops when the pipette is held properly and the drop rate is kept uniform. The proper angle is the vertical, since this gives the most constant results and is the one easiest to maintain. With a given pipette which drops 100 drops in a given amount of fluid when held vertical the number of drops falls and their individual sizes rise as the horizontal is approached. Thus at an angle of fifty degrees there are only eighty-two drops and at the horizontal only forty-eight. The decline in the number of drops is not uniform for each equal reduction in the angle.

**Syphilis among Confined Criminals.**—Eugene Boudreau (*Medical Record*, December 2, 1916) gives the results of the examination of the inmates of Auburn, with special reference to the Wassermann reaction. It was found that 16.85 per cent. of the males, and 33.85 per cent. of the females showed a positive reaction, while 7.5 per cent. of all those admitted are potential sufferers from paresis, or tabes, or some other form of syphilis of the nervous system. History, glandular enlargement, and physical findings in general are proved to be lacking as evidence of the presence of syphilis, while enlargement of the epitrochlear gland is not pathognomonic of the disease.

**Trichinosis.**—William Lintz (*Medical Record*, December 2, 1916) states that having had access to some human muscle tissue containing live trichinae he fed it to albino rats with the idea of deciding whether the isolation of *Trichina spiralis* from the feces could be depended upon in the diagnosis of the disease. At no time could trichinae be found in the feces, and at autopsy none occurred either in the large intestine or feces, although they were found in the small intestine, so that they are evidently destroyed in the fecal mass. Therefore it would seem that the search of the feces is of no value in the diagnosis of the condition, and also that the feces play no part in the transmission of the disease.

**The Blood Platelets in Hemophilia.**—G. R. Minot and R. I. Lee (*Archives of Internal Medicine*, October, 1916) state that they studied the platelets in two typical cases, and were impressed with the essential role of these bodies in the pathogenesis of the disease. Previous work had shown that the formed elements of the blood, the calcium and fibrinogen content, and the thrombin and antithrombin were practically normal in hemophilia. The platelets, however, proved strikingly abnormal in the two cases referred to. Whereas addition of normal platelets to hemophilic plasma caused it to coagulate in a normal period of time, hemophilic platelets, added in amounts seventy-five times as large, never reduced the coagulation to anywhere near normal. In a special thrombin forming procedure, hemophilic platelets required more time to form thrombin than normal platelets. The evidence obtained suggested that the delay in coagulation in hemophilia occurs in the initial step in clotting, which seems to be a rendering of the platelets available by some process resembling solution. In one of the hemophilic patients transfusion of 600 c.c. of normal blood reduced the

clotting time from sixty to seven minutes, but a gradual retardation then took place in the course of three days, when the clotting time again reached sixty minutes. This agrees with the findings as regards the blood platelets, the life of the latter generally being put down as three days. On the whole, they are led to consider hemophilia the result of an hereditary defect in the blood platelets, this defect consisting of a slow availability of the platelets for clotting purposes.

**Appendicitis and Pulmonary Tuberculosis.**—Hugh M. Kinghorn (*Journal A. M. A.*, December 16, 1916) states that the occurrence of appendicitis in tuberculous patients is not infrequent, and that the disease may run any of its usual forms or may be very slight in its symptoms and difficult of diagnosis. Operation was necessary in two thirds of the cases and the results showed that such patients, when undergoing climatic treatment for their pulmonary disease, stand the operation quite as well as otherwise normal persons. Nitrous oxide or chloroform seemed preferable to ether for anesthesia on account of their slighter local actions on the lungs.

**Infantile Kala Azar.**—Fidel Fernandez Martinez (*Revista de Medicina y Cirugia Practicas*, November 21, 1916) reports a case of kala azar in a child of four years with fever, greenish icterus, and slowly progressive abdominal enlargement. There was hepatic enlargement, tympanites but no ascites, and splenic puncture showed abundant colonies of *Leishmania infantum*. Massot's formula with equinine and cacodylate of iron was prescribed, resulting in stomatitis and salivation. Then an intravenous injection was given of .03 grain tartar emetic in two c. c. of distilled water repeated in two days with marked improvement in every respect, and a third was given forty-eight hours later.

**Acidosis in Children.**—A. Campbell Stark (*Brit. Med. Jour.*, December 2, 1916) asserts that the circulation of considerable quantities of acetone, diacetic acid, or of both, in the blood of children produces definite symptoms, which may be termed acidosis. Cases in which this condition arises are very common, but are not usually recognized, due to the failure to examine the urine of children for these bodies as a routine. The clinical features of the condition vary widely in different cases, according to the severity of the intoxication. Fever from 100° to 103° F. may occur for one or two days, or fever may be entirely absent. Vomiting occurs in over half of the cases, and is often extremely severe and resistant. Constipation is usual, but may be absent. The majority of the cases have an odor of acetone on the breath. Prostration is frequent and may be very severe. The most constant characteristic feature, however, is the occurrence of a pale urine, markedly acid, of high specific gravity, and containing large amounts of acetone and diacetic acid. The treatment of such cases calls for free evacuation of the bowels, the administration of fairly large doses of potassium bicarbonate and an abundance of water, and the restriction of fats in the diet. The cases may be very alarming when first seen, but recovery always follows proper treatment. The cause of the condition is not known.

**Report of a Case of Spinal Cord Tumor.**—W. W. Plummer (*American Journal of Orthopedic Surgery*, December, 1916) reports a patient who complained of backache for one year before paralysis appeared. Spastic paralysis of both lower extremities developed in three months. Upon operating, a giant cell sarcoma was found at the site of the second and third dorsal vertebrae. The laminae and spinous processes of these vertebrae were eaten thin. No nerve tissue was found in the specimen removed. He draws attention to the fact of the unusual extension of the paralysis and the deception of the x ray as far as bone destruction was concerned.

**Interpretation of Eye Symptoms.**—A. J. Balantyne (*Glasgow Medical Journal*, November, 1916), in the course of his discussion of such symptoms as pain, disturbance of vision, headache, and giddiness, states that he has been impressed by the frequency with which eye strain at the presbyopic period is manifested by chronic conjunctivitis or blepharitis. The patient complains of local heat, smarting, soreness, dryness, or sometimes watering, and photophobia. Boric or other lotions give temporary relief, but hyperemia of the conjunctiva and lids increases, and a catarrhal secretion begins to form. At times examination of the secretions reveals the Morax-Axenfeld diplobacillus; local treatment should not alone be relied upon. It is essential in all cases of conjunctivitis after the age of forty, and in many at an earlier age, to combine optical and medicinal treatment if a lasting cure is to be obtained. All possible rest to the eyes should be given and the conjunctivitis treated locally until the eyes are sufficiently well to allow of reliable measurement of the refraction, to be followed by habitual wearing of glasses.

**Agglutinating Properties of Sera against Bacillus typhosus and Bacillus enteritidis Gaertner.**—Thomas T. O'Farrell (*Lancet*, December 9, 1916) states that agglutination tests were done upon the sera of 495 patients, some of whom had been prophylactically inoculated against typhoid, others of whom had not. The tests were made by the method of Dreyer with *Bacillus typhosus*, and certain of the sera were also tested against Délépine's strain 7160 of Gaertner's *Bacillus enteritidis*, which was stated to be agglutinated by the serum of persons suffering from typhoid infection, but not by sera from those who had merely been inoculated. Of 270 inoculated men over eighty-seven per cent. showed agglutination for the *Bacillus typhosus*. The majority of sera from these men gave twenty-five standard units of agglutins per mil of serum, above which the proportion of cases dropped rapidly so that only very few sera with as much as one hundred and twenty-five units were found. The maximum agglutinin titre was obtained during the first few months after inoculation; this fell rapidly during the third month to reach a level which was fairly maintained from the fifth to the fourteenth month. The presence of syphilis in the men did not influence the power of typhoid agglutination. The agglutinating power of serum against strain 7160 was not affected by antityphoid inoculation. Three out of thirteen sera from previous typhoid fever patients agglutinated 7160.

**Microbiological Diagnosis of Typhus Fever.**—R. Otto (*Medizinische Klinik*, October 29, 1916) states that there is often not a little difficulty in making a definite diagnosis of typhus fever by clinical means, and laboratory methods, if available, should be of great help. As yet there is no certain specific laboratory method, since the causative organism has not been definitely established. Several methods are, however, available as adjuncts to the clinical diagnosis. The first of these is the finding of typical bipolar organisms in the intestinal tracts of the body lice taken from suspected cases. While these organisms are not known to be the causative agents of the disease, their occurrence in smears from body lice is almost wholly confined to vermin from typhus cases. Weil and Felix have isolated a proteus like organism from the urine and blood of typhus cases, and have found that it gives specific agglutination with the blood of infected cases. This agglutinin reaction is seldom positive in sufficient dilution to be diagnostic before the sixth day of the disease. Finally, there is a less useful method of diagnosis in the inoculation of guinea pigs with the blood of suspected cases. In typhus infection the pigs are made ill, but without characteristic symptoms and only after many days. At autopsy the brains of such animals show localized lesions which are more or less typical. This reaction, however, is so slow in developing as not to be of great service in the diagnosis of the disease in man.

**Hypothyroidism in Certain Types of Uterine Hemorrhage.**—S. Salzman (*American Journal of Obstetrics*, November, 1916) maintains that there occurs a type of hemorrhage from the uterus not caused by any discernible pelvic disease, nor related to any of the so called hemorrhagic states, but due to a deficiency in secretory activity of the thyroid gland. Every surgeon of large experience has at some time performed a hysterectomy on one of these cases as a life saving measure, all ordinary methods of treatment having failed. The blood coming from the uterus in cases of this type is non-coagulable, a fact suggesting that menstruation is controlled by the secretion of a substance which inhibits coagulation. From the clinical results obtained by thyroid treatment in his cases Salzman is led to believe thyroid deficiency responsible for the unopposed activity of the inhibiting substance in these cases. In his first patient, that of a woman of thirty-eight years, with continuous bleeding for six months, unaccounted for by any local pathological condition, five grain thyroid tablets were given three times a day at first, cessation of hemorrhage occurring in two days. The dose was then reduced to two tablets a day for a week and stopped. Within three days bleeding again started, but stopped at once upon resumption of two tablets a day. This continued for three months, at the end of which regular menstruation returned. One year after the beginning of treatment she was in good health, taking one tablet daily. Four other cases are reported, including one of severe bleeding during pregnancy and two of excessive menstruation, all benefited by the treatment. Attention is directed to the fact that in thyroidectomized goats pregnancy invariably results in bleeding and abortion.



# Proceedings of National and Local Societies

## THE NEW YORK ACADEMY OF MEDICINE.

*Joint Meeting with the Section in Genitourinary Diseases, Held November 2, 1916.*

The President, Dr. WALTER B. JAMES, in the Chair.

### **The Relation of Chronic Infections of the Genitourinary Tract to Obscure Internal Disorders.**—

By Dr. HUGH H. YOUNG, Professor of Urology at Johns Hopkins University, Baltimore. This paper appears in this issue of the Journal.

Dr. THOMAS McCRAE, Professor of Medicine at Jefferson Medical College, Philadelphia, said that the infectious pelvic diseases in the male were becoming more widely understood and, indeed, were perhaps as important as in the female. The importance of keeping the possibility of this condition in mind could not be overestimated. If a patient complained of urinary symptoms it was easy for attention to be directed to the urinary tract. But if he had other symptoms and nothing suggestive of genitourinary trouble, it was possible to miss the essential etiological factor.

Several points were to be taken into consideration. For instance, disease of the prostate was often responsible for general nervous disturbance. This was instanced by the case of a young man of thirty who had advanced rapidly to a position of importance in a large business house and had suddenly begun to lose his efficiency. His chief nervous symptom was a feeling of worry and anxiety over trifles. There was no history of venereal disease, he did not drink, and there were no local symptoms. It was found that there was some disease of the prostate, which had given no symptoms. The local prostate was treated for three months, when there condition was better in his nervous condition, and, was a marked change in a year ago, up to the though this occurred over a recurrence and the present time, there had been no recurrence and the patient was perfectly well, the fear, or anxiety neurosis having totally disappeared.

He said he did not wish to give the impression that he believed all cases of neurasthenia in males were due to disease of the prostate, but some of them undoubtedly were and in many there were no symptoms of the real etiological cause.

One might refer to the great number of conditions, met in one's own practice, similar to those mentioned by Doctor Young which confirmed the speaker's belief that there was no doubt that the genitourinary tract was often a focus of infection. It also produced far reaching psychical effects of which one could convince himself by following these cases closely. Many of them gave no local symptoms. It was very easy to recognize local trouble if one took the pains to make a local examination in spite of the lack of symptoms.

Dr. WALTER A. BASTEDO, of New York, said that Doctor Young had brought out the important point that in hunting for the cause of obscure diseases the genitourinary system should not be forgotten. The speaker did not quite understand whether Doctor Young meant to convey the impression that, in the prostatic cases in which low phthalein output,

high filtrate nitrogen, and high blood pressure disappeared after proper catheterization or an operation, the kidney disturbances were due to infection. If bacteria were not found in the blood and the kidney began to act when drainage was established, though the urine was still infectious, it would seem that back pressure and not infection was the etiological factor.

A point of passing interest, not always thought of, was that in the laboratory, if the vein of a kidney was clamped off so as to make venous back pressure, the urine flow stopped; if clamped slightly the urine flow slowed. A little venous back pressure, therefore, might be sufficient to cause stagnation in the kidney or ureter and result in ascending infection. This would suggest that urinary infection might be secondary to disturbances of the circulation.

Dr. E. L. KEYES, Jr., of New York, said that he had not been able to get the results obtained by Doctor Young in exorcising the tuberculous seminal vesicle. The operation in his own hands had seemed dangerous to the patient, though he had been fortunate in some cases.

Doctor Young had said that rheumatism was unusual as a complication of infection of the kidney; he agreed with that statement, but he had seen a case of rheumatism, due to stone, disappear when the stone was removed.

The symptoms of pyelonephritis in infancy were far removed from the urinary tract. The chronic infections of infancy often exhibited only digestive disturbances, while acute infections were often characterized only by high fever and repeated chills.

Doctor Young had commented on the great variety of symptoms arising from retention infections in the bladder and kidney. He had also referred to some of these cases having been treated for paresis. The speaker had seen some cases of which the most striking symptoms were cerebral, and the renal infection was suspected only when pus was found in the urine, the cerebral symptoms being relieved subsequently by some form of drainage.

In regard to the psychic side, the phobias and anxieties, it seemed as though there should be a distinction made between genital and urinary infections; the first brought out this class of nervous symptoms, while the bladder, ureter and kidney affections did not. Further, the same psychic disturbances came in cases not generally considered infectious but where the genital tract was involved, whether in male or in female. The question arose, could the psychic disturbances, whether the result of infection or not, be manifestations of something sexual. Some were relieved by the removal of genital tension, whether by the draining of the seminal vesicles, removing the prostate, adjusting the uterus, or functional relief. The speaker had had people suffering from tension referred to him as cases of ulcer of the stomach, or duodenum, or cardiac disease. They were invariably unmarried persons. In such supposed ulcer cases, for example, one did not find blood in the stools or

stomach contents, or other characteristic findings; they had the pain and symptoms of ulcer though one could not get the string test. Such patients, put to bed for an ulcer cure, would in a week or two become highly restless, and the symptoms might return in aggravated form. But if, in spite of the diagnosis of ulcer, after a short period of treatment for hyperacidity, they were kept in vigorous activity out of doors, in the woods with a gun for instance, or horseback riding, or if they married, the symptoms soon disappeared. These internal disorders were the result of psychic disturbances related to the sexual region. These psychic cases should not always be referred to the genitourinary specialist, but to a physician who was also a philosopher.

Dr. REGINALD SAYRE, of New York, said that he agreed with Doctor Squier about the necessity of discovering the exact focus of infection which was causing the trouble. It was said by many men that when this was done the arthritic patient got well. But if a joint was involved, removing the focus of infection did not cure the joint unless it was given rest and attention.

Dr. EMANUEL LIBMAN, of New York, said that while he appreciated the fact that focal infections were of great importance in causing various forms of disease and that their rôle had been for a time underestimated, at the present time there was a tendency to blame conditions upon local foci that were not due to such a cause. This was particularly true with relationship to the question of chronic appendicitis causing various forms of infections. The cases of chronic appendicitis generally showed more or less complete obliteration. The lesion consisted of a mass of fibrous tissue and it did not appear clear how such a focus could be the origin of any infections. It was only rarely nowadays that appendicitis, where pus was present, was allowed to become chronic. The only general effect that one could imagine could come from a chronic appendicitis would be through the intoxication caused by stasis in the ileum and by reflex action, especially on the pylorus.

It was important to be careful in one's use of the word "rheumatism." The term rheumatism should be used in the old clinical sense and in no other way. The disease called rheumatic fever was characterized by the tendency to recur, by the lack of suppuration in any joint, by the tendency to the development of pericarditis, chorea, and verrucous endocarditis with Aschoff bodies present in the heart muscle. The only primary focus of rheumatism was a preliminary tonsillitis. Therefore, if any local focus was present aside from a tonsillitis, the case could not be properly grouped as rheumatism. Cases of joints infected with hemolytic or nonhemolytic streptococci should be called "streptococcic arthritis" and not rheumatism. Up to the present time it had not been definitely proven that streptococci caused rheumatism. If these cases could all be proven to be due to streptococci, then the term rheumatism could be dropped and the name streptococcic arthritis used to replace it. It was better, however, for the present to use the term rheumatism for this special group of cases as described above and try to find out what these were due to.

The speaker believed that Doctor Rosenow's theory of mutation of the streptococcus and pneumococcus must be accepted. At the Mt. Sinai laboratory they had for many years believed in such mutation as evidenced by the publication of the work of Doctors Buerger and Ryttenberg in 1907. Doctor Libman himself had shared in those studies at that time and since then Doctor Aschner and he had made studies from time to time and would in the near future publish some further examples of mutation. It was much more common to see a pneumococcus take on streptococcus features in the body than the other way around.

There was no doubt that Doctor Bastedo was perfectly right in his statements concerning the importance of sexual tension as an etiological factor. To show how far in error one may go in blaming conditions on a focal infection, one of his old patients had recently been advised by a specialist to have her tonsils and teeth removed for headaches which she herself had confided to the speaker to be due to such tension.

Dr. HUGH H. YOUNG, of Baltimore, in closing the discussion said that he wished to assure Doctor Bastedo that he did not intend to imply that everyone suffering from obscure internal disorders should be referred to a urologist for examination, but he wished to emphasize the fact that prostatic examinations were among the most accurate clinical microscopical tests. General practitioners should realize that this is one of the important parts of a thorough examination, and make rectal examinations, obtain the prostatic secretion by massage and examine it microscopically more frequently.

It was certainly true that back pressure led to the deterioration of the kidney, but when infection was also present the symptoms were increased and the secondary changes were more rapid.

The neurological and psychic symptoms were not due absolutely to focal infection, but rather to the effect on the nervous system of conditions produced by focal infection.

## ASSOCIATION OF AMERICAN PHYSICIANS.

*Thirty-first Annual Meeting, Held at Washington, D. C., May 9, 10, and 11, 1916.*

The President, Dr. HENRY SEWELL, in the Chair.

*(Concluded from page 47.)*

**Factors in Normal Blood Destruction.**—Dr. PEYTON ROUS and Dr. O. H. ROBERTSON, of New York, stated that the subject was studied with the etiology of cryptogenic anemia in view. It was not satisfactory to speak of hypo- or hypersplenism; but the accepted idea of blood destruction rested on a hemolytic action of the spleen. Quincke, however, held that there was a gradual deterioration of cells in the circulation. In dogs and rabbits, phagocytosis could account for blood destruction, but some other mechanism must be sought for in cats, monkeys, and man.

Conclusions reached from experiments were that: (1) Phagocytosis was not sufficient to account for blood destruction in man. (2) There was a grad-

ual disintegration of red blood cells, with removal in the liver.

Dr. S. J. MELTZER, of New York, asked if adrenaline was used in Doctor Rous's work. Observations of Lamson and Adler on polycythemia had shown that when there was an accumulation of cells in the liver, the use of adrenaline would cause the stored cells to be driven out.

**Observations on the Metabolism and Treatment of Rheumatoid Arthritis.**—Dr. RALPH PEMBERTON, of Philadelphia, gave the report of fifty cases of rheumatoid arthritis treated by an unusual and useful method. The method was not opposed to the focal infection theory of the causation of this disease, but it was useful where treatment of the focal infections did not benefit the arthritis.

Curtailment of carbohydrates was the basis of the method; and experiments showed subsidence of symptoms on the regimen suggested, with exacerbations following renewed carbohydrate feeding. The restriction in diet might regulate the symptoms whether focal infections were present or not.

**The Vital Capacity of the Lungs and Its Relation to Dyspnea in Heart Disease.**—Dr. FRANCIS W. PEABODY and Dr. JOHN A. WENTWORTH, of Boston, stated that the production of dyspnea in patients with heart disease depended, in part at least, on inability to increase the minute volume of air breathed to as great an extent as in the case of normal persons. This was due to a decrease in the vital capacity which limited the depth of breathing. The tendency of a patient to become dyspneic on exertion varied closely with the degree of the decrease in vital capacity. The determination of the vital capacity gave an indication of the amount of exercise which would produce dyspnea, and was a guide as to the severity of the functional disability of the case.

Dr. FRANCIS W. PEABODY, of Boston, said that the effect of training on vital capacity was very marked indeed; this did not affect the clinical behavior of respiration in heart disease, however.

**The Immunizing Effect on Swine of Desiccated Sensitized Hog-Cholera Virus.**—Dr. C. W. DUVAL and M. J. COURET, of New Orleans, stated that the hog cholera immune serum of De Schweinitz and Dorsett very quickly deteriorated, must be used in large quantities, and was quite expensive. Heretofore, defibrinated blood had been used as a virus; but it was now found that tissues, by extraction and desiccation, yielded a virus which would remain potent for at least thirteen months, which could be used in small doses, and which could be produced cheaply. The best effects were obtained by sensitizing the virus; it then could be used safely and effectively. Animals might be immunized by doses ranging from 0.05 mgm. to 5 mgms. Duration of immunity depended on the amount of virus used. Heretofore, the immunizing virus had been given in one dose; it was now found that immunity was more persistent when after an initial minute dose, three weeks later a dose of five to ten mgms. had been given.

**Action of Opium Alkaloids and Their Combinations on the Vomiting Centre.**—Dr. DAVID I. MACHT, of Baltimore, said that nausea and vomit-

ing were the most annoying symptoms produced by opium and its derivatives. In a study of the seven principal alkaloids of opium, it was found that they could be divided into two groups: (1) Morphine, which caused vomiting; (2) all the others, which produced nausea feebly. The minimal dose of morphine which produces vomiting in the dog was found to be (average) 0.3 to 0.4 mgm. per kilo body weight. Not only was vomiting produced by morphine, but the drug puts the vomiting centre out of gear; no vomiting was induced thereafter by apomorphine. Morphine and narcotine given together produced less vomiting than smaller doses of morphine alone; moreover, the combination did not produce exhaustion of the vomiting centre: the same held true for morphine in combination with narceine, and even more remarkable effects were seen when a mixture of all the alkaloids (pantopon) is given; the vomiting centre was not put out of working order by this preparation. Clinical observations had demonstrated the superiority of pantopon. The explanation of its favorable action probably lay in the molecular structure of the alkaloids: the combination of opposites reduced the tendency to provoke nausea.

Dr. R. H. BABCOCK, of Chicago, said that he had used pantopon with most gratifying results; it had a better somnifacient effect than morphine and it acted better upon cardiac patients than morphine.

Dr. DAVID I. MACHT, of Baltimore, said that pantopon had been found to serve as an excellent anesthetic for experimental dogs.

**The Role of the Liver in Acute Polycythemia.**—Dr. PAUL D. LAMSON, of New York, recounted efforts to determine the cause of the sudden increase of red cells in acute polycythemia. Two theories were held in view: (1) That polycythemia was due to sudden diminution of blood fluid with concentration of cells; (2) there was a sedimentation of red cells somewhere in the body, which if stirred up would suddenly increase the red cell count. Epinephrin would cause a polycythemia in a few minutes; this reached its height in fifteen minutes and began to fall in another fifteen minutes.

Experiments (described in the paper) were made to fix the liver as the source of the influx of cells. It appeared that the increase of cells was not due to loss of plasma alone, but also to a sudden influx of stored cells. The liver seemed to be the organ that was responsible for both factors. It was suggested that a physiologic influx of epinephrin might account for acute polycythemia, such as occurred after fright, etc.

**Blood Sugar Estimations as a Test of Carbohydrate Tolerance.**—Dr. LOUIS HAMMAN, of Baltimore, stated that frequent examinations of the blood and urine after the administration of glucose to fasting persons revealed four types of reaction: 1. The Normal Reaction: The blood sugar rises rapidly to a level not exceeding 0.15 per cent. From this point it again rapidly declines, the whole reaction being over in less than two hours. 2. The Diabetic Reaction: The blood sugar rises more slowly, but reaches a higher point, 0.2 per cent. and over. The high point is maintained for some time, and the decline occurs gradually, the whole reaction occupying three



hours or longer. If the blood sugar rises above 0.175 per cent., sugar appears in the urine. 3. The Renal Reaction: In a small number of persons, although the blood sugar curve is in all other respects like the normal reaction, still sugar appears in the urine. In severe cases of diabetes this same low renal threshold is often found. 4. The Nephritic Reaction: In many cases of nephritis the blood sugar rises to a high level, often exceeding 0.2 per cent., and the blood sugar curve resembles the diabetic reaction; however, no sugar, or only a trace of sugar, appears in the urine. Studies of the blood sugar reaction after the administration of glucose and its relation to glycosuria give valuable clinical data in diabetes and other conditions.

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*The Healthy Marriage.* A Medical and Psychological Guides for Wives. By G. T. WRENCH, M. D., B. S. (Lond.), Past Assistant Master of the Rotunda Hospital, Dublin; Second edition. New York: Paul B. Hoeber, 1917. Pp. 299. (Price, \$1.50.)

We live in an era marked by efforts to educate the general public in matters concerning health, and a host of the efforts that have been made in the form of books have dealt with one or another of the phases of sex hygiene. Some of these have been good, others only fair and many so bad as to have been unwarranted. The truly good ones have been decidedly few and it is always a pleasure to welcome an addition to their number. The present volume gives this pleasure to the fullest extent, for it is truly excellent both in what it teaches and in how it teaches it. The author deals intimately with all of the factors which go to make up a normal, healthy and happy marriage, and of necessity speaks often of the sexual sides of married life. Wherever he does so he handles his subject in a way that is altogether pleasant, though intimate and quite to the point. He gives the woman the facts which should guide her in the proper conduct of marital relations in general and in particular, but he gives them in such a manner as to leave a pleasant impression rather than one tinged with an element of disgust. But he goes much further than the sexual side of the married life and gives sound advice on most of the matters which are concerned in the maintenance of normal health and happiness. Thus he includes discussions of the causes of neuroses, the value of exercise, food, ventilation, baths, and hygiene in general, and even deals with the subject of appropriate dress. He also presents chapters on the menstrual function, pregnancy, and some of its more common abnormal aspects, labor, the puerperium, and the climacteric. The whole work is of the type that carries conviction of the author's fitness for treating of the subject, which was born of his experiences as a past assistant Master of the Rotunda Hospital. He has written from the view point of the woman, and to her the book can be recommended, but it can also be commended to the attention of the physician who is often called upon for advice in the matters here considered.

*The Practice of Urology.* A Surgical Treatise on Genitourinary Diseases Including Syphilis. By CHARLES H. CHETWOCK, M. C., LL. D., F. A. C. S. Professor of Genitourinary Surgery, New York Polyclinic; Visiting Surgeon to Bellevue Hospital; Special Consulting Surgeon to Knickerbocker Hospital. Profusely illustrated. Second edition. New York: William Wood & Co., 1916. Pp. 825. (Price, \$5.50 net.)

This is the second edition published within a period of three years. There are several changes: the department of cystoscopy has been enlarged, an addition has been

made to the operative technic and, finally, a section on local anesthesia has been included. The volume is complete, especial attention being paid to the macroscopical and microscopical anatomy of the genitourinary tract, the technic of operations, the instruments required, and the various blood reactions and their significance. In the chapter on instruments and surgical technic the author's alternating urethral irrigation clamp, by means of which the urethra is alternately filled and emptied, is described and illustrated. In this chapter the care and sterilization of the urologist's armamentarium is also carefully considered. Diagnosis receives an adequate amount of space, being subdivided into oral examination, physical examination, uranalysis, chemical, microscopical, and bacteriological, serodiagnosis, with several pages on serum and vaccine therapy, urethroscopy, cystoscopy, functional renal diagnosis, and roentgenography. In enumerating the various complement fixation tests the author points out that the gonococcus complement fixation test possesses even a greater percentage of reliability than the complement fixation test for syphilis. The diseases of the various parts of the genitourinary tract from the penis to the kidney, together with their etiology, diagnosis, prognosis and treatment, both medical and surgical, make up the bulk of the volume. A short but excellent section on local anesthesia gives the details for the performance of such operations as suprapubic cystotomy, external urethrotomy, and operations on the external genitals. The final chapter is devoted to syphilis, embracing syphilitic infection of all parts of the system, and a resumé of the newer methods of treatment of this disease. While not strictly a part of urology this chapter is added because the author's investigations and teachings, covering a period of over twenty years, have been in the sphere of genitourinary diseases, including syphilis.

The arrangement of the subject matter and the details of illustrating and printing—the important facts being outlined in bolder type throughout the text—deserves special commendation.

## Meetings of Local Medical Societies

**MONDAY, January 15th.**—New York Academy of Medicine (Section in Ophthalmology), Yorkville Medical Society; Medical Association of the Greater City of New York (annual); Medical Society of the County of Erie; Elmira Clinical Society; Psychiatric Society of Ward's Island.

**TUESDAY, January 16th.**—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Medical Society of the County of Monroe; Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine (annual); Medical Society of the County of Westchester; Federation of Medical Economic Leagues of New York (annual).

**WEDNESDAY, January 17th.**—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medicolegal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York; Bronx County Medical Society; Dunkirk and Fredonia Medical Society; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology).

**THURSDAY, January 18th.**—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society (annual); German Medical Society, Brooklyn; Æsculapian Club of Buffalo; New York Celtic Medical Society.

**FRIDAY, January 19th.**—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society; Alumni Association of Roosevelt Hospital; Saratoga Springs Medical Society.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the fourteen days ending January 3, 1917:*

- GALLOWAY, T. C., Assistant Surgeon. Relieved from duty on the Texas border and ordered to proceed to Denver, Col., for cooperation with the Colorado State Board of Health in prevention of interstate spread of typhus fever.
- GARDNER, C. H., Surgeon. Granted fourteen days' additional leave of absence from December 27, 1916.
- GASSAWAY, J. M., Senior Surgeon. Ordered to report to the chairman of the board convened at the Bureau, January 9, 1917, for physical examination.
- HURLEY, J. R., Passed Assistant Surgeon. Detailed to conduct First Aid Classes at School of Preparedness at Washington, D. C., during the month of January, 1917.
- SMITH, H. F., Assistant Surgeon. Relieved from duty in investigations of poliomyelitis, and ordered to return to station at Cincinnati, Ohio.
- STOUT, J. D., Assistant Surgeon. Relieved from duty at Norfolk, Va., and directed to proceed to Spartanburg, S. C., for duty in investigations of pellagra.
- WHITE, M. J., Surgeon. Directed to proceed to Chicago, Ill., for conference; thence to various railway camps of Mexican laborers in Illinois, Missouri, Oklahoma, Texas, and Kansas, relative to measures for the prevention of occurrence and spread of typhus fever.

#### Board Convened.

Board of commissioned medical officers convened at the Bureau from time to time, upon the call of the chairman, for the purpose of making physical examinations of such senior surgeons as may be ordered to appear before it. Detail for the board: Assistant Surgeon, General A. H. Glennan, chairman; Assistant Surgeon General W. G. Stimpson, member; Senior Surgeon Fairfax Irwin, recorder.

### United States Navy Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for the four weeks ending January 6, 1917:*

- CARR, E. C., Assistant Surgeon. Ordered to Naval Recruiting Station, Nashville, Tenn., for duty.
- COLE, H. W., Jr., Passed Assistant Surgeon. Detached from the *San Diego* and placed on waiting orders.
- COTTLE, G. F., Passed Assistant Surgeon. Detached from the *North Carolina* and ordered to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.
- DOWNEY, J. O., Passed Assistant Surgeon. Detached from the Navy Yard, Mare Island, Cal., and ordered to the *Oregon* on December 28, 1916, for duty.
- DURETT, J. H., Assistant Surgeon. Ordered to the Navy Recruiting Station, New Orleans, La., on January 2, 1917.
- EYTINGE, E. O. J., Detached from the *Milwaukee* and given a six months' sick leave from January 2, 1917.
- FAUTLEROV, A. M., Surgeon. Detached from the Naval Medical School, Washington, D. C., from January 29, 1917, and ordered to command the Yokohama Hospital.
- HUNT, DANIEL, Assistant Surgeon. Detached from the *Florida* and ordered to the Navy Recruiting Station, Jackson, Miss.
- LOWMAN, K. E., Assistant Surgeon. Ordered to the Navy Recruiting Station, Scranton, Pa., on January 2, 1917.
- ODELL, H. E., Surgeon. Detached from the Yokohama Hospital and placed on waiting orders.
- PRIEST, H., Assistant Surgeon. Detached from the *Tallahassee* and ordered to the Navy Recruiting Station, Montgomery, Ala.
- SHORT, W. H., Passed Assistant Surgeon. Detached from the *Oregon* and placed on waiting orders.
- SMITH, H. W., Passed Assistant Surgeon. Detached from the *Nevada* and ordered to the *North Carolina* for duty.

- STEADMAN, W. G., Passed Assistant Surgeon. Detached from the Naval Hospital, Mare Island, Cal., and ordered to the *Milwaukee*.
- TAYLOR, J. S., Surgeon. Detached from the *Connecticut* and ordered to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.
- THOMAS, G. E., Passed Assistant Surgeon. Detached from the *Utah* and ordered to the *Tallahassee* for duty.
- WARNER, R. A., Passed Assistant Surgeon. Detached from the *New York* and ordered to the *Connecticut* for duty.
- WATERHOUSE, R. M., Assistant Surgeon. Detached from the *Melville* and ordered to the *Nevada* for duty.

## Births, Marriages, and Deaths

### Died.

- ANDERTON.—In Morristown, N. J., on Tuesday, January 2d, Dr. George A. Anderton, aged thirty-five years.
- ANDZULATIS.—In New Britain, Conn., on Saturday, December 30th, Dr. Joseph Julius Andzulatis, aged fifty-one years.
- BLOSSOM.—In Caribou, Me., on Saturday, December 30th, Dr. William Ripley Blossom, aged fifty-eight years.
- BORLAND.—In Franklin, Pa., on Tuesday, December 26, Dr. John R. Borland, aged eighty-eight years.
- CAVANAUGH.—In Duluth, Minn., on Sunday, December 24th, Dr. Richard Edward Cavanaugh, aged forty-eight years.
- CLARY.—In New Britain, Conn., on Saturday, December 30th, Dr. George Clary, aged eighty-seven years.
- EAKIN.—In Philadelphia, Pa., on Tuesday, January 2nd, Dr. A. Louis Eakin, aged seventy-seven years.
- FULTON.—In Lawrenceville, Pa., on Wednesday, December 27th, Dr. Henry D. Fulton, aged fifty-seven years.
- GALBRAITH.—In Dresden, Ont., on Wednesday, December 27th, Dr. Daniel Galbraith, aged seventy-seven years.
- GILNACK.—In Rockville, Conn., on Wednesday, January 3rd, Dr. Frederick Gilnack, aged seventy-two years.
- HAIGHT.—In Sacramento, Cal., on Friday, December 29th, Dr. Herbert N. Haight.
- HARDEMAN.—In Portersville, Cal., on Saturday, December 30th, Dr. John Locke Hardeman, aged sixty-one years.
- HARRIS.—In San Francisco, Cal., on Sunday, December 18th, Dr. Henry S. T. Harris, aged fifty-three years.
- JONES.—In Los Angeles, Cal., on Tuesday, December 26th, Dr. Cummins B. Jones, aged sixty-nine years.
- LANDT.—In Mohawk, N. Y., on Thursday, December 28th, Dr. William Landt, aged eighty-three years.
- LUYTIES.—In St. Louis, Mo., on Saturday, December 23rd, Dr. Carl J. Luyties, aged fifty-six years.
- MCCORMICK.—In Philadelphia, Pa., on Saturday, December 30th, Dr. William S. McCormick, aged forty years.
- McKEE.—In Carnegie, Pa., on Monday, December 25th, Dr. Joseph H. McKee, aged fifty-four years.
- O'BRIEN.—In Alexandria, Va., on Friday, December 29th, Dr. Matthew Watson O'Brien, aged sixty-one years.
- PAINE.—In Eugene, Oregon, on Wednesday, December 27th, Dr. DeWitt A. Paine, aged sixty-three years.
- RAMSBURGH.—In Washington, D. C., on Wednesday, January 3rd, Dr. Jesse H. Ramsburgh, aged forty-six years.
- REBER.—In Philadelphia, Pa., on Saturday, December 30th, Dr. Wendell Reber, aged forty-nine years.
- RICE.—In Fitchburg, Mass., on Saturday, January 6th, Dr. Charles Henry Rice, aged seventy-three years.
- SPEAR.—In Boston, Mass., on Monday, December 25th, Dr. Edmund Dow Spear, aged sixty-five years.
- SWEET.—In Geneva, N. Y., on Tuesday, January 2nd, Dr. Amos L. Sweet, aged seventy years.
- TATUM.—In Stuart, Va., on Friday, December 29th, Dr. Benton F. Tatum, aged forty-five years.
- THOMAS.—In Jonesboro, Tex., on Friday, December 22nd, Dr. George T. Thomas, aged sixty-one years.
- WALSH.—In Oliphant, Pa., on Thursday, December 21st, Dr. James J. Walsh, aged thirty years.
- WARRINER.—In Philadelphia, Pa., on Friday, January 5th, Dr. Harry Blair Warriner, aged twenty-eight years.
- WHITE.—In Bloomfield, N. J., on Thursday, December 28th, Dr. William H. White, aged seventy-nine years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal <sup>and</sup> the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 3.

NEW YORK, SATURDAY, JANUARY 20, 1917.

WHOLE No. 1990.

## Original Communications

### MEDICOEDUCATIONAL PROBLEMS IN THE TREATMENT OF ATYPICAL CHILDREN.\*

By G. HUDSON-MAKUEN, M.D.,  
Philadelphia.

In the newer order of things the physician is beginning to realize more and more the importance of treating his patients rather than their diseases, and therefore in his preparation for the practice of medicine he is finding it necessary to study psychology as well as physiology, anatomy, and chemistry. It is found that the disease itself is not so important as the manner in which the patient reacts to the disease, and on the same principle the modern physician is giving more attention to the effects of remedies than to the remedies themselves.

All this is a natural consequence of a fuller realization of the fact that there is something which distinguishes the human organism from a mere laboratory receptacle or test tube, and this something is obviously the patient's mind or the personality. The time has come when the physician must be more than a mere doctor or prescriber of drugs, and it would be interesting to speculate upon the conditions which are responsible for the change, but it is enough perhaps to recognize its existence, and also the fact that it has been in a measure forced upon us by circumstances over which we have had little or no control. It is not greatly to our credit perhaps that we should feel called upon to make this confession.

The practice of medicine, like the practice of every other profession, must improve in character largely as the result of opposing principles, and our methods of practice, like the methods of any other art, must change to meet the ever changing conditions of a progressive age.

The fact of the close relationship between mind and matter is now generally recognized, and we know that the physical organism of man is the basis of his psychical development. We know that the brain is the seat of the mind and that intellectual development can come only as a result of the physical development of certain cerebral structures, and vice versa, it being a poor rule that will not work

both ways. We are becoming convinced that physical health is in some way related to, and dependent upon, psychical health, and that we always tend to be what we will or desire to be, if for no other reason than that we always strive consciously or unconsciously to reach the height of our ambition. This is probably what Browning had in mind when he said, "A man's reach should be beyond his grasp, or what's a heaven for?"

Moreover, modern thought leads us to the conviction that the prevention of disease is even more desirable than cure, and to no class of physicians should this belief appeal so strongly as to those who have the care of children. It is well known that the inefficiency of adult life is due largely to the mistakes of childhood, but it is not so well recognized that many of the actual diseases of later years may be traced to faulty habits acquired during infancy and adolescence. The physician is usually the first to receive and welcome the child into the world, and he should be the first therefore to outline and direct methods for its education and development, and thus enable it to avoid the mistakes which lead to inefficiency and disease.

Medicoeducational methods are applicable in a measure to all classes of patients, but they are especially indicated in the treatment of so called atypical children, and, as Oliver Wendell Holmes suggested, to be curative in every instance they should be instituted several generations before the birth of the child. Medicoeducational methods, therefore, have a twofold function, the prevention of disease and the cure of it.

The principle of eugenics has been advocated as a means of preventing disease, and but for the difficulties of establishing or enforcing the principle, it would doubtless be of great value. The chief obstacle to the successful practice of any medicoeducational methods, whether for the prevention or cure of disease, is the difficulty arising, first, in outlining a suitable course of procedure, and, second, in having the course properly carried out.

To meet these difficulties successfully the medico-educationalist must be a specialist in the true sense of the term. He must be a medical man and an educational man; he must be at once a physician and a teacher; a physiologist and a psychologist; he must know his medicine well and he must know the workings of the human mind equally well. He must

\*Address delivered at a joint meeting of the New York Academy of Medicine, the New York State Society, the New Jersey Pediatric Society, the Philadelphia Pediatric Society, and the New England Pediatric Society, Boston, November 4, 1916.



know, not only what should be done for the prevention and cure of certain abnormal conditions, but he must also know how to go about it and how to teach others. "To do" is not so easy as "to know what to do," and the great medicoeducational problem is to make men do the things that are good for them and leave undone the things that are not good for them.

Failure in the successful application of medicoeducational methods of treatment may be due to the physician's own lack of belief in them. If we would convince another of the error of his ways, we must ourselves be keenly alive to the error, and when we have once really convinced our patient of his error, we have him in the true psychological condition for the adoption of means which make for its complete eradication. Physicians are constantly making the mistake of separating the mind from the body in their diagnosis and treatment, and this is especially true in the diseases of children. The mind of the child is always a product or function of the child's brain, and defective mentality always suggests a defective action in some of the cerebral structures. This defective action does not necessarily indicate organic cerebral defects, but it may be due merely and wholly to a bad start in the growth and development of the brain tissues.

A study of child psychology teaches that of all the organs of the body the brain is the most susceptible to physical and functional development. The cerebral convolutions increase enormously in number, and the enveloping gray matter, which forms the so called cortex of the brain, undergoes a corresponding increase in its surface growth during what we call mental development. Moreover, the so-called associational fibres of the brain, upon which its mental functions so largely depend, are merely rudimentary in early childhood, and attain their full functioning powers only after years of growth and development.

These anatomical and physiological facts must be taken into consideration in the application of medicoeducational methods, and we should keep in mind that the physical development of the child's central nervous system is largely the result of, and directly dependent upon, his early psychical activities. A striking difference between the mentally normal and abnormal child appears in the fact that the one develops automatically, while the other halts in his development or actually, in some instances, loses ground or undergoes retrograde development. The physician's aim in the treatment of atypical children should be to assist them in both their physical and mental development, and the phrase that best expresses this work is "psychophysical education."

The two important things to keep in mind in the psychophysical education of children are: 1. The correction of postural attitudes; and, 2, the development of normal respiration, phonation, and articulation. These two things have been said to constitute a cardinal principle in the treatment and prevention of disease, and at all events they should form the starting point of all medicoeducational systems of treatment. Their application in the case of normal children is comparatively simple, but in subnormal or atypical children the problem is more difficult and

more complex. These physical exercises have a psychical value far beyond that which is usually attributed to them, and when they can be made use of in the training of atypical children they should not be neglected or supplanted by the usual methods of manual training.

Atypical or backward children should not be coddled, but encouraged, and, like plants of slow growth, in some instances they may be "forced." This may be done by supplying favorable conditions for growth and development, and by directing their physical activities in the right channels. Comparative poor health is not always a contraindication, but often a decided indication for this forcing process. Many a nervous child immediately begins to improve physically as well as mentally when well directed pressure is brought to bear upon him in psychophysical education.

This is due to the fact that the child may have been wearing himself out nervously by his aimless and ill directed activities, and judicious training in such a crisis often results in a much needed rest to both mind and body. It is said of older people that it is not work that kills, but worry, and we are inclined to overlook the fact that this is equally true even of young children. The satisfaction of having performed constructive work in a successful manner is not confined to mature men and women, but may come very early in the lives of children, and it is not too much school work that impairs the health, but too little that is well adapted to individual needs.

Nervousness is the most characteristic state of the atypical child, and manifests itself in a thousand and one ways. In the majority of instances it is due to a neuropathic heredity, coupled with an unsuitable or unfortunate environment. Although the physician can do nothing directly to change the child's heredity, he may do much to make the environment more suitable and more favorable by at once instituting medicoeducational measures. These measures must be really medicoeducational, and only the physician can direct them because he alone knows whether the symptoms are of organic origin, or whether they are more or less functional and therefore subject to psychical and emotional treatment.

So called hereditary tendencies are frequently aggravated and encouraged by faulty parental attitudes; and these are usually the result of ignorance, selfishness, or it may be overanxiety with reference to the condition of the young offspring. In this way the mistakes of the parents may indeed be visited upon the children, even to the third and fourth generation. Atypical children are for the most part spoiled children, and they usually acquire nervous habits which, if allowed to continue long, can never be quite eradicated or supplanted.

The most difficult thing in the treatment of atypical children is to control and direct this parental influence and enlist its services in behalf of the child's welfare. In some instances the parents are hopeless, and it becomes necessary to remove the child entirely from the home environment before satisfactory progress can be made. Mother love is undoubtedly a great factor in child development, but if wrongly directed it may be so misunderstood as to be subversive of all medicoeducational influences

The bright mother of in many respects a bright boy consulted me in behalf of her child while this paper was being written, and I may add that the father of the boy was a successful practitioner of medicine, although now retired. The purpose of the consultation was to devise measures for the cure of the boy's stammering. He is ten years of age and fairly well developed both physically and mentally, and, as is often the case, I found the stammering to be only one of several striking symptoms of a general nervous condition. The boy has occasional crying spells without any apparent reason. He is afraid to be alone in the dark, and at night he will not go unattended to bed.

In explanation of this condition I found that in early childhood he had a governess who was accustomed to recount to him all the terrible things that might happen if he did not "watch out," and he was frequently allowed to be present in the family circle during the recital of interesting and thrilling tales of adventure. As a result we have a boy who stammers in his speech and who, in spite of an otherwise good mind, is unable to control adequately certain of his emotional and psychical faculties, and it will now be a difficult task for him to overcome these acquired tendencies.

In contrast with this little story let me tell another of another son of a physician, who was brought to me at the age of two and a half years on account of a tendency to stammering speech. I had a brief consultation with the father of the child and outlined a little course of treatment, which consisted purely of what I have called *medicoeducational* measures. After two weeks a second consultation was held, and as a result of the father's well directed methods speech began to develop in a perfectly normal manner, and there is now no trace of stammering or other nervous affection after a period of about ten years.

Overanxiety and undue manifestations of solicitude as to the child's welfare on the part of the parents is a frequent cause of nervous fear in children, and I have recommended as a substitute a course of what someone has called "intentional neglect" in order to develop in the child greater independence of feeling and action. It takes courage for a mother completely to ignore the crying and pleading of her young hopeful, but she should understand that there are many occasions when this is the very best thing to do.

A case showing the disastrous results of too much coddling was that of a boy thirteen years of age, a Canadian by birth, who was a bad stammerer, and at the same time had acquired other curious nervous conditions. The mother requested me prior to his arrival to allow no one of pro-German proclivities to come in contact with him because it always aroused him to such a high pitch of excitement; in other respects also she herself insisted upon directing the manner if not the method of treatment. She was overanxious with reference to the slightest symptoms, and especially lest the boy should become too much fatigued, and I could not make her understand that by suggestion she was aggravating some of his most important and serious symptoms. Needless to say that in spite of all that we could do the

boy continues to stammer and, what is of greater importance, he continues to be a psychophysical weakling, because, to use a well known expression, he is tied to his mother's apron strings, and the mother herself is guided by her heart rather than her head. In other words, her affections so dominate in the management of her son that whatever judgment she may have had originally is now woefully warped or completely held in abeyance.

These three cases illustrate very well how atypical psychophysical conditions may be acquired by children prior to the school age, owing to faulty environment and inadequate training, and the second case illustrates what may be done by way of prevention.

#### SUMMARY AND CONCLUSIONS.

Children are largely what we make them, and the factors which determine their psychophysical condition as well as their personality are heredity and environment.

Heredity is an important factor in the development of children, but environment is even more important because it is always subject to change and improvement, and in addition is probably even more responsible than heredity for putting the prefix, *a*, in the word atypical as it relates to children.

The most important feature of a child's environment is his education and training, and the most important neglected period in the life of anyone is that which comes prior to the so called school age.

Teachers believe that the failures of their pupils are due chiefly to faulty habits formed before their entrance into the schools and colleges.

The so called fixed habits are the early ones formed during the child's physical and mental development in the first years of his existence.

The Jesuits have a saying, "Give me the first seven years of a child's life and I care not who has the rest."

While the mind of the child has a physical basis, yet his mental activities determine to a great extent the character of this basis by regulating its development, and hence it is that the general physical condition of the child may be influenced for good or ill by the character of his mental and emotional activities.

Medicoeducational methods become real measures of prevention only when employed during infancy.

A mother once asked at what age should a child learn to be obedient, and the significant reply was, "If your child has not learned obedience now, he never will learn it."

Medicoeducational measures should aim, not to remake the child, but to make the "absolute best" of what has already been made.

Nervousness is the most characteristic malady of children, and its treatment should be, first, preventive and, second, remedial or curative.

Preventive treatment is applicable in the earliest infancy, and consists largely in an attempt to control the child's physical activities through careful direction of his psychical and emotional activities.

If the child is normal physically, this treatment should result in a development of normal psychical and emotional faculties, but if the child inherits physical abnormalities, such as cleft palate or other

irregularities of structure, surgery and some form of medication may be indicated in addition to the psychophysical training.

Punishment should never be inflicted except perhaps at the very beginning and before the child is mentally susceptible to medicoeducational measures.

It is said that there are upward of 300,000 stammerers in the United States alone, and I am of the opinion that if this vast army of defectives had had the right kind of early training there would now be few if any stammerers to contend with, and what is true of stammering is true of similar and allied nervous diseases.

The remedial and curative treatment of atypical children is psychophysical in character. It is an effort to improve their condition through their physical activities.

The personality of the child is modified and moulded by what someone has called the reflex influences of its own acts and expressions. "To make any act or gesture or mode of speech or motion habitual through deliberate repetition is to stimulate in the personality the appropriate moral quality or emotion of which such an act or gesture is the expression."

The Japanese have a theory that for one to be what one would like to be, it is only necessary for one persistently to act the part, and according to this principle if we would have a child become polite, for example, and good, we have but to persist in the teaching of the principles of politeness and goodness, and encourage the child to practise them.

Doing things with what Frankel has called "purposeful intent" is found to have a greater educational value than doing them carelessly or even in play.

The play instinct is an important factor in child development, but at the present time is the most overworked of all, both in the home and in the primary school.

What may be called the work instinct is equally important, and is now greatly neglected in the early training of children.

The difference between play and work should be clearly understood by the child, and the greater dignity of the latter should be impressed upon his mind at an early age.

The child should be taught to do things, not because they are easy, but because they are right, and the greater the difficulty of doing them, the greater the educational value.

Moreover, work and play should not be commingled, but should form two distinct factors in education.

Mr. Roosevelt gave good advice when he said: "When you play, play hard, and when you work, don't play at all."

Correct postural attitudes and good respiratory, pharyngeal, and articulatory habits should have a conspicuous place in all medicoeducational methods, because of their esthetic value and because they tend to give greater selfrespect, selfreliance, and selfcontrol.

The training of speech is of special importance because of the close relationship between the so called mental faculties and the organs of phonation and articulation.

## GRIPPE PNEUMONIA.

By BEVERLEY ROBINSON, M. D.,

New York,

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At this season we never read a daily paper without seeing the report of many deaths from pneumonia. Many of these are due primarily to grippe. By avoiding, or treating grippe effectively, we can prevent intercurrent or succeeding pneumonia. If we cannot prevent it or cure it, in all cases, we can, at least, lessen its severity and prevent many cases of death.

I know of no remedy at the present time equal to the salicylate of ammonium, when properly given in sufficient doses and at an early period. It should be given in capsules or solution, as preferred. When given in capsules it should be combined with caffeine and given every two hours. When given in solution it should also be combined with caffeine and a carminative like peppermint water and a little syrup of tolu, used as menstruum and corrective of slightly unpleasant taste. With young people it is preferable to use the solution. I have given hitherto, as a rule, in beginning treatment of grippe two capsules every two hours, each capsule containing three grains of salicylate of ammonium and one quarter grain of caffeine. Five or six doses may usually be given with good effects. Later, two capsules should be given every three or four hours.

In all colds at the present time, I order these capsules because I am satisfied, whether they are due to grippe or not, the capsules are remedial and do no harm.

As a preventive of grippe when it is prevalent, or when there is exposure to it, two capsules taken three or four times in twenty-four hours for twenty-four or forty-eight hours, are desirable. Their use may often be supplemented with advantage, by giving two grains of quinine at meal time, in a capsule. I prefer the muriate of quinine to the sulphate, as it agrees better with a sensitive stomach. I do not combine quinine with salicylate of ammonium, because practically they do not seem to work well together, so far as being helpful in grippe. This I have found out by experience. Whenever I can do so, in the beginning of grippe, when the patient is suddenly attacked with chilly feelings, fever, depression, and cough, I make use of inhalations of beechwood creosote. I make use of the ordinary croup kettle, filled with water and kept simmering in the room, constantly for a while, sometimes for hours or days, depending somewhat upon the way it affects the patient and the nurse. The creosote may be dropped upon the surface of the water five, ten, or fifteen drops at a time, and renewed as required or when the odor of creosote becomes slightly faint. The windows are kept open despite the use of the creosote, as fresh air is very desirable. All drafts, however, are most dangerous. Besides being useful to the patient, creosote vapor in the room prevents all danger of the grippe or pneumonia being contracted by the nurse or relatives. Other than these no one should be permitted to enter the sickroom. For stimulants or heart tonics, there are only two worth considering—one is strophanthus, the other is old brandy. The strophanthus



should be given in small doses, one to two minims, every two or three hours, at the same time as the brandy. The latter may be given in doses from a teaspoonful to a tablespoonful in a very little water, or Vichy water, ice cold.

Whenever there is stomach or intestinal disturbance—such as nausea and flatus, nothing equals Kirschwasser, made in Amsterdam from the product in the Black Forest, Germany. It allays these symptoms as nothing else will and helps save life not infrequently.

Too much interference with pneumonia patients is radically wrong. It is of no value to be listening to the lungs frequently and determining the precise march of the disease locally, at the expense of the patient's strength and vitality. In strong, robust men, even when stricken with grippe pneumonia, leeches applied locally over the liver or cardiac region, or a moderate bloodletting by venesection, will save life when nothing else will. These are cases where an acutely dilated heart cannot withstand the increased blood pressure thrust upon it. But let me now warn every practitioner *not* to infuse saline solution after bloodletting. By so doing, we often destroy life where we might have saved it by letting well enough alone.

The best remedy for the bowels, if need be, is cascara evacuant by the mouth, or one or more glycerine suppositories to unclog the loaded rectum. The nutriment should consist of fermented milk, beef juice, panopepton, light broth of chicken, or mutton, jelly, eggnog, curds, etc. In addition, a little hot, well made tea or coffee, is frequently valuable. Dry champagne is also helpful, and oxygen inhaled frequently, without increased fatigue to the patient, will lessen dyspnea and relieve cyanosed lips and extremities.

With the foregoing treatment, carried out intelligently, many lives will be saved, and thus the "captain of death" will have fewer victims, even among those who have passed the meridian of life.

12 WEST THIRTY-SEVENTH STREET.

## FATAL STREPTOCOCCEMIA IN AN EPILEPTIC.

*Due to Hemolyzing Short Chain Streptococci.*

By HOWARD A. KNOX, M. D.,

Skillman, N. J.

Acting Clinical Director, New Jersey State Village for Epileptics.

The following report is rendered because of the unusual behavior of *Streptococcus brevis* and the fulminating reaction it produced. The atypical features may in part be due to the fact that the patient was an epileptic, for the reason, as everyone familiar with epilepsy can testify, that in those so afflicted ordinary medical entities are sometimes so distorted as to be unrecognizable by the uninitiated, and again many pseudoconditions are seen which simulate real pathological conditions; indeed the medical anomalies seen in this disease would form the subject of a most interesting thesis.

Our patient (case 2981) was admitted to the Henry M. Weeks Hospital, October 1, 1916; he

was a chronic epileptic of many years' duration, twenty-eight years old, and of unusually powerful physique. He gave a history of trauma of the right supraorbital region received about two weeks previously as the result of a fall during a seizure. The brow became swollen, red, and painful a few days afterward, and was incised transversely; a thin seropurulent fluid was obtained in small quantity, and for about four or five days he seemed to be improving and then suddenly the palpebral tissues and right supraorbital area became reddened, edematous, and painful; in this condition he was admitted to the hospital.

October 1st.—On admission he had an axillary temperature of 104° F., and aside from the condition for which he was admitted, the physical examination was negative, except for persistent constipation which is practically universal in epilepsy. His pulse was of low tension and 138 to the minute, his respiration was 40; he was considered to be in a dangerous condition and the last rites of the church were administered. He was given atropine grain 1/100 and strychnine sulphate grain one-thirtieth. One hour later streptosero bacterin (500,000,000) was injected into the subcutaneous tissues of the right forearm. The edematous right lid was freely incised and nothing but blood was obtained, the tissues being almost cartilaginous in consistence; tincture of iodine and glycerin, equal parts, was applied to the wound. The lids were retracted with difficulty and argyrol twenty per cent. and sterile petrolatum applied to the conjunctiva. Liquid diet was given.

October 2nd.—The morning temperature was 99.8° F. A saline laxative was ordered and the argyrol solution applied to the conjunctiva. At 4 p. m. the temperature had reached 102.6° F. which was its maximum for that day. He was mentally clouded. He had one grand mal convulsion during the night.

October 3rd.—The morning temperature was 100° F.; the eye could be opened, but the swelling was extending backward over the temporal muscle and there was carphologia and subsultus despite the relatively low fever. At 4 p. m. the temperature was 104.2° (axillary) and the patient was in a noisy occupation delirium, evidently reacting to both auditory and visual hallucinations. This was controlled to some extent by sponging and alcohol rubs, but the most marked effect was obtained by colonic irrigation with cool water.

October 4th.—At 8 a. m. the temperature was 103.2° F. and could be reduced by sponging and fanning. The indurated, boardlike swelling was extending backward over the parietal bone and was tender to touch. Streptosero bacterin was again given (500,000,000) at 9:30 a. m. He was given calomel in fractional doses followed by a saline with good effect. By 3 p. m. the right ear became enormously edematous, and the patient's face, hands, and feet were cyanosed. At 8 p. m. his temperature was 106° F., and the nervous manifestations were again in evidence. The right ear and right side of face were painted with ichthyol and colodion, equal parts, and he was bathed and given colonic irrigations with unsatisfactory results.

October 5th.—At 8 a. m. the temperature was 102° F. and at 4 p. m. it was 103° F. The tissues were markedly distended and indurated on the right side of the head, and it was thought by a consultant that fluctuation was present over the right parietal eminence. A two inch incision was accordingly made, which extended to the calvarium, but absolutely no pus was obtained, only the same cartilaginous condition, and the scalp here was 3.5 cm. thick. The head was dressed with wet bichloride (one in 5,000) dressings and hydrotherapy continued.

October 6th.—The morning temperature was 101° F., but it went to 105° at 4 p. m. and 106° at 8 p. m. Slow proctoclysis with normal salt solution was used throughout the day, and dressings of this solution were used on the face and head, as hot as could be borne. The other side of the face and head became involved in the process, and he was given morphine sulphate grain one-half by mouth for the pain. This relieved the pain and produced sleep.

October 7th.—Morning temperature 103° F. It went to 105° at 4 p. m. and to 106° at 8 p. m., which was practically duplicating the chart of the previous day. The proctoclysis was discontinued and the saline packs to the head were continued. Every effort was made to reduce the temperature, but the results were poor. It promptly went up as soon as active measures were discontinued.

October 8th.—Morning temperature 100.6° F., evening temperature 105°. Pulse, 120 a minute and weak, thready, and intermittent. Respiration was 24. The local process on the right side of the head was purplish and swollen more than ever, and the left eye was closed completely. Hot bichloride of mercury solution (one in 5,000) was substituted for the saline pack to the head. The mouth had to be frequently cleansed, as the tongue was brown and furred and the teeth were covered with sordes.

October 9th.—Morning temperature 101° F. and evening temperature 104.4°. Two free incisions were made in the left ear, which was enlarged to at least twice its natural size. The patient was in a state of coma vigil.

October 10th.—The morning and evening temperatures were practically the same as on the previous day. At about 8 p. m. the patient became almost pulseless and exhibited Cheyne-Stokes respiration, and the surface of the body was cold and moist. He was given strychnine grain one-thirtieth and atropine grain 1/100 hypodermically, and black coffee by rectum. One thousand c. c. of physiological salt solution were also given intravenously under strict asepsis by the left median basilic vein. The result from this treatment was most remarkable. In fifteen minutes he had a severe chill which lasted for from ten to fifteen minutes, the respiration increased in depth and regularity, and he passed forty ounces of urine and had a copious bowel movement. At midnight he was reported by the nurse as "much better."

October 11th.—The morning temperature was normal for the first time since admission to the hospital; the patient regained consciousness and seemed in every way better. At noon he had suddenly a profuse hemorrhage of bright, red blood from the

bowel; his pulse became weak and rapid. Opiates were given and the hemorrhage apparently subsided. He became stronger toward night and the temperature went only to 101° F. in the evening.

October 12th.—The patient became weaker again through the night, and in the morning was noted to be *in extremis*. He expired in spite of our efforts shortly before 10 a. m., and his temperature at death was 104.6° F. He was cyanotic and lemon yellow at the time of death.

One half hour before he expired, a blood smear was prepared and blood cultures were made on the medium used by Schottmüller, two parts of human blood to five parts melted agar. The blood used for the smears was a part of that taken from the median cephalic vein of the right arm with a small sterile record syringe for the blood cultures. It was spread on slides and after drying was stained with Wright's blood stain; the findings were interesting. In fifty immersion lens fields there were fourteen leucocytes, and of these one was a poorly developed polymorphonuclear leucocyte and all the others were small lymphocytes. There was considerable change in the erythrocytes; most of them were small, and they not only varied in size but in shape; there was polychromatophilia and basophilic degeneration. The most interesting observation in the smear was the presence in every field of from two to eight or even more round, blue, reticulated, nonnucleated bodies, about half the size of a normal red cell. They were not platelets or "blood dust." I called in my associates, but we were unable to identify them. It is possible that they were atypical white cells. There were no bacteria observed in the smear.

In describing the blood cultures it will be best perhaps to go into some detail as to procedure. The media used were nutrient broth, Dunham's peptone, plain agar, and blood agar, and all were sterile except the last, and a description of the preparation of this alone will be given. The blood used in making this medium was obtained by Dr. Dan S. Renner and myself from a case of cerebral congestion in an elderly man afflicted with chronic interstitial nephritis, who had had one attack of cerebral hemorrhage about a year previously. This man was not an epileptic. The arm was washed with alcohol and the area over the right median cephalic vein was painted with tincture of iodine. A seventy-five c. c. record syringe, platinum needle, and connecting tube were carefully sterilized, and the hands of the operator were surgically clean; the field was made aseptic with sterile towels. The right median cephalic vein was punctured and sixty c. c. of blood withdrawn and deposited in a warm sterile flask. The operation was repeated on the right median basilic vein and also on the left median basilic until 190 c. c. of blood were obtained. Clotting prevented our obtaining enough blood from one vein, and we did not wish to use oils, paraffin, hirudin, or other artificial means of preventing coagulation. The flask was agitated and shaken in a water bath at 35° C. for fifteen minutes and then placed in the ice box for forty-eight hours. A specimen was cultured when it was obtained to insure sterility. The agar was prepared in the usual way, except for its reaction. One thousand c. c. were made up. Beef extract,

Witte's peptone, and sodium chloride C. P. were used. Three samples of five c. c. each of the melted agar were boiled with forty-five c. c. of distilled water and after adding five drops of 0.33 per cent. phenolphthalein solution to each, they were titrated with N/20 ammonium hydroxide; the average amount of the latter required to produce a faint pink was 0.5 c. c.

The medium was allowed to retain that reaction and no alkali was added. The blood was quickly brought up to a temperature of 45° C. and two parts of it were added to five parts of the agar at the same temperature. The mixture was filtered in sterile filters, containers, and tubes under applied heat, and after tubing had been completed the loaded tubes were autoclaved under low pressure for one half hour. Controls have remained sterile.

This blood agar was inoculated from the sterile record syringe which was used to obtain the blood from the patient. The blood, 0.5 c. c. to each tube, was allowed to strike the surface of the agar and flow down into the water of condensation at the lower surface of the slant. The tubes were incubated at 38° C. (fever temperature) in an automatically regulated electric incubator.

At the end of the twenty-four hours six colonies appeared on the dry surface of one slant and two on another. They were about 0.5 mm. in diameter on an average, and gray in color, faintly tinged with green. They were circular in outline, the edges were smooth and even, and the surface was slightly convex. At the end of forty-eight hours they had increased in size and showed a marked tendency to coalesce. The patient's blood in the water of condensation showed hemolysis and the phenomena extended down into the media and faded off at a depth of one cm. At the end of seventy-two hours hemolysis extended throughout the lower part of both tubes. Smears made at the end of twenty-four hours and stained with Kühne's methylene blue showed small cocci in chains of three to six, and many were single or in pairs. At the end of forty-eight hours they were practically all in short chains and larger in size. At the end of seventy-two hours, involution forms began to appear. The strain has been retained and its pathogenicity will be determined for laboratory animals.

No necropsy was permitted, but it is supposed that the enteric hemorrhage was due to a local pyemic process. *Streptococcus mitior* or *viridans*, a short chained organism, usually produces small green colonies and very little hemolysis.

I wish to thank Dr. Dan S. Renner, first assistant physician, for his generous assistance and advice. I also wish to thank Dr. David F. Weeks, superintendent, for his kind encouragement and permission to report the case.

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271 AVENUE C, BAYONNE, N. J.

#### GENERIN.

#### *The Agent which both Induces Menstruation and Starts Gestation,*

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London,

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In consequence of statements which from time to time have appeared in books, there has prevailed and still even today prevails the belief that women who have never menstruated and who are incapable of menstruating, but who are physically fit to live a marital life, have and may nevertheless become pregnant. I am quite confident, however, that such statements originated and have been disseminated inadvertently through some error of judgment and carelessness in the investigation and interpretation of the facts.

Most medical men who have been actively engaged in practice for any length of time, have come across patients who never menstruate while bearing children purely and simply because the recurring conceptions have taken place in spite of lactation and while the menstrual function was held in abeyance by the mammary activity, or have had again patients who became mothers although they seldom menstruated at all. In both these cases, however, the uterus was capable of menstruating, and because it was capable of displaying the phenomena of menstruation, it was fit to harbor and carry to maturity a fertilized ovum.

In hospital and private practice I have seen altogether nine patients of ages ranging from twenty-four to fifty years, who were actually living in wedlock and who were physically fitted to live a marital life, but who had never even once menstruated. Three of these had married at an age when conception was possible, but had already reached the recognized menopausal age before coming under my observation, and not one of these had ever been pregnant. The remaining six continued under my care for three or more years, and during this time, in spite of well directed treatment, none of these ever menstruated and none ever became pregnant. Now we may very reasonably assume that ovulation occurred at least occasionally in some of the aforesaid cases, considering that I detected Graafian follicles in the ovaries which I had occasion to remove from an unmarried woman aged twenty-nine years, who was physically fitted for living a marital life and who had never once menstruated. As, moreover, it is practically impossible to allow that all the husbands of the nine married women referred to were impotent, we are undoubtedly justified in concluding that a woman who is incapable of menstruating is also incapable of conceiving.

Discoursing on the purpose of the menstrual loss in his work, the *Science and Practice of Midwifery*, Playfair sums up the full extent of our knowledge thereon in the following terms:

The cause of the monthly periodicity is quite unknown and will probably always remain so. The purpose of the loss of so much blood is also somewhat obscure. To a certain extent it must be considered an accident or complication of ovulation produced by the vascular turgescence. Nor is it essential to fecundation, because women often



conceive during lactation when menstruation is suspended or before the function has become established. It may, however, serve the negative purpose of relieving the congested uterine capillaries, which are periodically filled with a supply of blood for the great growth which takes place when conception has occurred. Thus immediately before each period, the uterus may be considered to be placed by the afflux of blood in a state of preparation for the function it may be suddenly called upon to perform.

This is truly a fair sample of the vague notions which up to the present time have existed and found place in our textbooks regarding the meaning and purpose of menstruation, but they will be forever banished so soon as we realize that *generin*, the oxidizing agent which is responsible for the induction of the oxidative processes connected with menstruation, is the same oxidizing agent which is essential for starting gestation.

Already on several occasions I have, both in British and American medical periodicals, adduced well considered and incontrovertible clinical facts in support of my contention that menstruation is a secretory phenomenon—evidence which squashes wholly and renders absolutely untenable the hypothesis that the menstrual discharge is blood poured out by capillary vessels which have been opened into as a result of a more or less extensive degeneration and disintegration of the lining membrane of the uterus. Hitherto I have never even touched upon the strong presumptive evidence in favor of the menstrual discharge being a secretory product rather than mere blood poured out by disrupted capillaries furnished us by the very great differences so patent to every one in the physical characters, the color, the odor, and the mobility of the menstrual discharge, not only in different individuals, but in the same individual at different times. In connection with the periodical secretory activity of the uterus, however, it must be borne in mind that capillary hemorrhage may accidentally occur because the endometrial capillaries are large and very thin walled, and rupture on the slightest provocation. Hence we find it is almost impossible at any time to pass a blunt sound into a normal uterus without causing some hemorrhage.

It is now a well established fact that during the two or three days prior to and in anticipation of menstruation, there is an increased determination of blood to the internal organs of generation, an increase which is gradually induced and reaches its maximum just as menstruation is about to take place. This heightened vascularity is brought about by the vasodilatory action of the agent, *generin*, and is necessitated by the greatly increased demand for oxygen made by all glandular cells during activation. During secretory activity, as is well known, the cells require probably four times the amount of oxygen that they do during the resting stage, and the source of the energy involved in the production of the menstrual discharge is an oxidative process occurring in the cells of the uterine glands. I venture to suggest too that *generin*, like pilocarpine in the case of the submaxillary salivary gland, exerts its influence either on the uterine gland cells themselves or on the nerve endings in these cells, and that the vasodilatation in preparation for the increased oxidation which is to take place during secretory activity, is brought about by the direct action

of the *generin* on the vessels. That this is so is in my opinion incontestably supported by the fact that the reflex dilatation of the vessels in the generative tract which results during sexual intercourse, neither hastens the onset of menstruation nor yet re-establishes the menstrual discharge under ordinary physiological conditions once it has ceased.

The mere fact that menstruation may be suddenly arrested and even suspended for a greater or less length of time by physical or mental shock sustained while menstruation is progressing, does not in any way militate against the aforesaid theory of the action of *generin*.

We have, moreover, the very strongest clinical reasons for believing that the agent, *generin*, not only permeates the ovary, the Fallopian tube, and uterus, but is produced in each of these structures, and that the unity of these structures in its production with a dominating influence emanating from the ovary, is necessary for its activity. Regarding the chemical nature of this *generin*, I am not yet in a position to express an opinion, but in the manifestation of its activity iron undoubtedly plays a most important role, for we know that menstruation, which is not infrequently restrained in chlorosis—a disorder in which each red blood corpuscle and each cell of the uterus has less hemoglobin than it should have—becomes reestablished as the iron content of the body becomes reinstated under the judicious administration of some inorganic preparation of iron.

The energetic oxidizing powers of *generin*, which are probably not unlike those of nitric oxide with sulphurous acid, are expended, however, only on the production of menstruation in the absence of a fertilized ovum, as the latter is a much more powerful acceptor of oxygen than any group of adult cells can be. Menstruation thus becomes suspended whenever the energies of *generin* are used wholly in starting gestation, and this, as I have on previous occasions pointed out, happens invariably during the two or three days prior to an expected menstruation.

Up to the present time clinicians, in reckoning the duration of gestation, and embryologists in tabulating and depicting the various changes attributable to definite stages in the development of the human embryo and fetus, have been content to base their calculations upon the date of the cessation of the last menstrual period just as though fertilization always took place immediately after menstruation, and gestation followed immediately upon fertilization; assumptions which are in direct opposition to clinical facts and which can never have been considered sound. Balfour (*Comparative Embryology*, ii, p. 265) says: "Our knowledge as to the early development of the human embryo is in an unsatisfactory state." Hertwig (*Textbook of the Embryology of Man and Mammals*) says: "A little, although very scanty information has been acquired, but this concerns only the second and subsequent week. A small number of ova have been described in the literature, which for the most part have come from miscarriage, and the age of which has been estimated at from twelve to fifteen days." Hertwig (Fig. 141, *loco citato*) depicts even a human embryo

with yolk sac, amnion, and belly stalk of fifteen to sixteen days after Coste from His. Quite incidentally I would here remark, that as no woman ever considers that she can possibly be pregnant and no medical man is ever suspicious of the existence of uterine gestation, until and unless a menstrual period has been missed, and as, moreover, we have no knowledge of abortion occurring earlier than four teen days after a menstrual period has been missed, it is difficult to understand how it ever will be possible to reconcile such a statement as that of Hertwig's with our every day clinical facts. Again, Keith (*Human Embryology and Morphology*, third edition) says: "It is difficult to estimate the precise age of an embryo or fetus, because the exact date at which fertilization occurred can, as a rule, be only guessed. It is usual to presume it occurred soon after the last menstruation, for conception arrests the process of menstruation." Now the arrest of the process of menstruation as a consequence of gestation, it must be remembered, is itself an event which may be separated from that of fertilization by even more than three weeks.

For a comparative study of the phenomena of germination, incubation, and gestation, we are forced to the conclusions: *a*, That fertilization does not convert the ovum from a nonvital to a vital substance, although it appears nevertheless to endow it with the power of life; *b*, that the oosperm is absolutely incapable of starting its own life and requires to be influenced and acted upon by some agent outside itself before it becomes a living body; *c*, that the process of gestation does not necessarily begin, as embryologists would have us believe, immediately fertilization has taken place. In support of these pronouncements, and to enable us the better and more readily to understand the action of generin as the starter of gestation, let me cite some well established facts connected with the germination of seeds and the incubation of the bird's egg.

Cereal seeds, it is alleged, after having lain dormant in the Pharaoh's tombs for thousands of years, have germinated when placed under favorable conditions. Such statements may or may not be reliable, but whether they are true or not, we most assuredly do know that the seeds of barley, wheat, and oats are fully capable of germinating after having been preserved under ordinary general conditions for ten and even more years. All seeds, however, do not withstand equally well the effects of desiccation, for it has been observed that rye seeds lose more quickly the power of germinating than most of the other cereal seeds. It is noteworthy, too, that seeds buried at great depths in the ground have been known to lie there dormant for a great number of years without losing the power of germination, for they have germinated when tossed up in the same ground and brought nearer the surface where they could be influenced and acted upon by the sun's rays. Again, the spores of certain fungi are unable to germinate unless subjected to certain chemical stimuli. Hence the spores of *Merulius lacrymans* will germinate only in alkaline media, and those of *Onygena equina* only after being subjected to the action of gastric juice. For available facts it is quite evident that the enzyme which in the cereal

seeds starts the oxidative processes connected with germination, requires not only moisture, but the aid of the sun's heat and light rays, and we have good reason to believe, moreover, that the activity of the oxidizing enzyme outlasts the germinating propensity of most seeds.

To all, even the uninitiated, it must, therefore, be very obvious that the cereal seed at least does not forthwith burst into life merely because it has been fertilized, and that the cereal embryo has neither the power to start its own life nor the power to evince any of the recognized signs of life until and unless oxidation has been started in it through the agency of an oxidant the activity of which in turn is dependent upon well defined external conditions.

What is true of the cereal seed is equally true of the animal egg, and so far as the points just enunciated relate to the animal world, the knowledge which we glean from the behavior of the egg of the common barnyard fowl is that which is most reliable and will best suit our purpose.

In the freshly laid fertile, but as yet unincubated hen's egg, the germ mass is literally a colony of cells possessing, but not yet showing any of the signs of life. That every living thing respire will readily be conceded. Now for respiratory purposes the calcareous shell of the bird's egg is porous and pervious to gases, but as the unincubated egg is not yet the abode of a living entity, it does not respire, and if left exposed purely and simply to the tender mercies of the atmospheric air, it will never respire, but will most assuredly undergo decomposition. In order that intracellular respiration in the germ mass may be started, the egg must be subjected to a continuous and fairly steadily maintained temperature of about 100° F., and the atmosphere around it must have more or less moisture. If we attempt to incubate the hen's egg in a too confined space, or varnish the shell and thus interfere with its permeability, the embryo will perish, and it will likewise die if incubation is attempted in an atmosphere in which there is no oxygen. In clumps of frog's spawn, it has often been observed that the eggs situated in the centre of the mass never develop because oxygen cannot get at them.

I would here remark that, although the hen's egg contains a large amount of water and an air space, yet for successful incubation the air surrounding it must be more or less moist, a fact which would seem to indicate that ionization of the atmospheric oxygen is effected by the oxidant which acts as an intermediary between the air and the germ mass.

Now it is common knowledge that eggs need not necessarily be incubated immediately they are laid, and that eggs fertilized on different days—with a known difference even of ten or twelve days—may be incubated together and will hatch out on the same day.

Regarding the human female we have abundant and incontestable clinical evidence that fertilization may take place at any time during the intermenstrual period, except during the two or three days immediately preceding an expected menstruation. In support of this contention I would adduce the following facts: It sometimes, for example, happens that a woman who marries six or seven days before



an expected menstruation conceives forthwith, and the first expected menstruation after marriage is consequently suspended; or, again, we not uncommonly are confronted with the case of the woman who marries immediately after a menstrual period and whose husband, because of his vocation in the navy or the mercantile marine service, lives with his wife only a few days after marriage before he is compelled to leave her, and she nevertheless conceives, and in her case, too, the first expected menstruation after marriage fails to make its appearance. Or take again the strict Jewess, who observes devoutly the Mosaic law, and who so soon as she comes "unwell" renounces intercourse until she has been able to number seven clear days from the day of the cessation of the menstrual discharge and has had her prescribed bath. It is a most noteworthy fact, too, that the strict and devout Jewess ever since the time of Moses has not been one whit less prolific than her gentile sister, who in her relationships with her husband follows her own inclinations. Now no matter when fertilization may probably have taken place, whether soon after the cessation of menstruation or shortly before an expected period, in no case is it possible to diagnose the existence of uterine gestation earlier than fourteen days after the first menstrual period has been missed, and it is an indisputable fact that in every case of normal pregnancy at this stage the uterus is one and a half time the size of the unimpregnated uterus. Here, then, we have the strongest possible proof that gestation begins invariably at a definite and fixed time, and as during the autogenetic resting stage the oxidative processes going on in the internal generative organs are moderate in amount and continue so until two or three days before an expected period, when they become energetic, we have every reason to believe that it is at this time that gestation begins. In anticipation of menstruation, as I have already stated, there is an increased determination of blood to the internal organs of generation, because during the actively functioning period more oxygen is required than during the autogenetic resting stage, which is an inherited property. This heightened vascularity, as we have observed, is brought about by the chemical agent, generin, an oxidizing substance whose function primarily is to start oxidation in a fertilized ovum if it should chance to be situated in the internal generative tract, but which otherwise expends itself on the glandular cells of the uterus and induces menstruation.

It is very evident, therefore, that the fertile human egg, no more than the fertile bird's egg or the fertile cereal seed, has power to start its own life, but requires the mediation of an oxidant to start intracellular respiration. The facts which I have just enunciated, unless they can be satisfactorily controverted, prove conclusively that the human embryo which is obtained fourteen days after the first menstrual period is missed, is not five or six weeks old, but merely sixteen days old, and that the ages of the various embryos depicted in books are purely fictitious reckoned, as they are, from the date of the cessation of the last menstruation and on the assumption that gestation follows fertilization immediately.

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## GRANULOMA PYOGENICUM.\*

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Granuloma pyogenicum is too often mistaken by the clinician for chancre or a malignant growth, and not infrequently the pathologist makes a diagnosis of sarcoma. The recognition of the condition is important, and therefore a brief consideration of the subject is of sufficient interest to warrant the publication of two cases that came under our observation at the Nicholas Senn Hospital during the last year.



FIG. 1 (Case I).—Granuloma pyogenicum of the lip.

CASE I. P., boy eight years old. Small bright red growth developed on the lower lip, about one cm. from the mucocutaneous junction. The tumor grew gradually until it reached the size of a half pea. The nodule was excised, but recurred six months later, when patient was brought to the Nicholas Senn Hospital. At this time the tumor had a dark brown appearance; the edges were indurated. It appeared to be surrounded by a collar, through which it popped up (Fig. 1). The tumor was completely excised; no recurrence reported.

*Pathological report.* The tumor was the size and shape of a pea, of dark brown appearance. Histologically it was made up of connective tissue, which was interspersed with a great number of embryonic thin walled bloodvessels, having in places the appearance of an angioma. In the



FIG. 2.—Photomicrograph, low power, showing embryonic bloodvessels and distinct round cell infiltration.

stroma and around the bloodvessels there was a pronounced round cell infiltration. The surface epithelium of tumor was not altered (Figs. 2 and 3).

\*Read before the Botna Valley Medical Society, Atlantic, Iowa, August 24, 1916.



The clinical appearance of the lesion was like chancre, but the induration was less, and the tributary lymph nodes were not indurated. The fact that the tumor recurred after excision made us think of malignancy (sarcoma), but, although there are recorded cases of sarcoma on the lip in very young children, yet the condition is of great rarity. The microscopical study of the tumor revealed its true nature.

CASE II. Mr. M., aged fifty years, had noticed a small nodule near the outer angle of left eye. In a short time it broke down. He was treated by x ray for a year for

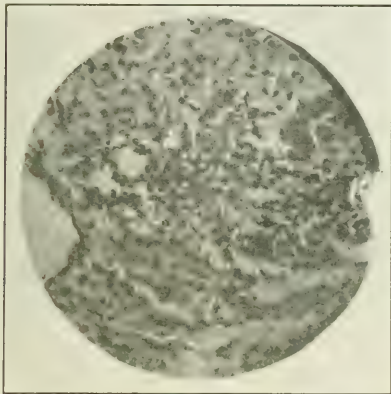


FIG. 4.—Photomicrograph, high power. Note thrombosed small blood vessels with rounded cells.

rodent ulcer without benefit, and the ulcer increased in size. When the patient was admitted to Nicholas Senn Hospital, the tumor presented a reddish appearance; it was indurated, but not to the same extent as in carcinoma. There was no tenderness. It had, however, the typical appearance of granuloma pyogenicum, the tumor resembling a lead pencil stuck through a piece of paper.

The tumor was completely excised and there was no recurrence (Fig. 4).

Histologically, there was distinct hypertrophy of the epithelium, but no malignant alteration was observed. There was a great abundance of newly formed blood-vessels with pronounced round cell infiltration (Fig. 5).

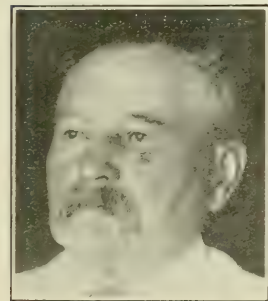


FIG. 4 (Case II).—Granuloma pyogenicum of the face.

This case was diagnosed and treated as rodent ulcer. The fact that the patient was not improving under x ray made us suspect some other condition, and microscopically we proved it to be granuloma pyogenicum. Granuloma pyogenicum is caused by a staphylococcus of low virulence. This was first established by Sabrazes and Laubie (8), and later by Bodin (9). The lesion develops most frequently upon the fingers, feet, and face (6). It has also occurred on the lip, as reported by Poncet and others (1, 2, 3, 4, 5). Al-

though trauma is generally supposed to play a part in the production of the lesion, in our cases no such history could be elicited.

The staphylococci become first implanted in the intima of bloodvessels as a result of which granulation tissue forms (10). This fact explains why recurrence follows incomplete excision without cauterization. Although many terms have been used in literature to describe the condition, granuloma pyogenicum, as suggested by Hartzell (11), we believe, is the most appropriate, since it designates the exact nature of the disease.



FIG. 5.—Photomicrograph, showing hypertrophy of epithelium and round cell infiltration.

The treatment consists in complete excision and cauterization of the base. Sutton (12) prefers to freeze the base with a hard pointed stick of Pusey's carbon dioxide snow.

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#### GIANT VENTRAL HERNIA\*

##### Results and Technic of the Inversion (Author's) Method of Treatment,

BY IRVING S. HAYNES, Sc. D., M. D., F. A. C. S.,  
New York.

While this method is particularly adapted to the treatment of the very large ruptures, it is equally simple and successful with the smaller ones, especially those at the umbilicus with weak linea alba and separated recti muscles. From experience in twenty-two cases I feel justified in asserting that my method is simple, safe, and effective. As to sex, there were five males and seventeen females. The youngest patient was a man thirty years of age and

\*Read at a meeting of the Society of the Alumni of Bellevue Hospital, May 3, 1916.

the oldest a woman of sixty-five years. There have been no deaths, notwithstanding conditions of excessive obesity, complicated by strangulation of the intestine in two cases. The average weight of these patients is 200 pounds, several of them going much higher, up to 280 pounds at the time of the operation.

The hernia is usually postoperative, below the level of the umbilicus. Most of the hernias have existed for years, and operation was undertaken as a last re-

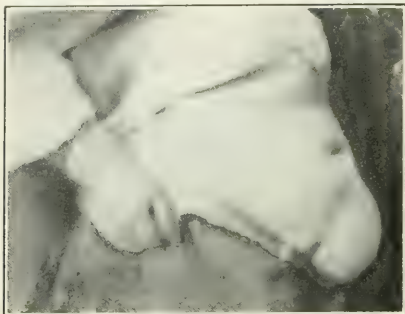


FIG. 1.—Photograph of Case XI before operation

sort to secure relief from intestinal disturbance and the drag and pain of the rupture. The hernia, itself, varies in size from that of a large grape fruit to one as large as a "watermelon," as the historian in the Hartford Hospital described it. To express the size in inches, they vary from six to ten inches in diameter, and project from the abdominal wall from four to ten inches. The sac may be single, but is often multilocular. If a typical ventral, postoperative type, it may be complicated by a protrusion at the umbilicus above. The hernial orifice varies. It is usually a single large oval opening. My largest measured eight by five inches in its longest and broadest diameters. The actual size of these orifices are as follows: Case I, 8 by 4. Case v, 6 by 2. Case VII, 7 by 4. Case x, 6 by 3. Case XII, 5 by 2. Case XIII, 4 by 2. Case XVII, 4 by 3. Case XVIII, 6 by 4. Case XIX, 8 by 5. Case XXII, 6 by 4. While some of the remaining cases had single small orifices, others had two or even three separate openings, demanding a wide and long inversion.

In many instances the omentum is found adherent to the sac. This does not present such a difficult complication as one might imagine. Provided the intestine is not attached to the sac and entangled in the omentum, I deal with such adhesions when dealing with the sac. In the large hernias the sac is excised, as a rule, about three inches from the hernial orifice. If the omentum is attached to that portion of the sac excised, or, if it is firmly attached to the remaining portion of the sac, the omentum is clamped at the level of the incised sac and the distal portion severed, this being removed with the sac. Usually to the sac is attached a large elliptical mass of skin and fat.

The raw edge of the omentum is now sutured between the margins of the sac, when closing the latter, by a locked stitch of No. 2 plain gut, doubled. This

stitch arrests all oozing. From such inversion, there has never arisen a single symptom. This method should be used, however, only in selected cases. The previous condition and present state of the patient, as well as the situation within the hernial sac, must help to decide whether to treat extensive omental adhesions in this way or not. Usually the intestine has been free, or attached by adhesions of moderate extent. Such adhesions must be dealt with according to accepted technic. A little detail which I have found helpful is to excise a liberal portion of the sac in releasing the adherent intestine, then turn the raw surfaces of the excised portion of the sac together and whip over the edge with fine gut. I have had several very interesting experiences in dealing with intestines in mass adhesions. I will refer to two cases only.

CASE XI. A woman, sixty-five years of age, weighing 230 pounds, the mother of eighteen children. She had had an immense hernia for twenty years. During the last five years it had been irreducible, and had been strangulated several times. She had worn a belt and hard rubber pad as large as a soup plate over the hernia for many years.

When I was called to operate, in June, 1913, there had been fecal vomiting for twenty-four hours and she was in a desperate state. I found the intestines matted into a mass, fan shaped, two inches wide at the hernial orifice, six inches at the free margin, and one and a half inch thick. From the long continued pressure of the truss and the frequent strangulations the intestinal loops were so adherent that no single loop could be discovered. Considering the critical condition of my patient, that the fecal current had been able to pass through this mass for many years, and that the cause of the present strangulation—recent accession of intestine and omentum into the sac—had been relieved and the current might again resume its course, I split the hernial ring for several inches, returned the adherent mass of intestines to the abdominal cavity, and carried out the technic of my method for cure of the hernia. The result has been a permanent cure of the rupture with daily bowel action without pain, the first in over twenty years.

CASE XXII. A second instance is furnished by a patient of Doctor Connors's. We found a great mass of small intestines adherent to each other and to the entire inner surface of the sac. These adhesions were recent, soft, vascular, and thick. They oozed freely. They were all severed, hot sponges were packed over the intestines until the first and second courses of sutures had been in-



FIG. 2.—Case XI. Photographed eleven months after operation.

FIG. 3.—Same patient as in Figure 2.

serted, then, when the sac was ready to be closed, the sponges were removed and half an ounce of sterile petrolatum was rubbed over the entire mass. The operation was finished in the usual way, picture wire being used for the last row of retention sutures. The patient did not have a

single symptom. The bowels acted on the fifth day and ever since.

As stated in my first communication upon this subject, this method by which I have treated many immense hernias was forced upon me in September, 1911 (I). The case was that of a woman who weighed over 225 pounds and who measured more than four feet about the abdomen at the center of the hernia. The hernial orifice measured eight



FIG. 4.—Photograph of Case XXII, before operation, illustrating the prevailing type of patient, and post-operative hernia. In this patient, the hernia is almost buried in four inches of adipose tissue.

inches vertically and four inches at its widest part. The protrusion was as large as a child's head. The usual flap splitting operation had been contemplated, but owing to the terrific expiratory efforts of the patient when under the anesthetic, I dared not open the sac, and determined to attempt a cure by total inversion of the sac, its contents, and the adjacent abdominal wall. This was accomplished by the technic to be presently described. The course of the case was uneventful and the result was a permanent cure.

In a review of the literature I find that the first attempt at the inversion of the sac, in a surgical manner, was by Edebohls (2). He said he was the first to attempt the inversion of a hernial sac without opening it. The similarity between his and my methods ceases here, for he formed flaps along the denuded margins of the recti muscles and sutured these flaps in separate layers. Doctor Polk (3), three years previously, had stated in a discussion "that it ought to be possible to unite the fascia without opening the peritoneal cavity." I find no record that he ever devised a technic for this purpose.

So far as I can determine, no operator has attempted to secure relief of the hernia by the method which I have been using; that is, by inversion, coaptation, and union of the abdominal wall adjacent to the hernial margin. I am aware that this method is contrary to the generally accepted teaching and practice, that there must be layer coaptation of the separate strata of the abdominal wall. My first attempt was attended with many misgivings. So much time has now passed, however, and the results of my first and subsequent operations have been so satisfactory, that I feel that I can confidently affirm the

reliability of my method. So far as I can determine, there have been relapses in two cases, VIII and XVII.

The first, Case VIII, was presented about a year ago to a medical society as cured, which was the condition at that time. This is the patient who suffered infection at the original operation from laceration of the intestine while extensive adhesions were being separated. Profuse and long suppuration followed, but healing eventually took place with a thin but firm scar. She tells me that during the past winter she had a very severe cough and neglected to wear her abdominal belt. On examination there was a protrusion the size of half an English walnut, through an orifice half an inch in diameter, about two inches to the outside of the inversion scar. Whether this case can properly be called a relapse is a question, but it is placed on record as such.

Case XVII was that of a patient upon whom two operations were performed, the second for a recurrence of the hernia due to the breaking of rotten linen sutures, used for retention purposes, before the expiration of five days. A return of the hernia was expected, and when it became evident a second operation was performed. The patient had a severe cough through the entire convalescence, owing to a severe cold she caught the day before the second operation. We did not know of this until after the operation. Notwithstanding the cough, I hoped for a cure, as all the sutures apparently held. A hernia recurred in the lower third of the area operated in. The protrusion was not large and could easily be repaired.

I shall not discuss the various other operations for the cure of this type of hernia, except to say that their general plan depends upon extensive flap formation with layer to layer or overlapping suturing; either alone or combined with no less extensive mus-



FIG. 5.—Case XXII.

cle and fascia sliding; or by fascial grafting; or by the reinforcement of such areas by the use of various wire filigree screens. Those familiar with these methods are fully aware of the great technical difficulties involved in the formation of suitable flaps, their correct apposition, and disappointments in healing.



THE AUTHOR'S INVERSION METHOD FOR TREATING  
GIANT ABDOMINAL HERNIA (4).

Large elliptical incisions expose the sac, which, with the external fascia of the abdomen, is cleansed for more than two inches beyond the hernial orifice.

If the sac is to be left practically intact, the elliptical portion of skin must be dissected cleanly away.<sup>1</sup>

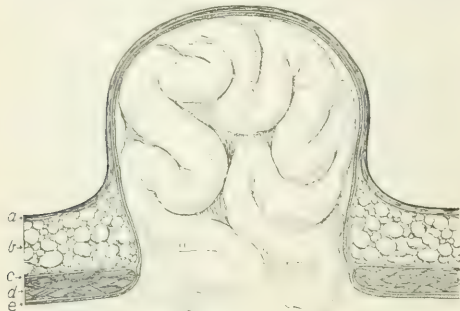


FIG. 6.—A sectional view of hernia. The contents may be disregarded; the construction of the sac is the important feature. The different structures are lettered the same throughout: a. Skin, b. Subcutaneous tissue, c. External fascia covering the abdominal muscles, d. Muscular layer, e. Internal muscular fascia and peritoneum.

Usually, however, the portion of sac corresponding to the elliptical mass of skin is removed with the latter, thereby freely opening into the peritoneal cavity. Complications are dealt with in the usual manner.

In my experience, the intestine can be freed and any raw spot covered with omentum. Extensively adherent omentum need not be freed from the sac unless it seems to be exercising a deleterious traction on the intestine and stomach. The excess of omentum, usually very thick and adherent, may be trimmed off at a suitable point and the peritoneal cavity closed by uniting the edges of the sac with

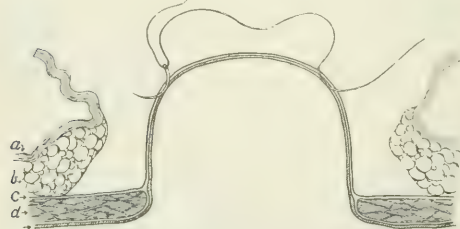


FIG. 7.—The figures 7 to 10 inclusive depict the steps in the operative treatment when the sac is not opened. This shows the skin dissected from the thin sac and the skin and subcutaneous tissue dissected back from the hernial orifice so as to leave a wide margin of the adjacent fascia cleanly exposed. The first suture, to take up the slack or fullness in the sac, is shown. This suture is often omitted.

this adherent omentum between, by an overcasting suture of No. 2 plain gut. Interlocking the stitch is sufficient to arrest oozing from the omentum.

Before the sac has been closed the first row of the inverting sutures of heavy kangaroo tendon is inserted. These are placed at the edge of the hernial orifice; they bite deeply into this edge for a width of

three fourths of an inch and are half an inch apart. Then the sac is closed, and this first row of mattress sutures tied—first above and then below until all have been tied. I use three knots in all these sutures. By this first series of sutures the bulging mass of sac, also the omentum, if present, is inverted into the abdominal cavity. A second row of the same suture material is placed one inch outside the first row so as to "break joints."

Retention sutures are next inserted. These are

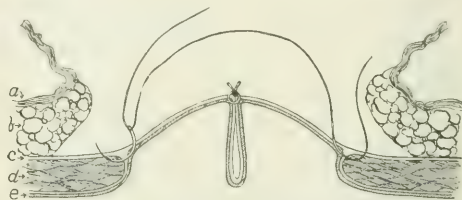


FIG. 8.—A cross section to show the infolding produced by the first suture and the placement of suture No. 2. While the needle is represented as being inserted at right angles to the hernial margin, in reality it is introduced parallel with the margin of the hernial opening and penetrates deeply into this margin.

introduced through the skin from two to four inches from the margin of the incision. They are placed not more than two inches apart and in a figure of eight manner, taking a deep bite into the fascia. When tightened they invert the last row of kangaroo sutures and take all the initial strain. They should be selected with regard to the particular case. The very largest hernias require either double strands of bronze wire, gauge No. 30, or single strands of a medium sized twisted wire cable.<sup>2</sup> In the smaller hernias double strands of silkworm

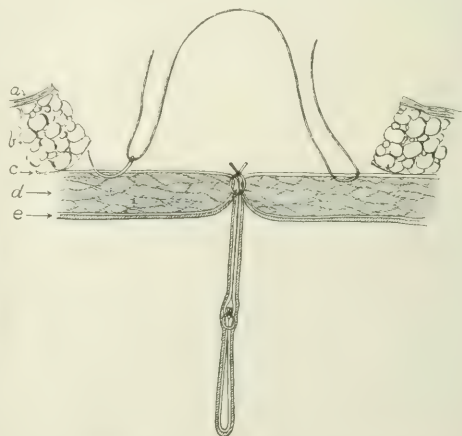


FIG. 9.—Suture No. 2 has been tied and the muscle edges of the hernial orifice have been brought together. Suture No. 3 is shown in place.

gut or Pagenstecher's linen may be used. All these sutures are doubled for a purpose. If one breaks the other is strong enough to hold; and, doubled, they do not cut so fast through the tissues. I used

<sup>1</sup>The sac should be opened by two or three incisions, large enough to admit a finger, so placed that the contents of the sac can be examined and the first row of mattress sutures inserted without danger of penetrating the peritoneal cavity. Later these small incisions are sutured.

<sup>2</sup>In Case xix, I used common picture wire, at the suggestion of Doctor Wells, as the silver or bronze wire cable could not be obtained. The picture wire, No. 1, was perfectly satisfactory. In Case xxii, I used No. 0 picture wire, but this began to break about the ninth day.

chromic gut in Case XII. The result was perfect, but the gut absorbed at the end of ten days and I was anxious for the next week. These sutures are tied over rolls of gauze half an inch thick so as to afford a broad surface for traction and not necrose the skin from the pressure.

A drain of rubber tissue is laid over the retention

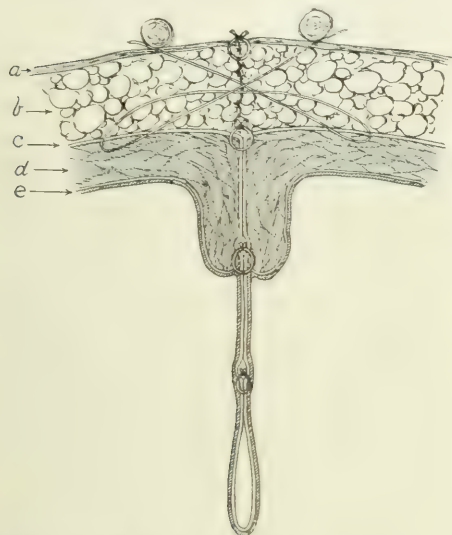


FIG. 10.—Suture No. 3 has been tied and the surfaces of the fascia over a wide area have been brought in firm contact. This last suture rolls inward, the edges of the muscles forming the hernial orifice. A figure of eight retention suture is shown in position, to be tied over rolls of gauze; and the skin edges coaptated by a last stitch.

sutures and the skin is closed by plain gut, Pagenstecher thread, or silkworm gut. The material is unimportant.

The drain should not be disturbed for three days. It is then withdrawn for an inch, and this is repeated every other day until it is entirely removed. These wounds ooze a great deal of serum. Do not irrigate the drain tract, or remove the drain to insert another. Infection is possible. Leave the drain as

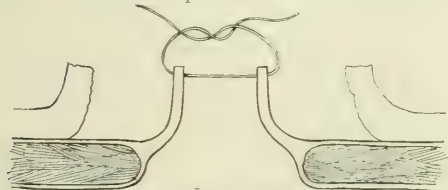


FIG. 11.—The figures 11 to 14, inclusive, show the adaptation of the method to the case where the sac is excised. Fig. 11, the introduction of the first suture. This is usually double. No. 2, plain gut. As stated in the paper, adherent omentum is often sutured between the margins of the sac.

long as there is a free exudate of serum, and remove it gradually as this ceases. Keep the retention sutures tight. I usually tighten them up at the end of five or seven days, and remove them from the tenth to the fourteenth day after the operation.

Following the operation, a pint of normal saline solution is given per rectum every four hours day

and night for twenty-four or thirty-six hours. Morphine, from one eighth to one quarter grain with eserine salicylate one sixtieth to one fortieth grain, is given if necessary once or twice during the first twenty-four hours.<sup>3</sup>

These patients have no more pain than the average patient after laparotomy. The urine is drawn every six or ten hours as necessary. The patients are turned every hour from side to back and to side, if not asleep. This plan I follow out in all my abdominal cases to facilitate intestinal peristalsis. These patients should be kept in bed about a week longer than for the usual abdominal section. Their entire stay in the hospital is usually three weeks.

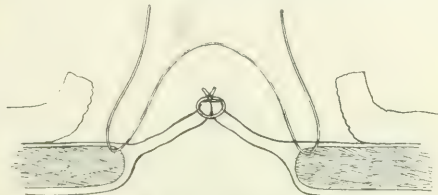


FIG. 12. The sac is closed. Before this is done the first row of kangaroo mattress sutures should be inserted. As represented, this suture is not clearly enough placed, and it lies parallel with the long axis of the hernia.

Some I have allowed to go home in two weeks under favorable circumstances.

An abdominal belt is used in the majority of cases. I do not feel that it is a necessary part of the treatment, but it gives the patients comfort until the muscles resume their normal function.

In my first paper I made the following statements: In these enormous hernias, with multilocular sacs, with adherent viscera, and similar complications, the saving of time secured by not having to dissect out the necessary flaps is very considerable, while the method of suturing is so simple and easy that it adds to the celerity of the operation.

The objection that will at once suggest itself is that in case the hernial sac is not opened there is great danger of perforating the intestines in introducing the sutures. This I grant, and urge great

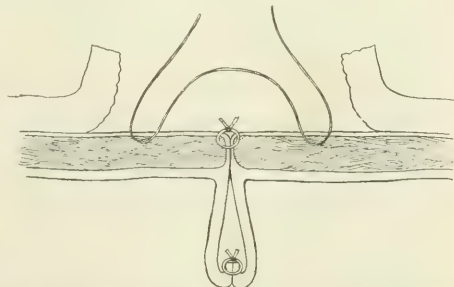


FIG. 13.—Suture No. 2 has been tied with the result of coapting the edges of the hernial orifice. Suture No. 3 is inserted.

care in placing the first and second rows. Furthermore, this danger may be entirely avoided if through small incisions in the sac a finger is inserted beneath it and under its guidance the suturing is carried out.

<sup>3</sup>During the past year, I have been using petroleum oil before and after operating. The oil has seemed to help secure intestinal action.

Another danger that I feared was the tremendous increase in the intraabdominal pressure by rolling into the abdomen a mass of sac and further narrowing the space by inverting the walls themselves. In actual practice, however, there has been no disturbance from this cause.

Obstruction and possible strangulation of the intestines might seem to be another real danger. If it is, it has not appeared in my experience. In the cases with the largest hernias the bowels have acted spontaneously on the second or third day. I believe such prompt action is aided by the greater tension within the abdomen.

Neither has the fascia become necrotic or sloughed

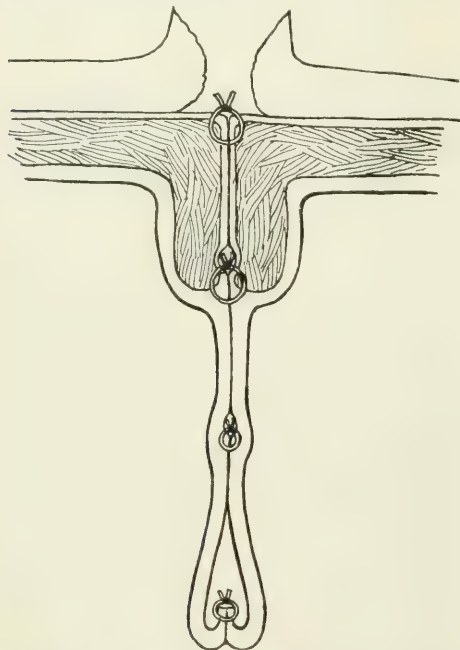


FIG. 14.—The inversion of the hernial margins has been completed. The figure of eight retention sutures and the skin suture are yet to be inserted.

in any of my cases. Primary union has resulted in all.

In the second paper the following statements were added: Fourteen cases were all cured. Six cases may properly be termed giant hernia. The others were either large or ordinary, and were operated on by this method to demonstrate its applicability to any form of ventral hernia, postoperative or umbilical.

Primary union occurred in twelve cases; superficial suppuration in one case, skin only. Fecal fistula, fascial necrosis, and protracted convalescence occurred in another. Hernia was cured in both.

No postoperative complication happened in any case from increase of intraabdominal tension. Bowels acted spontaneously or easily from assistance on the second to fourth day, and regularly thereafter. There was no intestinal damage from insertion of sutures. To these fourteen cases I wish to add the following two.

CASE XV. Mr. G. K., aged fifty-eight years, German, admitted to Red Cross Hospital, April 2, 1914. Diagnosis, incarcerated, inflamed umbilical hernia. Weight, 275 pounds. Had a girth of fifty inches at the umbilicus. Had had an umbilical hernia from infancy. This had been obstructed a number of times. Examination showed a small, inflamed, incarcerated umbilical hernia; no intestinal symptoms; contents of the hernia, probably omentum.

Operation, April 2, 1914, vertical elliptical incisions encircling sac and mass of attached omentum. Hernial orifice only about an inch in diameter. Peritoneum with sac margin sutured with plain gut. Two rows of kangaroo mattress sutures, two double silkworm gut sutures completed the inversion. Small rubber tissue drain. Skin closed with plain gut. Bowels moved on the fourth day after the operation. Patient was out of bed on the fifteenth day, and left for home the following day, cured.

CASE XVI. Mrs. A. B., Harlem Hospital, admitted September 8, 1914, large, stout woman, aged forty-three years, weighing about 180 pounds. In 1909 she had been operated upon for a pelvic abscess. The following winter a hernia showed at the site of the ventral scar. Since then the hernia had steadily grown in size. At present the hernial mass is as large as a large grape fruit. The scar extended from the umbilicus to the symphysis. The centre of the scar had given away, forming an opening about four by two or three inches. There were smaller defects above, so that the entire extent of tissue between the umbilicus and symphysis must be dealt with. Author's inversion operation. The sac was opened and the omentum found extensively adherent. It was ligated and excised. The edges of the sac were trimmed off and whipped over with plain gut. Two rows of heavy kangaroo tendon placed and double silkworm retention sutures. Coaptation obtained without undue tension. Time of the operation, ninety minutes, delayed by omental adhesions. Bowels moved the third day after the operation. Pituitrin was started first day after operation, Mviii morning and evening, hypodermically. Recovery uneventful.

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107 WEST FIFTY-FIFTH STREET.

### DIFFERENTIAL RÖNTGEN DIAGNOSES IN BONE DISEASES.\*

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It is accepted that the Röntgen ray is a valuable aid in the diagnosis of diseases of the bones, and it is being employed as a routine procedure. In no other field has röntgenology proved more helpful than in pathological osteology. The röntgenographs not only show the surface and the outlines of the bones, but also dislocations and enlargements, the architecture within the bones as well as the histology and chemical state.

In interpreting the radiographs many points must be considered: 1, History; 2, physical signs; 3, evidence of disease or tumor in other parts of the body; 4, radiographic appearances and their correct interpretation. Chief among these, so far as our purpose is concerned, are the röntgenological appearances.

In making a diagnosis of bone diseases the röntgenologist must have a knowledge of the laws governing physics and know the normal, as shown by

\*Six additional cases will be found in full in the reprints of this communication.—EBS.

\*Read before the Röntgen Ray Society of Central Pennsylvania, October 21, 1916.



the röntgenograph, as well as the changes due to age and the variation of the individual. The fundamental law of Röntgen rays is that a picture is recorded according to the specific density and the thickness of the part under examination. The rays diverge as they pass out from the anode of a tube, and it is only the central rays that give the true image, while the outer rays of the cone may produce much distortion of the shadows. This is to be determined by the distance of the part to be examined from the plate as well as the tube distance. If this is not taken into consideration there is the liability to error in interpreting, regardless of the quality of the radiographs. This accounts for many mistakes, not only by the physician and surgeon, but also by the röntgenologist. Many who are interpreting their own plates are not familiar with variations in density of bones due to age, nonuse, or disease, nor do they know the appearance of the epiphyses at all ages, and that only the part of the epiphyses that is ossified is seen on the röntgenograph.

The interpreter will make many mistakes unless he takes many points into consideration and knows the technic used in making a plate. It has been suggested that the röntgenologists standardize a technic in making bone plates, but not much has been accomplished along this line. Until this is done, every one should interpret his own plates. It is advisable to have the surgeon see the röntgenographs, but we must not let him convince us that the plate shows disease when nothing abnormal is seen. In early bone lesions the disease may be in the soft parts and cause no change in the density of the osseous structures. In such cases we should make this explanation and let the surgeon make his early diagnosis by other means. To illustrate, acute osteomyelitis in the very early stage does not usually cause any change in density, and it might be dangerous to the life of the patient to depend on the x ray plate or wait until bone changes can be shown röntgenographically.

It is generally recognized that Röntgen rays have certain limitations, both in the diagnosis and in determining the exact extent of the disease. The diagnosis of diseases of the bone is made by variations of density and architecture, together with certain lesions having a predilection for certain sites, while in certain other diseases the röntgenograph is so characteristic that, when considered with the clinical history, the diagnosis may be made without difficulty. Several diseases may show the same changes in density, but the pathological changes produce an entirely different architecture. In other diseases the picture is very similar, and the only value of the Röntgen rays is to disclose bony destruction. In such cases the diagnosis must be made by other means. In other diseases the röntgenograph may be so characteristic as to be diagnostic, giving us accurate knowledge of the extent of the disease.

It is my purpose to consider this subject only in its application to four or five of the more common bone diseases, excluding the rarer infections, such as osteomalacia, osteitis deformans, and others. The physician must be familiar with the röntgenological aspects of these common diseases before he is competent to differentiate between the rarer lesions.

Tuberculosis of bones and joints, more common in young than in old people, is the usual disease affecting these parts. Some of the bones and joints are more frequently affected than others; the spine, hip, and knee more often than the shoulder and skull. In making a diagnosis it is always essential that clinical history and other tests should be carefully considered with the Röntgen examinations. Assistance is often obtained by examining the chest, because the bronchial glands may be the source of infection. In the early stage it is to be noted that if the disease starts in the synovial membrane, no bony changes are seen, though it may be suggestive, not diagnostic. When the disease starts in the bone, Röntgen evidence is seen sooner. Rarefaction is nearly always constant when the disease is of some duration, and is due to absorption of the lime salts. It is to be remembered that increased translucency occurs in a bone from nonuse, for instance, after fractures, as well as in tuberculosis. The extent or presence of such conditions can be determined by comparison with the joint of the opposite side. In tuberculosis the röntgenograph shows bone atrophy or rarefaction, bone destruction, sequestra, and abscess formation. When the disease is of a few months' duration, one or more of these are always present; it should be realized that they may be caused by other diseases.

In tuberculous osteitis there is no abnormal appearance until the nutrition of the trabeculae is interfered with. But as soon as this occurs bone atrophy or rarefaction is present. The typical röntgenograph of tuberculous osteitis shows atrophy, one or more areas of bone destruction, and a hazy or foggy appearance. The clinical symptoms are pain, spasm of the muscles, and great tenderness.

There are some special points in making a diagnosis of bone tuberculosis by Röntgen rays which are characteristic in regard to certain sites. In children, the vertebrae are the most common site, usually the middle or lower dorsal. It may have its origin in the periosteum or the synovial membrane, but rarely begins in the transverse or spinous processes or laminae. More frequently it starts in one of the bodies near the intervertebral cartilage and is first noticed on the röntgenograph as a small area of rarefaction. Later the intervertebral disc is affected and eventually destroyed, and the disease thus spreads to the body of the next vertebra. When the dorsal vertebrae are affected, the position and direction of the ribs may show deformity. When the disease starts in the periosteum a periostitis is noted, but usually röntgenographic evidence is not recorded until the bone becomes infected. In making the diagnosis it is necessary to differentiate from injury, typhoid spine, sarcoma, and metastases secondary to carcinoma.

The hip joint in early life is another part frequently affected with tuberculosis, which may begin in the neck or head of the femur or great trochanter, but rarely in the synovial membrane. In the beginning, a tilting of the pelvis is usually present, but no bony changes show on the röntgenograph. The characteristic appearance is that of the bony shadow projecting inward from the pelvic side of the acetabulum. Later the röntgenograph shows atrophy of the epiphyseal line of the femur and acetabulum,

which becomes irregular and ill defined. As the disease advances the head of the femur is flattened and the acetabulum is absorbed, the articular surfaces reaching a higher level, but there is no actual dislocation. The disease, if left untreated, may progress until the head and neck are entirely absorbed, and there is great atrophy of the affected bones.

Tuberculosis of the knee in children is next in frequency to that of the spine and hip, and is frequently followed by disease in the ankle. Attention has been called to the fact that the lower extremities are more often affected with tuberculosis than the upper. In the knee joint it has been stated that the origin is more frequent in the bone in children, and in the synovial membranes in the adult. The disease may start in the femur, tibia, patella, or fibula, but the head of the tibia is considered the most frequent starting place. It usually begins in the spongy portion of the epiphyses of the internal condyle. An abscess cavity, surrounded by sclerotic osteitis, often follows.

The shoulder is less frequently attacked than other joints. It is usually of osseous origin and begins in the head or tuberosity of the humerus or neck of the scapula. In the shoulder caries sicca often occurs. The bony tissue is slowly eroded without abscess formation, and the bone and surrounding parts show marked atrophy. Abscess formation may occur as in other joints. Tuberculosis of the shoulder joint is frequently accompanied by pulmonary tuberculosis. In the differential diagnosis of bone tuberculosis by the Röntgen rays we note the following points: In syphilis the bone is porous instead of translucent, and the periosteum and cortex are denser and wavy in outline. In rickets there is a flaring out and irregular cup shaped effect of the diaphysis, and in scurvy the epiphyses are flattened, which is characteristic of the disease. The diagnosis between osteomyelitis and tuberculosis by the Röntgen rays is often difficult, but we must take into consideration the fact that osteomyelitis does not produce bone atrophy and there is a periosteal overgrowth which is not present in tuberculosis, except when the disease involves the shaft. In bone cyst there is a clear space, but bone atrophy is lacking.

Osteomyelitis, in the early stage, usually cannot be detected by the Röntgen rays. Very often, at the beginning, the course of the disease is rapid, and many patients die before a diagnosis is made. Therefore in the early cases treatment should not be deferred because nothing is shown by the radiograph. The earliest Röntgen ray appearance is a slight increase in periosteal shadows at one or more places and a definite swelling of the soft parts. After from six to eight weeks' duration, the bony changes usually give a very characteristic picture. The alternating dark and light areas with rarefaction, showing a softening and loss of lime salts seen at one or both epiphyseal ends of the bone, extending to a greater or less length of the shaft, ending abruptly at the epiphyseal cartilage associated with new bone formation, is a characteristic picture of osteomyelitis. Generally, osteomyelitis is confined to the shaft of the bone, the epiphyses and joints escaping. In the hip joint it may be difficult to differentiate between osteomyelitis and tuberculosis. Osteomyelitis has a tendency to proliferation of the peri-

osteum, thickening of bone, and osteophytic overgrowth. Bony destruction near a joint, but not involving it, is seldom caused by tuberculosis.

Sarcoma is the most common tumor of the bone, and in the early stage cannot be diagnosed roentgenographically from a simple inflammatory process. Endosteal sarcoma has its origin in the medullary cavity or cancellous portion. This causes absorption of the bone from within, followed by expansion and at the same time osseous deposits on the under surface of the periosteum. Fine trabeculae may pass through its substance from wall to wall of the capsule which gives a more or less honeycombed appearance on the roentgenograph. The shaft of the bone above and below a sarcomatous growth is normal and suddenly expands at the tumor. The growth generally begins at the ends of one of the long bones, but rarely involves the joint.

Periosteal sarcoma is the most difficult type to diagnose by the Röntgen rays, but as soon as the periosteum shows thickening dense enough to cast a shadow, it can be shown on the plate. The soft parts are involved and usually are of sufficient density to cast a shadow.

Myeloid sarcoma must be differentiated from bone cyst. It resembles bone cyst in that its growth is slow, occurs usually in the long bones, and may be followed by fracture.

The roentgenographs of syphilis of the bone are usually characteristic, and changes are shown in the bone in several ways. The chief manifestations of syphilis of the bones are epiphysitis, periostitis, and gumma. There is an irregular epiphyseal line with periosteal new bone formation of the shaft side of the epiphyseal line. It may be confounded with tuberculous epiphysitis, but gives a different picture. In tuberculosis we have rarefaction, erosion, or the typical fuzzy appearance. In syphilitic epiphysitis we sometimes have a separation of the epiphysis, but it is to be remembered that thickening of the shaft on the epiphyseal side is diagnostic of syphilis. This may be confounded with tuberculosis starting in the shaft of the bone. Probably the most common manifestation of syphilis of the bone is periostitis, which presents a typical Röntgen picture. There is a lamellation of the periosteum running parallel to the cortical line of the bone. When periosteal bone occurs there may be new endosteal bone formation producing a partial obliteration of the medullary cavity. Gumma may appear either in the form of a circumscribed periostitis causing round nodes and sometimes softening and breaking down, or may begin in the marrow or in the spongy parts of the bone. The mouse-eaten or mosslike appearance of the periosteum is very characteristic. The gummatous infection of bones, if localized, shows erosion and rarefaction of a limited area of the shaft of the bone with new periosteal bone formation on either side of the affected area.

Carcinoma of bone is secondary to a growth elsewhere in the body, such as the breast, prostate, etc., and usually follows the scirrhus type. It is a late manifestation and affects the sternum, ribs, spine, and long bones most frequently, but may attack any bone. It is much more common than is generally conceded. The disease may invade a large joint, or the shaft of the bone or the long bones may be in-

volved. The changes are shown on the radiograph as irregular shadows of varying density, lighter than the normal bone. In some cases the disease takes the form of necrosis, when the cavities are filled with necrotic tissue and appear as lighter areas on the plate.

In connection herewith, let me quote a paragraph from an article, *Carcinomatosis of the Bone, Secondary to a Growth in Some Epithelial Organ*, which I published in the *NEW YORK MEDICAL JOURNAL*, September 2, 1911, describing the pathological conditions: "Von Recklinghausen found that the invasion began in the marrow, which was usually found studded with nodules of cancer tissue. In the long bones these occurred most frequently in the expanded extremities; in the vertebrae, throughout their bodies. This is in accord with the theory that the invasion of the bone occurs via the blood stream, since Lexer has pointed out that the metaphyses are the most vascular parts of bone."

These cancer nodules (usually found in groups) rarely attained any great size. Occasionally they were more miliary in character. This invasion of the marrow leads to a low grade osteoporosis (called by von Recklinghausen, *osteomalacia carcinomatosa*), which often extends from the central canal to the periosteum, with nests of cancer cells scattered throughout the Haversian canals. Extension to the periosteum is productive of a fibroperiostitis with formation of new bone. New bone formation also occurs in the marrow. These two processes, osteolytic and osteoplastic, as a rule, are not productive of extensive alteration in the architecture of bone.

EMPIRE BUILDING.

## THE SURGICAL VALUE OF THE X RAY.

### *What We Learned in Our Work in Serbia.*

By J. RUDIS-JICINSKY, M. D.,  
Chicago.

In the Bohemian-American Mission, or Frothingham unit, at Uskup, Serbia, military rules and all kinds of military orders in regard to the *modus operandi* in our procedures in medicine and surgery, during our stay there in 1914-1915, had absolutely no influence upon our modern means in diagnosis; especially later on, when all prejudice was broken down. We could work more independently and observe our own results. When we arrived, there was an old coil and x ray accessories in the Belgrade hospital and one apparatus in Nish, both out of order after the Balkan war with Turkey. With our experience in röntgenology since 1896 we selected a portable apparatus for alternating and direct current of great efficiency and the best tubes for our work. Cases were sent to us for diagnosis or electrical treatment from all the other hospitals in the unfortunate land of constant struggle.

We used a special fluoroscope and special covered screens for observation during operations, especially for the extraction of foreign bodies, bullets, resections, transplantations of bones, fragments of fractured bones, deformities, stiff joints, comparison of normal and diseased soft tissues, location and determination of any abnormality of the organs of

the body, living and in action, etc. Protecting our hands with lead solutions and rubber gloves, we operated in a dark room, using sometimes just the screens, or for photography instead of glass plates, special chloride paper or the Eastman films, exhibiting some wonderful effects in connection with soft tissues, such as brain, heart, lungs, diaphragm, stomach, intestines, liver, bladder, gallbladder, ureters, rectum, and in all lesions where there was a congestion, giving us positive evidence of the site and degree of injury, with the shadows even of arteries after amputation in stumps of older soldiers. Without regard to our textbooks we could study conditions, which were guides, not only in diagnosis, but also in our decision, whether we should operate, when and how, observing the individual steps of an operation on the screen. If necessary, drainage was established and cavities, fistulae, or sinuses were injected with sterile solutions, or substances opaque to the x rays, or we gave the patient a harmless fluid, bismuth oxychloride, etc., when the whole alimentary tract or the liver and biliary passages could be studied, and we injected the bladder, ureters, and kidneys for the purpose of diagnosis.

Knowing that in all practical work with Röntgen rays it is necessary to have a standard of intensity, depending on our eyes more than on all kinds of mechanical accessories, we could see the effects of the modern small calibre bullet on the bones and soft tissues, and compare them with the terrible laceration and bony destruction in cases of dum-dum bullets, of which we have (Fig. 1) a whole set taken from an Austrian soldier in the field near Shabac, who belonged to a Hungarian regiment. For comparison we have (Fig. 2) one set of the absolutely clean Serbian bullets, small and jacketed. In many aseptic wounds in which the bullet had lodged in the tissues and was removed later, we had an opportunity to study the remoter effects of the injury. In all cases the swelling of the tissues at this time had almost or entirely obliterated the tubular wound, the location of which was indicated by small discoloration, parenchymatous extravasation, remains of fluid, or coagulated blood, and a limited area of edema and infiltration. In some cases the wound of entrance could hardly be seen at all in the usual way. The bullet was found when the diagnosis was made by the x rays, in a small cavity filled with liquid blood or serum, while a more extensive zone of infiltration indicated the primary stage of encapsulation, later perhaps complete closure with no pain and symptoms, according to the location. When supuration at the seat of the bullet resulted in the formation of a circumscribed abscess, or the bullet was between the fragments and pieces of crushed bones, we recognized the complication at once, and the x ray aided us to locate and remove the missile with all the necrotic bony tissues and the debris of small fragments, or other foreign bodies and particles carried into the wound. A large proportion of the hundreds of bullets extracted under the x ray were found deformed, showing that they were deflected by some hard objects or passed through other mediums. The firing being usually at long range, gave us also many balls in soft tissues without injury to the bones. Such a bullet (Serbian) is shown in Figure 3. The bullet is a nickel encased pro-



jectile of natural size; the jacket is perfect. The bullet was removed from behind the fibula, about one inch above the ankle joint. It entered the calf of the leg below the popliteal space and never

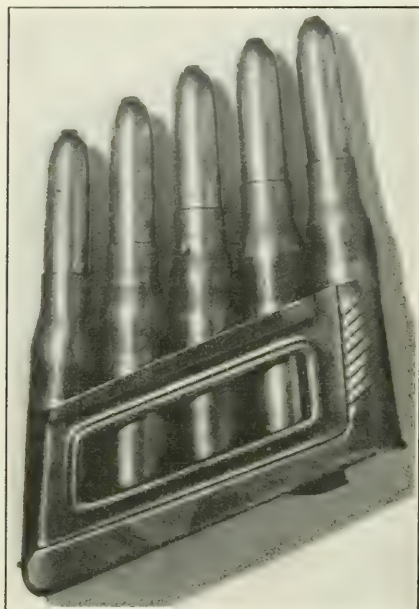


FIG. 1.—A set of dumdum bullets, Austrian.

touched the bones. Figure 4 represents the same kind of bullet, exhibiting few lines and depressions in the body. (Gunshot injury of skull; primary operation; removal of loose fragments of bone; no focal symptoms; wound healed, leaving a pulsating scar.) Figure 5 is an Austrian bullet, slightly bent. It was lodged in the deep tissues of the thigh, about four inches from the wound of entrance, fracturing the femur in the middle, with constantly draining sinuses. The fragments of the shaft of the femur were put in apposition under the x ray, plaster of Paris dressing applied with extension, and windows over the sinuses were made for examination and treatment. Figure 6 illustrates the brass clad bullet removed from the soft tissues of the arm without bony injury. Figure 7 shows a round piece of lead from a grenade. Figure 8 illustrates a piece of the jacket of a cut bullet which lacerated the soft tissues of a leg and caused a most repulsive infection, the patient's entire body apparently filling with pus without apparent cause, even when this piece of the bullet was removed. Figure 9 is a piece of iron taken from a shrapnel wound of the hip, infected and very severe. Figure 10 is a bullet found in a terribly lacerated wound of a Croatian prisoner of war, shot from behind by his own comrades belonging to an Austrian regiment. Probing for bullets, etc., was not practised in our hospital at all. We depended on the x ray alone, without pain or additional risk to the patient; the existence of fracture, or its absence in

doubtful cases was positively demonstrated in this way. Especially in close proximity to the joints the x ray was of the greatest value, even in injury to the hollow viscera. Accuracy took the place of ignorance and doubt, and painful manipulations ceased to be necessary for diagnostic purposes. Proper diagnosis and proper treatment followed, and the prognosis in injuries with the small calibre bullet, if not fatal from immediate effects, was nearly always favorable, unless some vital organ was injured. Death occurred from acute hemorrhage, or if the infection could not be controlled. But sometimes even the most horrible cases ended in recovery, under a most simple dressing soaked in salt solution and daily care and observation.

There was a case with a portion of the frontal bone of the skull shot away, the brain exposed; another case with entire lower jaw gone, leaving no support for the tongue; and still another with sternum crushed and the heart exposed. But plastic surgery did wonders. Other men had been pierced by bullets in every direction. Thus there were cases in which the head had been wounded, the bullet entering above the orbit and passing out of the skull in the parietal region on the same side. Others were shot through the thorax, while several had been wounded in the abdomen, groin, and buttock, in both upper and lower limbs, or the bullet traversed literally from one end to the other, only particles of the jacket of the bullet remaining at certain portions of the spine, giving us, later on, symptoms of nerve injury, with a certain degree of neuritis or paralysis. On the other hand, the majority of original wounds,

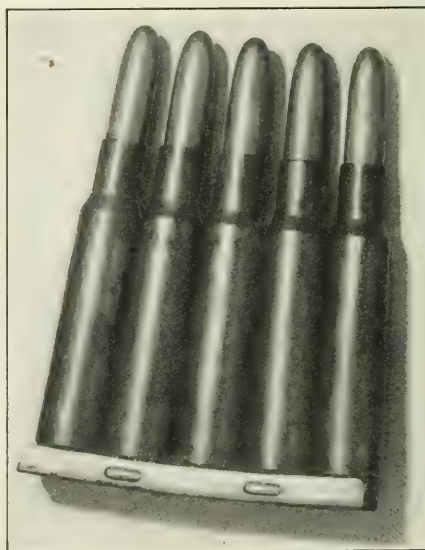


FIG. 2.—A set of Serbian bullets, jacketed, clean and small.

with the exception of comparatively few, healed and left no symptoms whatever behind them. The tendency to run an aseptic course was marked in such cases, deep suppuration or diffuse cellulitis being

rare. The wounded forgotten in the field for a long time suffered most. The asepsis of the bullets was clearly demonstrated to us, infection following oftener in wounds by hand bombs of Serbian make, grenades and shrapnel, portions of clothing being carried into the wounds more readily, with dirt, mud, and other debris. Vessel wounds gave us many cases of traumatic aneurysm with the extension of superficial infection to the seat of fracture, showing that every change of dressing was attended by risk of infection, the fate of the wounded resting in the hands of the one who applied the first dressing.

There is perhaps no better field to prove the value of x rays in diagnosis than military surgery. There the test of diagnosis and deductive reasoning has to be done in comparatively short time, with all effort tending to accuracy and completeness. And in nearly all cases in actual warfare we had the opportunity to prove with our apparatus that of all senses which we employ in diagnosis—and we have to employ them all—vision usually gives most accurate information. However well trained in the interpretation of clinical manifestations we may be, we are sure of the presence of a lesion when it is demonstrated to our eyes. The superiority of the x ray over other methods of locating missiles was in our practice so great that we used it to the exclusion of others, depending on this most distinct aid in conservative surgery; as Borden states, "because with it obtainable, disturbance of the wound through attempts to locate missiles was absolutely unnecessary." We have seen many times how some colleagues followed, or attempted to follow the track of the bullet before it had healed with a dangerous probe, or some substitute, disregarding one of the main tenets of modern surgery, namely, noninterference. In that way specific infection was made possible, even probable.

With the x ray at hand we located missiles at any time when necessity demanded, and their track was safely left undisturbed, and even in contraction of the tissues, change of position of the patient, with all the shifting of the muscles and facial structures obstructing the original path made by the projectile, had in the end nothing to do with our examination, and showed rather the object sought from different points of view if necessary. With cleaner bullets, in a number of operations, especially in wounds of extremities, with all the modern surgical methods, the mortality was reduced, the x ray playing the most important part in our work. We could make out in every case if there was any deformity of the bullets, if they were situated at dangerous points, near vital organs or not, in bony cavities, or lodged back of the bones, the examination being made perfectly safe and clean in the dark room or at the bedside and through the dressings. We at once distinguished the Mauser bullet from shrapnel, old lead bullets, or metallic objects of different forms, their number, and the actual material, or could make out the brass jacket bullets, which usually had been deformed by ricochet, or the jacket entirely stripped off and thrown some distance from the original bullet, having its own track, which could not be traced with a probe. Any small missile imbedded in the centre of the callus formed at the side of a gunshot fracture, or any other place, was found; fractures

and their dimensions were made out, the whole amount of destruction was diagnosed, and any comminution, due to impact against the shaft of the bones, could be seen. The conditions of united fractures and the actual steps of repair after receipt of the traumatism, were observed from time to time, and the repair of perforation of the bones was photographed successfully. We could study also the relationships of joints, the various movements, fissures, "green stick" fractures, depressions, marrow cavity, separation of splinter or apophysis, the direction and character of the complete, transverse, oblique, longitudinal, V or T shaped and comminuted fracture, its relations to the neck, head, shaft; separation of epiphysis, or if extended into a



Fig. 2.—Nickel plated Serbian projectile, exact size, extracted from leg near ankle joint.  
Fig. 3.—Serbian bullet removed from the skull.  
Fig. 4.—Austrian bullet, slightly bent, taken from the thigh.  
Fig. 5.—Brass clad bullet removed from soft tissue of arm.  
Fig. 6.—Round piece of lead from a hand grenade.  
Fig. 7.—Part of jacket from a cut bullet, which caused extensive suppuration.  
Fig. 8.—Piece of shrapnel from badly infected wound of the hip.  
Fig. 9.—Bullet found in terribly lacerated wound of back.

joint, multiple, compound, or combined with dislocation; fractures of nasal septum, in cavities of the head, or near the sutures, sinuses, or grooves, with the lesions in the antrum or foreign bodies in the eyes. In regard to callus formation, process of repair, disturbances in this process, small abscess cavities in the newly formed bone, other peculiarities of the wound, perfect or cartilaginous union, caries, deposition of earthy salts in the joints, along the

bones or near the opening of the nutrient artery; deformity, and functional ability—in all the x ray told the truth and taught us to do more honest and successful surgery. When the proper conditions and positions were known the x ray could not mislead; its revelations being always correct and infallible.

We usually proceeded in this way: With the help of the x ray we made our diagnosis through the preliminary dressing, not merely looking at the object,

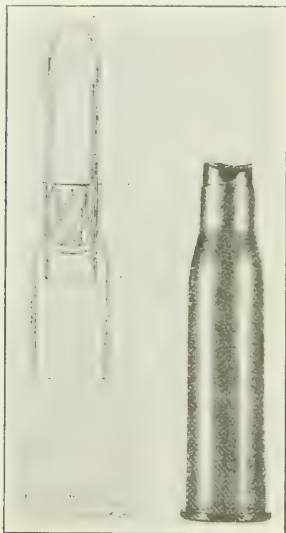


FIG. 11—Cross-section and section of dumdum bullet (Austrian): 2. Chamber for powder. 3. Base. 4. Gincletube. 5. Striker. 6. Chamber for Nos. 4 and 5.

but into it, and if from the nature of injury and the symptoms presented we judged that the bones were crushed, fragments were not in apposition, or the bullet was lodged in a part readily and safely accessible, we decided to remove it. In the majority of cases we worked without general anesthesia, because the operation was really of secondary importance compared with possible dangers on account of the heart, kidneys, etc., and local anesthesia was resorted to, or none, if the brave patient, usually a Serbian, protested, asking rather for a cigarette than a stimulant. The x ray tube under or on the side of the table, was in action, and when deemed expedient, under strict aseptic precautions, we enlarged the wound and observed our knife cutting into the tissues and going deeper step by step toward the missile. Finally the bullet was removed, with all the bony debris and other particles of foreign bodies seen here and there in the wound. If we cut direct upon the bullet we wired the fragments of the bones together, if necessary, or used plates, set the fragments properly, and applied a permanent dressing, observing thus the whole procedure and the results of the same on the screen. We took care of a free exposure of the track of the projectiles, and after removal of foreign bodies and necrosed or detached tissues, we dried the wound and treated the surface with tincture of iodine, bringing together the edges

by provisional sutures with drainage from the most dependent part, either by the wound or by a counter-opening. Many times we photographed through plaster of Paris, and made out on our stereoradiographic films whether proper approximation of the fragments had been accomplished, or why union did not or could not take place. Under no circumstances could this be demonstrated by any other means of diagnosis. If we had a suspected fracture, or dislocation, or both, where the swelling would not allow immediate digital examination on account of pain or inflammation which masked the true condition, the simple rapid application of the rays at once revealed the status without danger to the patient and with great satisfaction to us.

We certainly had to remember that the greatest diagnostic difficulties were offered by the joints and old fractures. The older the fracture, the less conspicuous the line of fracture appeared, being overshadowed by the callus, and the prognosis in such cases had to be guarded, if there was a constantly discharging wound. Many times the splints and plaster of Paris dressings were applied over the original seat of the fracture, especially in fracture of the femur, tibia, etc., coming from the field hospital. Or, on x ray examination, no bullet would be found, it having entered the orbit and passed behind the eyeball, escaping in front of the external meatus on the same side. At other times the official record would note penetrating gunshot wound of skull, and we found, with the help of the x ray, loose fragments of bone, which were removed, but the bullet was in the interior of the skull. Such a wound healed with a pulsating scar, but no mental symptoms. We had only a few amputations in gunshot wounds, as we saw every particle of the crushed bone through the preliminary dressing, and determined if amputation was necessary. In gangrene, post typhus or from frost bite, we usually ex-



FIG. 12—Base of the case with date 1912 and the Austrian eagle as a proof of origin.

amined the bones beyond the line of demarcation before amputation. In severe cases we shortened the exposure from minutes to seconds with the help of the tungstate of calcium screens, when skiagraphs had to be made, bringing the object as close as possible to our paper or film, removing our Crook's tube to a greater distance from the screen in fluoroscopy,



or the paper and the film in skiagraphy. In that way we could make out some of the rare cases of fissures in the clavicle, where there was absolutely no deformity or crepitus, or could see even the most obscure fracture of the scapula and dislocation of the humerus combined with a fracture of the acromion. In the elbow joint proper diagnosis was many times impossible, but with our x ray we recognized the various types of elbow fractures in a second, noting all the complications such as a fracture of the olecranon combined with dislocation of the radius, crushed to pieces or not. Study of the wrist joint and of the injury due to different projectiles was interesting, as were fractures of the bones of the hand, carpal, metacarpal bones, or phalanges. Fractures of the pelvis were accurately recognized, and we could hardly fail to be impressed with the wonderful results achieved in these cases, differentiating between contusion, fracture of the acetabulum or the neck, dislocation, or impaction. We had hundreds of such cases, viewing the separate fragments of the shaft, or particles which had to be removed, not to mention the intraarticular complications in the knee, or incomplete fracture of the patella. The malleolar type of fractures of the leg, which could not be diagnosed before, even the so called Pott's fracture, were revealed just as well as fractures of the lower end of the radius or styloid process. Instead of sprains, many times we found fractures of the ankle beside fractures of the tarsal and metatarsal bones, with injury to the phalanges, called usually contusions or "flat foot." In fractures of the sternum and the ribs or vertebrae, we located the fragments and decided on operation, if necessary; also in fractures of the skull, and of the inferior maxilla and larynx.

We had some remarkable recoveries follow grave bullet injuries of the neck, the clinical symptoms being confirmed by the x ray; a few wounds of the trachea, with fracture of one or more of the spinous processes. We had a few gunshot wounds of the chest, with fractures of ribs and spinous processes of dorsal vertebrae, penetrating wounds of the chest and abdomen, drainage being instituted in some cases without rib resection, or when empyema and purulent hemothorax formed, operation being done. In peritonitis absolute rest was advised, especially when the bullet had passed through; the chances of life were always better, when there was no other complication. The diagnosis of bronchitis, pneumonia, and tuberculosis was made with the help of the x ray, also of asthma in the older soldiers, and such conditions rendered the lungs more favorable in the eventual formation of lung abscesses, the aspiration of these under the x ray being comparatively easy. We also saw the heart in action, the structures about the lung root, the aorta, mediastinal shadows, diaphragm, and the esophagus, the increased speed permitting the best rays in the tube, with absolutely perfect effect as to solidity and perspective of the picture. Of bayonet and other stab wounds in the chest or abdomen we had only a few, but they were never probed either for diagnostic or for therapeutic purposes. In the absence of serious visceral lesions, penetrating wounds of the abdomen usually healed without operation, but under conservative treatment. The penetrating wounds of the kidney were bad, if

complicated, but others ended in recovery. We had only two wounds of the urinary bladder and both healed, although the bullet penetrated the bony wall of the pelvis.

We have not forgotten either the curative action of the x rays in certain cases, and we proved again and again that the x ray in reality often not only relieved the pain, but caused the disappearance of previous fibrous accumulations, being particularly useful in enlarged lymphatic, tuberculous lymph glands, chronic joint diseases, skin lesions, etc., possessing a chemical and even germicidal action, if powerful enough. After having worked with the x ray continuously through a fluoroscope and screens, under good protection of the body, we were not affected very painfully during the whole year of our stay, although our eyes seemed to suffer a little.

1900 BLUE ISLAND AVENUE.

### PAID SERVICE IN HOSPITALS.\*

*Its Advantages Over the Present Free System,*

By M. SCHULMAN, M. D.,  
New York.

There are very few men and women among the urban population of today who can boast of being unacquainted with the doctor. Indeed, men are coming to realize that a doctor can do something more than prescribe a nauseating and expensive medicine for a fully developed disease, and are more and more seeking periodical examination and advice, that possibly unsuspected disease or disease tendencies may be discovered at the earliest moment and their development arrested or averted. This is as it should be, for especially in the domain of health it is easier to prevent infringement than to remove it. An ounce of prevention is fully worth a pound of cure. The modern doctor earnestly begs for an opportunity to apply his knowledge in disease prevention.

Nevertheless, there still are, and it is to be feared for some time will be, sick men and women and children. For such, modern medicine can do something, and at times a good deal, but the methods of *modern* medicine and of medicine of one or two generations ago are quite different, and of necessity so. This important fact is insufficiently realized, not only by the people at large, but also by many doctors. Yet the reason is close at hand. In the last fifty years there has been an enormous increase in the knowledge of disease; there have been improvement and multiplication in measures for diagnosis; and there have been very material increase and improvement in methods of treatment. The consequence is, that no one man can possibly be master of the entire field of diagnosis and treatment, and clinical medicine has been divided into many specialties. While fifty years ago there were practically no specialists, today there are too many. The already excessive amount of specialization is leading to narrowness of view, but this matter will shortly adjust itself.

From the fact that doctors are compelled to de-

\*Supplementary to "Clinical Medicine and the Public," NEW YORK MEDICAL JOURNAL, September 4, 1915.

vote themselves to small parts of the human organism so that they may become possessed of complete knowledge of those parts, it does not at all follow that when that organism becomes diseased, the disease limits itself to any given part in order to accommodate the specialists. The human body, in spite of the physician's limitations, remains one complex whole, so that there is scarcely a disease of any one organ that may not make an impression on remote parts of the body. It becomes clear that it is seldom possible for any one doctor to give the patient the benefit of good modern medical care without the cooperation of one or more specialists in other branches of the art. Only such cooperative team work can yield the best results obtainable today. Why should the public be satisfied to accept from the medical profession anything less than the best? We must also ask, Does the public get the best?

To answer the last question, "the public" must be divided into three groups. The first group includes the wealthy; the second, the dependent poor; the third, the intermediate, with moderate incomes. The first two groups get the best attention possible; the third, though by no means less deserving, does not. The sick rich can employ and pay for any required number of specialists. The sick dependent poor have excellent provision made for them in hospitals and dispensaries, where cooperative team work in the practical application of clinical medicine finds its highest expression. The sick of the intermediate class cannot often afford to pay groups of specialists their prevailing fees, and find the hospitals and dispensaries, as at present managed, closed to them. Manifestly something is wrong with a system of medical practice that neglects to provide for so large and worthy a proportion of the population. The situation is by no means hopeless, for it merely requires that the medical profession come down from its lonely pedestal, look about, and adopt methods of reorganization, division of labor, and the cooperation of effort so freely employed today in all other fields of endeavor, that it may become *economically, as well as professionally, efficient*. Business methods as well as business efficiency in the medical profession would indeed be an innovation, but it will work to the advantage of the general public as well as to that of the medical profession. If the changes do not come soon from the voluntary efforts of the profession, they will be forced upon it by public demand.

It was pointed out above that the practical application of clinical medicine finds its highest expression in hospitals and dispensaries. This requires some modification, to point out that *dispensaries* do not yield the quality of work that they might and should, because of an underrating of their possibilities and value. They are not given the proportionate or deserved degree of attention by the managers of the hospitals to which they are attached. This is an error which is at last coming to be recognized, and which will probably in a short time be rectified. What these institutions do for the dependent poor they, or similar institutions, can just as well do for the neglected middle class. There is absolutely no good reason why dispensaries and hospitals

should not offer medical care for reasonable pay, and by a decently paid and properly selected staff of physicians and surgeons and specialists in all branches. Similarly, small groups of physicians, surgeons, and specialists, may combine and cooperate to render medical service in a manner comparable to that rendered by hospitals and dispensaries. They can thus render it far superior in quality and at a cheaper rate than is possible with the uncombined, single handed methods that prevail in private practice today.

When comparing, from the economic standpoint, small groups of cooperating practitioners, and the large groups so cooperating in hospital and dispensary, the advantage is with the latter. It is a well known law of economics, that the larger the production the greater the economy of production. It is quite clear that one institution that can handle a large number of patients can do so more economically than ten small institutions which together handle only the same number. The saving in incidental and overhead expenses must be considerable, and might be applied to increase of allowance to physicians and to decrease of charges to patients. Furthermore, magnitude commands respect, and, all else being equal, a large institution is more attractive to patients than a small one. It inspires them with greater hope and confidence, and is able to control patients better. Practitioners will admit that the impatience of their private patients frequently compels them to proceed hastily and with insufficient study of the case, while this handicap to accurate diagnosis and treatment is practically never encountered in hospital work.

The pay service of a hospital and dispensary should be manned by doctors who receive salaries from the institution, in accordance with the amount of time required of them. The number of patients that they may be required to treat within the given time must not exceed an established maximum, that their work may not be hurried. Thus the income of the doctors is assured and is not immediately dependent on the income of the institution. When, however, cooperative offices are owned and managed for profit by a small group of practitioners, the incomes of the doctors are directly proportionate and dependent on the total income of their offices. It is quite obvious that such small institutions, no matter how honestly and conscientiously conducted, will be sometimes suspected by their patients, and thus suffer the great handicap of being thwarted in their efforts to have a sufficient amount of consultation and study brought to bear on a case. This is at present also one of the handicaps of the private practitioner, from which the hospital is immune.

Doctors will contend that institutions such as proposed will compete with them for patients and so reduce their clientele and their incomes. Undoubtedly these institutions would draw many patients from private offices of practitioners and reduce the *quantity* of their private practice. Their incomes, however, would not suffer, for to man the institutions, doctors will be required in number, exactly proportionate to the number of patients attracted to the institutions. Thus, the greater the number of patients, the greater the number of doc-

tors, and the greater the number drawing salaries from the institutions. These same doctors who are to lose private patients will draw salaries from the institutions, which will quite compensate them for the loss. In addition, they will have an opportunity to do better work and render more adequate service than is possible in private practice, because they will work in cooperation with other doctors, all expert in their chosen field.

We may briefly summarize as follows:

1. It is impossible nowadays for a doctor to be master of the entire field of medicine.
2. Present day diagnosis and treatment are much advanced over those of one and two generations ago.
3. The adequate study of a case by modern methods frequently requires the cooperation of many specialists.
4. At present, for economic reasons, a large proportion of the population cannot avail itself of the best aid that the medical profession is capable of rendering.
5. The situation can be remedied by the establishment of cooperative medical offices, or by the establishment of pay services in hospitals and dispensaries.
6. Hospitals and dispensaries are probably better fitted to render the service, and can do so on a more economical basis.
7. The establishment of such services would not reduce the income of the medical profession.
8. It is to the interest of the general public to stimulate the establishment of such services.

1845 SEVENTH AVENUE.

### MERCURIALIZED SERUMS.

By F. E. STEWART, PH. G., M. D., PHAR. D.,  
Philadelphia.

The present remarkable interest now being taken in mercurialized serums as therapeutic agents is largely due to the investigations of Dr. Charles D. Byrnes, of Baltimore, Md., and Dr. Loyd Thompson, of Hot Springs, Ark., whose papers form a part of the symposium on the subject of immunity we are here to discuss. To this symposium my contribution is the introductory paper. It is to be immediately followed by a contribution from my associate, Dr. Paul S. Pittenger, dealing with the action of mercurialized serum on experimental animals. Under the circumstances, therefore, I am limiting my paper to a general consideration of the subject.

Mercurialized serums are prepared by adding corrosive sublimate to normal serums and dissolving the precipitates thus formed in an excess of serums.

Mercurialized serums may be prepared from the blood serum of the patient (autogenous serum), from the blood serum of some other human being (homologous serum), or from the blood serum of some animal (heterologous serum). These preparations may be administered subcutaneously, intramuscularly, intravenously, or intraspinally. These are all factors that must be taken into account when considering the action of mercurialized serum.

When horse serum is used as a vehicle in the prepa-

ration of mercurialized serum, the product, so far as the serum is concerned, must of course be considered in the light of our knowledge regarding horse serum preparations in general, such as diphtheria antitoxin, tetanus antitoxin, and the antibacterial serums. This phase of the subject will be considered later.

Corrosive sublimate when injected subcutaneously is irritating. Mercurialized serums may be injected under the skin, or into the muscles, or intravenously, or even intraspinally, and yet produce no irritation whatever. How is this change in reaction to be explained?

Referring to Cushny (1) we learn that when a "solution of a metallic salt comes in contact with a living tissue, such as the mucous membrane of the mouth or stomach, a metallic albuminate is at once formed, and the acid with which the metal is combined is set free. The more completely dissociated the ions of salt are, the more rapid is the reaction with protein, and the more intense the local action. Thus the more rapidly ionized organic salts act more strongly than the organic ones which are slowly dissociated. Other factors determining the nature of the local action are the character of the precipitate, and the activity of the acid formed, the latter again varying with the extent to which it is dissociated into ions."

The proteins apparently play the role of acids, displacing the acids of the metallic salts, which are set free, and forming insoluble albuminates with the salts. These salts are not generally of definite chemical composition, for the percentage of metals contained in them usually varies within wide limits; in some cases, however, definite compounds have been formed.

The salts of mercury are more irritating and corrosive than those of the other metals. Cushny says the cause of this is probably the fact that the precipitate is less continuous and more loose and flaky, and also that it is soluble in excess of proteins, and therefore allows the unattached molecules to penetrate deeply. Furthermore, mercury itself, unlike most of the other heavy metals, is poisonous to the protoplasm of the cells. When mercuric chloride comes in contact with the tissues it is split up, and the mercury ions destroy the cells, not only by the corrosive action of the acid set free, but also by the poisonous action of the mercury itself.

The most powerful corrosive salts of any of the metals are those which are most rapidly dissociated into ions, that is, the chlorides and nitrates, provided that they are soluble. The least corrosive of the metals are those formed with a slowly dissociated organic acid, such as the acetates, tartrates, and citrates.

Thus when a weak solution of lead acetate is applied to the mucous membrane, the metal forms an albuminate with the protein lying on the surface, and in the more superficial part of the cells. This albuminate forms a continuous sheet, and the very dilute acetic acid set free is incapable of corroding the tissues. If a stronger solution is applied the tissues are denied this protection by an insoluble albuminate, and therefore the metallic precipitate extends more deeply. The greater the concentration, the more rapid and deep the destruction. Thus ace-



tate of lead may act as an astringent covering the mucous surface with a protective pellicle of insoluble albuminates, or as an irritant on account of the more penetrating and corrosive action of the stronger acetic acid set free. No such protection is afforded when a solution of mercuric chloride or nitrate comes into contact with the tissues, and therefore mercuric chloride and nitrate are always corrosive, never astringent.

The action of mercuric chloride, like that of all the heavy metals, consists of two parts, namely, the local effects produced at the point of application, and the general effects which follow the absorption into the blood and tissues. These two actions are to be regarded as entirely independent of each other.

The heavy metals, as such, do not induce any symptoms when swallowed, except by their mechanical properties. Thus mercury may be swallowed in large quantities without causing poisoning, and silver or copper coins are equally devoid of poisonous effect. However, when mercury is finely divided, as in blue mass and mercurial ointment, it becomes more or less physiologically active. Salivation is readily produced by blue mass.

The salts of the heavy metals are often only slowly absorbed, and in acute poisoning the symptoms arise from local irritation and corrosion, and only, to a smaller extent, from the general action of the metal. Mercury, however, is an exception. Unlike many of the other metals it is rapidly absorbed and distributed throughout the body, and being fairly toxic in itself, its poisonous effects are largely due to the general action of the metal upon the system.

Let us consider what happens when mercuric chloride is dissolved in a solution of sodium chloride not containing albumin, and then note what probably occurs when mercuric chloride is dissolved in normal serum containing sodium chloride.

Paul and Kronig (2) investigated the disinfecting powers of a solution of bichloride of mercury and common salt. Many years ago, Bacelli, when advising intravenous injections of mercurial salts in cases of syphilis, employed a solution of the bichloride mixed with sodium chloride in the proportion of one part of bichloride of mercury to three parts of sodium chloride, which he stated was more effective in actual practice. Paul and Kronig have shown, that the actual process is as follows: A soluble salt ( $\text{Na}_2\text{HgCl}_4$ ) is formed which dissociates into positive Na ions and negative complex ions of mercury and chlorine. The latter are negative from an antiseptic point of view, but a certain amount of secondary dissociation of the complex negative ion occurs, resulting in the formation of the active mercury ions, though to a smaller extent than when an equimolecular solution of mercuric chloride alone is employed.

Corrosive sublimate when dissolved in normal serum loses its corrosive character, and the product thus formed is bland and nonirritating, and may be injected intraspinally, intravenously, intramuscularly, or subcutaneously without any corrosive or irritating action whatever, and yet it appears to be just as active as mercuric chloride itself.

The correctness of this statement is clearly demonstrated by the investigations of Pittenger, to be reported in his contribution to this symposium.

When the precipitate of albuminate of mercury

formed by adding a solution of the bichloride to normal serum, is dissolved in excess of serum, if any dissociation takes place the acid unites with the albumin of the serum, and therefore mercurialized serum when used as a therapeutic agent is incapable of corroding the tissues of the patient.

What is the nature of the compound formed when mercuric chloride is added to normal serum and redissolved in excess of serum? Is it a solution of mercury albuminate containing chloride of sodium, or is it a solution of the double salt of mercury and sodium? This question cannot be answered without further research.

As far as the relative toxicity and presumably the comparative value of the product therapeutically are concerned, Pittenger has shown that toxic effects may follow the intravenous injection of mercurialized serum in animals within five minutes when sufficiently large doses are administered; also that within six or eight hours vomiting and bloody stools may occur. Cases have been reported where toxic symptoms have promptly followed the intravenous injection of one third of a grain in man.

When heterologous serums are used in preparing mercurialized serum, they are to be regarded as heterologous serum preparations the same as diphtheria antitoxin, tetanus antitoxin, and antibacterial serums.

It is of course well known that the subcutaneous injection of diphtheria antitoxin may be the cause of more or less severe symptoms known as "serum sickness," and usually attributed to anaphylaxis. These results may follow upon the first or a later injection. Recent studies on animals by Nemmer (3) and Goodall (4) have demonstrated that fatal results from the subcutaneous employment of diphtheria antitoxin are exceedingly rare. Weil (5) states that phenomena in humans are in accord with the results of animal experimentation. Even highly sensitized animals can tolerate relatively large doses of serum when given by the subcutaneous route.

As pointed out by this author, there has been a strong tendency of recent years to substitute the intravenous administration of therapeutic serums for the subcutaneous route. This has been recommended not only in the case of diphtheria antitoxin, but also in tetanus antitoxin. The reasons for this procedure are indeed cogent, and have been carefully analyzed by Park (6), who reports its use in 200 cases without a serious accident. As stated by Weil (7), on the analogy of animal experimentation there can be no doubt that this mode of administration, however, is fraught with considerably greater danger to the patient from the standpoint of serum anaphylaxis.

In order to obviate serum sickness and anaphylactic phenomena, Besredka (8) suggested the application in human beings of the method of desensitization which had been studied by him with great elaboration in animals. In a series of experiments on guinea pigs, he found that the sensitized animal could be sufficiently protected against the fatal dose of serum given intraspinally if the animal had previously received a graded dose of serum under the skin, into the peritoneum, intraspinally, or intravenously.

Weil (9) admits that "as to the results obtained

by Besredka in his animal experimentation there can indeed be no question." He points out, however, the serious difficulty in applying these results directly to the treatment of human beings. "In the animal experimentations it was known that the guinea pigs had been sensitized by a certain dose of antigen, and that a certain definite amount of serum was necessary to produce death; but unfortunately these data are not known in human diseases."

Besredka (10) has recently suggested that desensitization might be rendered still more certain by the use of repeated instead of single preliminary doses. These are given at comparatively short intervals, and are graded in such a way that the last dose is many times larger than the first. He dilutes five c. c. of serum with ten times the amount of physiological saline solution; one c. c. of this diluted serum is administered intravenously. Four minutes later, three c. c. are injected, two minutes later, ten c. c., and two minutes later, twenty-five c. c. Besredka states that the curative dose can then be administered without fear of anaphylaxis. This is known as the method *à doses subintrantes*. Weil (11) says there can be no question that this method is extremely effective. He does not consider it to be a reliable guarantee of safety, however, in human therapeutics.

The foregoing brief extract of Weil's important contribution to the subject of serum anaphylaxis is sufficient to point out the fact that, while mercurialized serum prepared from horse serum when used subcutaneously is apparently safe, certain severe symptoms may follow its use, but the danger of serious anaphylaxis is very remote. On the other hand, when the serum is used intraspinally or intravenously the liability of anaphylaxis is increased.

As already stated, to Byrnes (12) belongs the credit of introducing mercurialized serum in the treatment of cerebrospinal syphilis. He first used autogenous serum, and afterward homologous serum, in its preparation, but after extensive researches to ascertain the probable safety of horse serum as a base, adopted the latter. The appearance of the product on the market prepared in this manner is due to his endorsement and approval. So far as we know, no cases of anaphylaxis have followed its intraspinial injection, and as a large number of patients have been treated with the serum, it is safe to assume there is little risk of anaphylactic phenomena when it is used in this way.

Referring to the intravenous use of mercurialized serum, it will be noted that Thompson, who is largely responsible for its use in this manner, does not recommend this route as a method of choice in all cases of syphilis, but finds it a great advantage in cases in which quick results are imperative; and also in those cases in which great pain occurs on intramuscular injection of mercuric chloride or other mercurial salts. Neither does Thompson favor the use of heterologous serum in the preparation of mercurialized serum.

Taking all of these facts into consideration, including the fact that mercurialized serum when injected subcutaneously or intramuscularly is rapidly absorbed and distributed throughout the body, producing characteristic effects upon the system in a

very short period of time, it seems advisable to advocate the use of serum subcutaneously or intramuscularly as a method of choice, except when specially indicated intravenously.

#### CONCLUSIONS.

1. Corrosive sublimate becomes noncorrosive and nonirritating when dissolved in normal serum.
2. The compounds thus formed are just as toxic and probably therapeutically as efficacious as mercuric bichloride itself.
3. When prepared from heterologous serums, mercurialized serums must be regarded as heterologous serum preparations, requiring conformity to the same rules in their administration as applied to other heterologous serums, such as diphtheria antitoxin, and antibacterial serums.
4. Mercury in the form of mercurialized serums is an ideal form for administering mercury subcutaneously, intramuscularly, intravenously, and intraspinally.
5. Subcutaneous or intramuscular administration is the method of choice. Intravenous or intraspinal administration should be the method of resort only when especially indicated, as outlined in the publications of Doctor Byrnes and Doctor Thompson, who have made a special study of the subject.

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11 ELENA STREET, GERMANTOWN.

#### MERCURIALIZED SERUMS.

By LOYD THOMPSON, PH. B., M. D.,  
Hot Springs, Arkansas,  
Visiting Urologist, St. Joseph's Hospital.

The intravenous method of administering mercury in syphilis was first practised by Bacelli (1), in 1893, and was soon used by several other investigators. In this country Bernhart (2), Crume (3), Lydston (4), Kingsbury and Bechet (5) Stokes (6), and others employed this method with more or less success. The bichloride has been the most frequently used salt and has been given in doses of five to forty-five mg. (1/12 to 7/10 grain). The cyanide, the biniodide, the benzoate, and sublimé have also been used.

Owing partially to the comparative difficulty of the technic, but probably more to the untoward effects which sometimes follow, the intravenous injection of mercury has not come into common use. These untoward effects consist of phlebitis and periphlebitis, which is sometimes so extensive as to cause complete obliteration of the vein.

Upon reading Byrnes's original article upon the intradural injection of mercurialized serum in syphilis of the central nervous system, the thought suggested itself to me that if mercurialized serum could be injected intradurally without irritation, it could be

injected intravenously without causing phlebitis. This I tried with perfect success, and in May, 1915, reported sixty-six injections in eight cases (7).

The method of procedure is as follows: From forty to fifty c. c. of blood are collected by venepuncture and placed in a large test tube which has been boiled in salt solution. After separation the serum is poured off and thoroughly centrifugated. A watery solution of mercuric chloride is prepared so that each c. c. contains twenty-two mg. ( $\frac{1}{3}$  grain) of salt.

The serum is now measured and divided into two parts, one third of the amount placed in one tube, and the remainder in another. The mercury solution is added to the first part in the proportion of one c. c. to each two c. c. of the serum. A heavy precipitate of albuminate of mercury appears, which is completely dissolved on the addition of the remainder of the serum. It will be seen that the mixture will contain twenty-two mg. ( $\frac{1}{3}$  grain) of mercuric chloride in each seven c. c.

At first great difficulty was encountered in keeping the albuminate of mercury in solution for any length of time, and it was necessary to prepare the solution fresh before each injection, but later it was discovered that if the mixture is heated in the water bath for one half hour at 55° C., it will remain in solution indefinitely.

Mercurialized serum for intravenous injection prepared from horse serum has been placed upon the market, but owing to the danger of anaphylaxis I have not employed this serum and do not recommend its use. Recently I have used ascitic and hydrocele fluids in the preparation of mercurialized serum for intravenous injection, with very favorable results. These fluids, however, vary somewhat in their ability to hold the mercury albuminate in solution, some of them requiring as much as ten c. c. to each twenty-two mg. ( $\frac{1}{3}$  grain) of the bichloride.

It has occurred to me that the use of these fluids might present an opportunity for placing mercurialized serums upon the market from the use of which there would be no danger of anaphylaxis. It might be well to state parenthetically that ascitic and hydrocele fluids should be tested for the presence of tubercle bacilli before using for intravenous injections.

I have not used mercurialized serum intravenously as a routine procedure in the treatment of syphilis, but have used it mainly in cases in which the pain of intramuscular injection was so great that the patient would not tolerate it.

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DUGAN-STUART BUILDING.

**Treatment of Heart Block.**—D. Danielopolu and V. Danulescu (*Presse médicale*, November 9, 1916) report experimental researches showing that in the symptoms of cerebral anemia occurring paroxysmally in heart block subcutaneous administration of adrenaline is indicated.

## Contemporary Comment

**Prevalence of Phimosi.**—The NEW YORK MEDICAL JOURNAL of October 7th devotes its prize essay columns to a series of descriptions from different surgeons as to the best method of obtaining the most satisfactory results in cases of phimosi. That a subject so apparently trifling should occupy so large a space, comments the *Medical Press*, of London, for November 15, 1916, is sufficient testimony to the importance which this common condition has acquired in the last few years. The frequency with which cases of phimosi occur in hospital outpatient work is always a matter of no little surprise to those who have been accustomed to look on it as a rarity rather than as an abnormal state. But the real fact seems to be that the exception in these dispensaries is really the child whose foreskin is normal and, with the picture ever before our minds of the evil that certainly follows the retention of this redundant skin, the question forces itself upon us as to how far should the matter rest only with the wishes of a sometimes not over careful parent. The education of the people in this, as in all those matters which involve the future welfare of the child would certainly effect a notable change in the ideas that exist among the poor as well as the rich, and if, to crown all, the adoption of the early operation in all cases were subsequently encouraged by every obstetrician, the many disgusting infections which often result in total crippling of the man or the boy would be a thing unknown.

**"Cardiacs."**—The importance of heart diseases has not received the full recognition warranted by its frequency or effects, says *American Medicine* for December, 1916. There is hope that the newly organized New York Association for the Prevention and Relief of Heart Diseases will be able to accumulate a large amount of evidence with reference to the causes, method of prevention, facilities for cure, the types of convalescent institutions most worthy, the forms of education to be advised, and the vocations best fitted for sufferers from heart diseases. In their program, one finds definite lines of work which appeal to the reason. From the standpoint of industrial effectiveness, the nature of the occupation of sufferers from cardiac disease is of great moment. To learn during the school age those children affected with organic cardiac conditions and to guide them intelligently into the most suitable vocations is a work that promises much. A large amount of cooperation will be required, much study of individual fitness will be necessary, but the trial must be made in order to determine whether it is feasible to develop vocational guidance for children suffering from cardiac disease, with self support as the end result. The problem for adults is fraught with greater difficulties because there is involved the adaptation of the patient to his environment and the alteration of long established habits of living in the patient himself. Changes of occupation, teaching new occupations, the provision for new trade training, the underwriting of self supporting businesses where larger amounts of rest may be possible are by no means simple measures to carry out on a large scale.



# Editorial Notes and Comments

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

EDITOR

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Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transporta-  
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JANUARY 20, 1917

## STATISTICS AND HEALTH.

Among the more significant recent indications of progress in the preventive medical world must be noted the first joint session of the sociological and statistical sections of the American Public Health Association at its recent meeting in Cincinnati, a session devoted to the consideration of errors in sanitary research. The field of health work has been flooded with streams of investigations, of surveys, and of reports. The freely flowing pens at the source of these streams have often been held by social workers who have not a vestige of medical training. The resulting false emphasis is understandable; but even when medical men are in charge of sociosanitary investigations, they, too, often lack the specific training in statistical method on which often depends the scientific value of such work. In spite of energy and good intentions, many investigators have not been taught to differentiate between material which is and that which is not suitable for statistical analysis; nor do they know the methods and limitations of mathematical presentation. Hence exaggerated statements, absurd deductions, and logical fallacies pour forth, and are presented as statistical summaries of scientific study.

Such work brings discredit on statistics, and on social and health reports. The general public grows

skeptical of the conflicting conclusions of various investigators as to the extreme importance of their pet evil. This incredulity is the result, no doubt, of the presentation of propaganda as if they were scientific data, as was pointed out at Cincinnati by Doctor Armstrong, vice-chairman of the sociological section, and organizer of the symposium.

A valuable paper by Doctor Dublin, a much needed contribution to the question of standards and formulas in the application of statistical methods to health work, was happily illustrated by the many instances of hazardous generalities and flimsily based deductions as presented by Doctor Schneider in a discussion at once searching and amusing. The amazing correlations on cause and effect in the housing and other studies cited, serve to call to our attention many similar instances in current reports. It seems that the average investigator often starts work without stating his problem, proceeds planlessly, according to developments, "adopting the principle of the shotgun rather than the rifle," and hastily transforms into dogma generalizations based on insufficient or inaccurately observed data.

One of Schneider's instances of this tendency was the report of a young lady who, finding that diphtheria and overflowing privies coexisted in the same house, stated that the recent epidemic of diphtheria in her town was probably caused by privies. Further, in a statement regarding the Liverpool rehousing work, it is pointed out that the tuberculosis death rate in the district affected was "more than cut in half" by the improvement in housing alone. This grotesque conclusion entirely disregards as possible other causes of the decreased death rate, the fact that the rate for the whole city fell markedly during the years in which the rehousing was done; that only a carefully selected sixty-five per cent. of the original population of the district was rehoused in it; and that a large number of social service measures were instituted, such as the reduction of the number of saloons, the provision of infant welfare work, the establishment of recreational facilities and medical school inspection, an elaborate antituberculosis campaign, etc.

Exactly such confusion of association with causation will continue to exist until our statisticians put themselves at the service of our investigators as expert advisors; and until the investigators turn, as pupils in this important matter, to the statisticians. Then we shall have "less assertion and more evidence, less emotionalism and more reason, less faith and more science."

That the American Public Health Association de-

voted an entire session to the furtherance of such cooperation augurs well for the future of statistics, sociology, and sanitation.

#### SING SING'S REBIRTH.

Conditions existing today at Sing Sing, both as a result of the innovations of the former warden, Mr. Osborne, and the introduction of a psychiatric clinic, as set forth by its director, Dr. Bernard Glueck, at a recent meeting of the New York Psychiatric Society, show such marked advances over the past that we wish to call attention to the results obtained.

In the first place, the formation of the Mutual Welfare League by Mr. Osborne was an experiment which has proved successful in group psychology. The league, as is pretty well known now through the notoriety it has received, is a body of men composed of prisoners through whom the prisoners become self governing. Infractions of discipline and the law are dealt with in a court of the league, and the prisoners themselves designate the disposition of the cases. This is the application to prison life of a principle well understood by men of affairs, namely, that responsibility and authority must be commensurate. The league is a success because the men, by succeeding in governing themselves through it, derive therefrom a much larger measure of individual freedom. It is a solution along the lines in which every social problem must be solved, a solution that brings benefits both to the individual and to the group.

The special work of the Psychiatric Clinic is more particularly interesting from the medical point of view. Already in the study of successive admissions it has become evident that a very large percentage of those sent to Sing Sing—considerably over fifty per cent.—are suffering from definable diseases of the central nervous system, and are therefore fundamentally not only cases for the doctor, but for the psychiatrist. To such a state has the ideal of the law brought us! The ideal that considers the crime and not the criminal.

It is of exceeding interest to learn that the prisoners themselves are beginning to appreciate, and to value very highly the existence of the Psychiatric Clinic. The clinic is there to help them, and they know it, and therefore they are constantly applying for help in person, and not only that but doing what very few judges on the criminal bench would think of doing—applying to the Psychiatric Clinic for information about those who come before their own Mutual Welfare court so that they can deal with them more intelligently.

And finally, a matter of the utmost importance in prison administration, as well as in all institutional

management, it is being found more and more as the days go by that the serious difficulties which result in disorder and highly aberrant forms of conduct which in the average prison demand disciplinary measures of more or less severity, are almost all artificial products. In other words, a more intelligent understanding of the person and his immediate prison environment and the relation of the two will enable the management, in at least nine cases out of ten, to readjust the situation so as either to prevent these outbreaks or to cure them after they have occurred.

The advent of the psychiatrist in the prison will undoubtedly prove a revolutionary measure in prison management. It is the beginning of sanity in dealing with the criminal.

#### PITUITARY "TETHELIN" AS GROWTH PROMOTER

The daily press has announced the discovery by scientists of the University of California of a substance in the pituitary body supposed to account for the gigantic development of the body in acromegaly, and deemed capable therefore of promoting growth of the human frame. We shall await with interest the reports of the California scientists. In the meantime, however, we cannot but express the opinion based on similar efforts in the past, that pituitary products of any kind will fail to accomplish the feat expected of them.

Because tumors of the pituitary body are known to cause acromegaly, which includes remarkable development of the body, many have thought that this overgrowth was due to a secretion produced by that organ. But repeated trials with extracts of the latter have failed to cause overgrowth, and there is not the least evidence to show that these extracts represent at all the so called secretion. Thus, as stated by Biedl, in his work on the *Internal Secretory Glands* (p. 349), "we possess no proof of any kind that the active substance present in pituitary extract is formed in the organ during life and by it passed on into the bloodstream." The assumption of such a performance on the part of pituitary organic products he attributes to analogy. But this analogy is not even close when carefully scrutinized, and if we realize that, as recently demonstrated, the pituitary contains a substance corresponding with adrenal substance—found throughout the chromaffine system—we can readily account for any effects pituitary glandular products may have on the blood-pressure, though modified by the presence of nucleins and other organic constituents with which the adrenallike substance is combined. On the whole, evidence is accumulating that, as long ago urged

by Lewandowsky, we are only dealing, in so far as pituitary products are concerned, with useful pharmacological agents, but not with the homologues of a secretion. Indeed, so far, nothing, not even Cushing's work, has demonstrated that such a secretion exists.

The failure to promote growth by means of pituitary extracts is but one of many clinical facts which point in the same direction. Thus, acromegaly may affect one side of the body only, and, in fact, only a small portion of it. This suggests a nervous influence. How could a general secretion affect but one side, or a few segments, of the body? A nervous connection of the pituitary with the body at large explains it, however. Again, during the active stage of acromegaly the symptoms are derived from a combination of diseases of the thyroid (Graves's disease) and adrenals (hypernephroma), while in its late or passive stage, they are those of these same organs, but when they have been exhausted (myxedema and hypothyroidia or even Addison's disease).

It is very doubtful, therefore, whether "tethelin" will ever meet the claims of its discoverers. Growth and mentality can, however, be developed in children that are deficient in these respects by extracts of other ductless glands—those whose functions the pituitary coordinates.

#### WHAT IS AN EPIDEMIC?

The health officer of a city which has had fifty cases of infantile paralysis to 100,000 population makes the official statement that there has been no epidemic of the disease, although the average citizen of that community is of a different opinion.

The definition of an epidemic as furnished by the lexicographers is not a help in this instance. It is evidently a relative term, since fewer cases of a disease like poliomyelitis deserve the term, than of another disease, like scarlet fever. No number of cases to the population is set for an epidemic of any disease. The word does not have a pleasant sound, especially in the ears of a department of health, which must feel itself, to a certain extent, responsible for the rise and progress of an epidemic, but the health department does not do well when it attempts to diminish its responsibility or improve the appearance it makes by changing the usual meaning of the word to suit the occasion.

The fewer cases of all kinds of disease that health authorities come to look upon as an epidemic, the sooner will the public come to look upon infectious disease as something we need not and ought not to have with us to a large extent year after year. It is the business of boards of health to sharpen the dulled public conscience in such matters rather than

to help lull it into deeper lethargy. A city is made none the more healthful, nor more attractive, by covering up its health conditions by a juggling of terms.

#### POSTURE.

The profession is indebted to Doctor Goldthwaite and others for their recent enthusiastic endeavors in behalf of good posture, and for pointing out the important and often surprising relation between bad posture and many chronic disorders such as albuminuria, persistent vomiting, partial paralysis, and insanities. History repeats itself, and the preaching about the importance of good posture for health is not at all a new propaganda. History needs to repeat itself, for, although we ought to expect a machine which is abnormally caved in here and bent out there, which has its boiler crowded, its water pipes pinched, and its battery wires interfered with, to go wrong, we are of such slow understanding that we have to have these selfevident things forced upon our consciousness by repetition.

Bad posture means more than an abnormal relationship of organs in the body, and, conversely, getting a man or a woman into good posture means much more than is indicated by the phrase. Bad posture is a sign of something (usually a good deal) back of it, and the restoration of parts to their normal relations means a correction of the physiological faults and a removal of the etiological factors which brought about the bad posture. Bad posture is never assumed for bad posture's sake, and while there are certain types which tend to such posture it is because the type is easily affected by the conditions which bring on bad posture. The robust child and the adult who takes an adequate (not an excessive) amount of recreation from work does not usually fall into bad habits in sitting or standing, in fact he is able to combat the conditions of study and work which make for bad posture. The less robust child and the overworked or too sedentary adult cannot, on the other hand, be made to maintain a good posture merely by being told to sit up or stand up straight. The work which is commonly done along these lines in the schools and gymnasiums is practically always of this type, and shows by its lack of results how superficial is the method of most "physical education." One may give an undernourished, hothouse child gymnastics all day long with no effect on his wilting physique unless something more is attempted. Gymnastics, even for a few minutes a day, may help, but alone they seldom cure bad posture. In the curing of bad posture associated with an aggravating chronic disease, the patient must be made over in more than relation of parts, though the getting him into bodily



good shape is the first step, and an important part of the process.

That in the robust bad posture means little is well evidenced. We have in mind a circuit judge and a college president, both men of remarkable physical and mental powers, both of unusual height and decidedly stooped by study, with projecting chins, and therefore (if we may trust some teachers) a misplaced diaphragm and stomach. Abraham Lincoln stooped, but he was very powerful and never sick. Such men can compensate for bad posture, while in the more delicately balanced, of whom so many now survive, this will undoubtedly add to the trend toward weakness and chronic disease.

As put by Doctor Goldthwaite, we need to look upon the patient, especially the chronic patient, as a whole. We need to examine him stripped, and not only lying upon his back (in which position his ailments often disappear), but standing and sitting. Moreover, we need to know a man's whole anatomy for comparison with his whole pathology, as well as the anatomy of his separate organs

#### IN MEMORY OF DOCTOR WHEELER.

The death of Dr. Claude Lamont Wheeler has brought to this office many expressions of sorrow and regret. One of the most graceful of these was a poem by W. J. Lampton, which was read at the meeting of the Fendsophs, a dining club of professional and literary men of which Doctor Wheeler was the dean. This poem is reproduced below:

CLAUDE LAMONT WHEELER.

Who said  
That he was dead?  
If breath  
Were life, or death,  
It might be so,  
But there is spirit which we know  
Lives always, and we feel its cheer  
Today and here,  
As though he had not gone,  
But still sat on  
In his accustomed place  
And with his easy, kindly grace,  
Brought to the board that welcome which  
Gives humblest fare the savor of the rich.  
His hands are cold today,  
But their last clasp will be  
A chery warmth in memory  
That cannot pass away.  
Who said  
That he was dead?  
Who dares to say  
He is not with us here today?

### News Items

**A Dinner to Dr. Chevalier Jackson.**—The Philadelphia Laryngological Society will give a testimonial dinner to Dr. Chevalier Jackson on Tuesday evening, January 23rd, at the Hotel Rittenhouse, Philadelphia. Dr. J. Solis-Cohen will deliver the address of welcome and Dr. Hobart Amory Hare will act as toastmaster. Addresses will be delivered by Dr. J. Chalmers Da Costa, representing Jefferson Medical, Dr. Edward Martin, representing the University of Pennsylvania, and Dr. Judson Daland, representing the Medico-Chirurgical College.

**Personal.**—Dr. William S. Stone has been appointed assistant director of cancer research at the Memorial Hospital, New York.

**The Henry S. Wellcome Prize Competition.**—The Association of Military Surgeons of the United States has announced the result of this competition. A gold medal, with \$300, was awarded to Dr. Mahlon Ashford, Captain, Medical Corps, United States Army, whose essay was entitled *The Organization of Medical Officers*. Dr. William C. Rucker, assistant surgeon general of the United States Public Health Service, received a silver medal and \$200 for his essay on *The Influence of the European War on the Transmission of the Infectious Diseases*.

**Pneumonia and Grippe in New York.**—During the week ending January 13, 1917, there were reported to the Department of Health of the City of New York 60 deaths from grippe, 142 from bronchopneumonia, and 365 from lobar pneumonia. During the preceding week there were 49 deaths from grippe, 146 from bronchopneumonia, and 276 from lobar pneumonia. The total number of deaths from all causes reported to the department last week was 2,076, corresponding to an annual death rate of nearly 19 in a thousand of population; the death rate for the preceding week was 17.23.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, January 22nd, North Branch of the County Medical Society, Section in General Medicine of the College of Physicians; Tuesday, January 23rd, West Philadelphia Medical Association, Academy of Stomatology; Wednesday, January 24th, County Medical Society; Thursday, January 25th, Pathological Society, Northwest Branch of the County Medical Society; Friday, January 26th, Neurological Society, South Branch of the County Medical Society, Northern Medical Association, Medical Club (directors).

**Low Death Rate in the Army.**—In an army of more than 150,000 national guardsmen and regulars, only 274 deaths occurred during the last seven months, according to the annual report of the chief surgeon of the Southern Department. Of the deaths 108 were classified as caused by violence, while 166 were caused by disease. Of the total deaths, 47 were caused by gunshot wounds. This includes the 11 men who were killed at Carrizal June 21, and others in the San Ignacio raid, June 15, Parral, and other minor clashes. These men were regulars. There have been 29 accidental deaths, 19 suicides, 10 drownings, and 3 fatal sunstrokes. Out of the 166 deaths from disease, 44 were due to pneumonia, 31 were from abdominal disease, appendicitis and internal troubles of that nature. Dysentery killed 11 men, but only one death from typhoid fever occurred during the seven months.

**Gifts and Requests to Hospitals.**—Among the gifts made to charitable institutions by Mr. Jacob H. Schiff on his seventieth birthday are the following: To the Montefiore Home and Hospital, \$100,000 to be used for research work; to the American Red Cross Society, for war relief in Europe, \$100,000; to the Henry Street Settlement, \$25,000.

The will of the late Martha L. Binder, of Philadelphia, includes the following bequests to Philadelphia institutions: To the Presbyterian Hospital, \$2,000; Methodist Hospital, \$1,000; Episcopal Hospital, \$500.

**The Medical Society of the County of New York.**—A stated meeting of this society will be held in Hosack Hall, New York Academy of Medicine, Monday evening, January 22nd, under the presidency of Dr. J. Bentley Squier. The program will consist of a symposium on Compulsory Health Insurance. Papers will be read as follows: *The Needs and Possibilities*, by Professor Irving Fisher, of Yale University; *The Economic Disadvantages*, by Mr. William Gale Curtis, Chairman of the Educational Committee; *The Tentative Draft*, by Dr. Samuel J. Kopetzky, chairman of Committee on Medical Economics; *Criticism of the Tentative Draft*, by Dr. Eben V. Delphay. Among those who will take part in the discussion of the subject will be: Dr. Alexander Lambert, Dr. Edward D. Fischer, Dr. William S. Gottheil, Dr. Sigismund S. Goldwater, Dr. Louis I. Harris, Dr. Walter Lester Carr, Dr. Israel Strauss, Dr. I. M. Rubinow, and Dr. Henry W. Berg. The program for the February meeting of this society will consist of a symposium on Infantile Paralysis.

**Bronx County Medical Society.**—The January meeting of this society has been postponed to Wednesday evening, January 31st. At this meeting, which will be held in Ebbeling's Casino, St. Ann's Avenue and 156th Street, Dr. John B. Deaver, of Philadelphia, will read a paper on Gastric and Duodenal Ulcer, with lantern slide demonstrations. At the annual meeting of the society, held on the evening of December 20th, the following officers were elected: President, Dr. J. Lewis Amster; first vice-president, Dr. John J. Decker; second vice-president, Dr. Maximilian Zigler; treasurer, Dr. Philip Eichler; secretary, Dr. Isidore J. Landsman; board of censors, Dr. John E. Virden, Dr. John F. Holmes, Dr. Jacob A. Keller, and Dr. John Kiegelman; delegates, Dr. Cornelius J. Egan and Dr. Nathan V. Van Etten; alternates, Dr. Paul Dolan and Dr. Edward Corbett.

**A New Monthly Journal Devoted to Tuberculosis.**—The National Association for the Study and Prevention of Tuberculosis announces that its plans are complete for the publication of a monthly journal for physicians and research workers in tuberculosis, to be known as the *American Review of Tuberculosis*. The *Transactions* of the annual meeting of the association will be discontinued and the papers presented at these meetings will be published in the *Review*.

The first issue of the new journal will appear in March, and will contain approximately sixty-four pages of reading matter. It will be of standard magazine size. Dr. Allen K. Krause, of Baltimore, has been appointed managing editor of the *Review*, and its editorial policy will be determined by an editorial staff of seven members to be appointed by the board of directors of the association.

**The Department of Health Loses Two Capable Officials.**—The retirement on pension of Dr. John S. Billings, deputy commissioner, and Mr. George A. Roberts, chief clerk constitutes a distinct loss to the community. Doctor Billings entered the department of health as bacteriologist in 1895, and four years later was placed in charge of the department laboratory of diagnosis, then occupying quarters in the Criminal Courts building on Center street. In 1905 he became chief of the newly created division of communicable diseases and as such had an important share in shaping the activities directed towards the administrative control of tuberculosis. His work in the organization and administration was so successful that a reorganization of the department placed him in charge of the bureau of infectious diseases (later, bureau of preventable diseases) made by consolidating the division of contagious diseases with the division of communicable diseases. Doctor Billings has been acting deputy commissioner since the appointment of Doctor Emerson as commissioner. He was forceful, well versed in the service and practice of health administration, a tireless worker, and devoted to the Department of Health.

**Child Labor Day.**—The National Child Labor Committee, with headquarters at 105 East Twenty-second Street, New York, announces that Child Labor Day will be observed by churches on January 28th, by synagogues on January 27th, and by schools on January 29th. The recent passage of the Federal child labor law has made the regulation of child employment in factories, mills, canneries, mines, and quarries uniform throughout the country, but children working in stores and offices, on the streets, as telegraph messengers, and in other industries not engaged in interstate commerce, are outside the field of Federal legislation and must be protected by the States. It is to the children in these perfectly familiar but more or less unregulated industries that the National Child Labor Committee calls attention this year. To facilitate the study of local child labor conditions the National Child Labor Committee has issued a study outline giving the main facts as to the industries in which children may be at work, an analysis of the child labor and school laws that should protect them, and suggestions for improving educational conditions and making school, mothers' pensions, and child labor laws coordinate. The pamphlet also contains a program for a child labor meeting which will be of great help to all who plan to observe Child Labor Day. Copies of the pamphlet together with other special printed matter and information may be obtained from the National Child Labor Committee.

**State Hospitals for the Insane Overcrowded.**—In an effort to secure more adequate provision for the care of the constantly increasing number of insane persons in New York State, the State Hospital Commission has sent a message to the State legislature describing the deplorably overcrowded condition of the thirteen State hospitals for the insane. The message states that exclusive of parole cases there are 33,988 patients in the State hospitals and that their capacity is only 27,890. The percentage of overcrowding is 29.9. The upstate hospitals are overcrowded from 8 to 25 per cent., while the metropolitan institutions as a whole are overcrowded 29.1 per cent., the most serious condition existing at the Manhattan State Hospital on Ward's Island, where the overcrowding is 38 per cent. At Central Islip, Kings Park, and Brooklyn State Hospital equally unsatisfactory conditions prevail. The commission suggests a definite programme, extending over a period of several years, which will provide for the gradual reduction of the present excessive overcrowding.

**Society of Medical Jurisprudence Condemns Health Insurance.**—The Committee on Industrial Insurance of the Society of Medical Jurisprudence, of New York, after several months of investigation, presented a report of their findings at a recent meeting of the society. The conclusions arrived at by the committee show that industrial or health insurance laws have not proved a success in either Germany or England where such acts have been passed by the national legislatures. The committee also reported that they had found that persons who would be directly affected by the law were not interested in it, and it was their belief that the subject had been agitated primarily by the American Association for Labor Legislation. Organized labor was either opposed or indifferent to any compulsory health insurance laws.

**Tissue Examinations for Diagnosis.**—The Department of Health has just completed and put into operation a plan by which the physicians of New York city are invited to submit specimens of tissue for microscopic diagnosis. Specimen blanks with instructions to physicians, and bottles containing tissue preservatives are being distributed to the various call stations throughout Greater New York, and physicians are requested to use them when forwarding specimens. Specimens in which an immediate diagnosis is desired should be sent directly to the Research Laboratories, foot of East Sixteenth Street, New York, and a report based upon examination of frozen sections will be sent by letter or telephone within twenty-four or thirty-six hours. Otherwise specimens may be left at the nearest call station, and will be reported upon within two or three days.

The responsibility for the diagnosis of tissue lesions will be assumed by Dr. Douglas Symmers, consulting pathologist to the Department of Health and professor of pathology in Bellevue Hospital Medical College. Dr. Symmers will head a staff of pathologists specially trained in the methods of tissue diagnosis.

**The Widal Test for Milk Dealers.**—The commissioner of public safety and the health officer of the city of Rochester, N. Y., required that all applicants for licenses to sell milk should submit to a blood test to determine whether or not they were possible carriers of the typhoid bacillus. An applicant for renewal of such a license refused to permit the test to be made and applied to the courts for a mandamus to compel the commissioner of public safety to renew his license. The court refused to compel the renewal of the license. In the opinion Judge Rodenbeck said:

It is important . . . to the whole community that the supply of milk and cream should be kept clean, pure, and wholesome and should not be contaminated with impurities or infected with disease; and it is the duty of the health authorities to see that this is accomplished by the establishment of such reasonable regulations as may be necessary to meet existing conditions or to ward off impending dangers to the public health, and in imposing a blood test as a condition to a license to sell milk and cream in the city the commissioner of public safety and the health officer acted within the scope of their authority, and applicants for such a license should cooperate with the public authorities and assist rather than oppose reasonable efforts to provide pure and wholesome milk and cream for the people of the city. The requirement of a blood test of an applicant for a license is just a step, and a small one, in the direction of the protection of the public health, but every reasonable effort made in this direction should be encouraged so long as it does not unreasonably infringe upon the rights of the individual.

The opinion is published in full in *Public Health Reports* for January 12, 1917.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### SODIUM BICARBONATE IN GASTROINTESTINAL DISORDERS.

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(Continued from page 85.)

A feature of the action of sodium bicarbonate also requiring consideration is its influence on the motility of the stomach. As Cushny states, "dilute solutions of the alkalis may act as slight irritants to the stomach wall and thus improve its circulation, and lessen pain, eructation, and distention, very much in the same way as other slight gastric irritants, such as the volatile oils." The liberation of carbon dioxide through reaction with hydrochloric acid is, moreover, generally credited with distinctly augmenting gastric movement. Again, the influence of the drug on the potency of the pyloric opening is to be considered. While low acidity of the gastric contents constitutes a reason for slow evacuation of the stomach, owing to reduction in the amount of hydrochloric acid, which normally acts as a stimulant to the propulsive contractions of the pyloric portion of the organ, and is the physiological cause for relaxation of the pylorus, markedly excessive acidity, especially in a sensitive, eroded, or actually ulcerated stomach, tends to cause pylorospasm and consequent delayed evacuation—a condition which sodium bicarbonate, administered at a suitable time, will relieve.

A related question is that regarding the effect of sodium bicarbonate on the gastric functions where some of it passes into the duodenum unneutralized. From experimental work published in 1906, Lönnquist ascertained that a solution of sodium bicarbonate artificially introduced directly into the duodenum tends to reduce gastric secretion. This effect he ascribes to a reflex arising in the duodenal wall and reacting upon the mucous membrane of the stomach. In relation to the pyloric sphincter action, moreover, it is well known that, while an acid reaction on the duodenal side of the pylorus causes contraction of the sphincter, an alkaline reaction, such as would result from direct entrance of unneutralized sodium bicarbonate into the duodenum, tends to induce relaxation of the pylorus. From the practical standpoint, the secretion depressing action of the alkali when in the duodenum has been shown by Linossier and Lemoine to be, as a rule, negligible. Not only is it highly improbable that any considerable portion of the bicarbonate taken into the stomach will enter the duodenum as such, the alkali combining with the hydrochloric acid, which itself favors pyloric relaxation, but, according to their experiments, the secretion depressing effect of the alkali when in the duodenum is much more than counterbalanced by its action in augmenting gastric secretion while still in the stomach. In the same way, the effect of sodium bicarbonate in the stomach in interfering with relaxation of the pyloric sphincter by neutralizing the acid which excites it should normally

prevail over the pylorus relaxing effect of alkali entering the duodenum. Hyperchlorhydria, however, constitutes an exception to this, the pylorospasm due to excess of acid and reversed pyloric reflex being relaxed by sodium bicarbonate.

Likewise of interest and significance in connection herewith are the recently published researches of Hamburger and Halpern on the effects of various salts and alkalies on the activity of pepsin. These investigations clearly prove, as Langley had previously maintained, that pepsin is extremely sensitive to alkalies, especially when digesting *in vitro* in the form of aqueous pepsin to which the hydrochloric acid necessary for its activity has been added after admixture with the alkali. In experiments more closely simulating clinical conditions in that actual gastric juice was used instead of aqueous pepsin, addition of alkali sufficient to neutralize the free hydrochloric acid caused an arrest of pepsin activity which could be overcome by addition of more acid; on the other hand, when enough alkali was used to neutralize both free and combined (total) acidity, the arrest of pepsin activity was permanent, subsequent addition of acid failing to reactivate the pepsin. Complete and continuous neutralization of the gastric juice by adequate doses of alkalies is, therefore, advised by Hamburger in the curative treatment and prevention of gastric ulcer, with the object of inhibiting peptic digestion, "which, next to mechanical trauma, is probably the chief factor in promoting gastric ulcer." Such a procedure would doubtless not be without disadvantages, important among which would be the cessation of the bactericidal function of the stomach through absence of free hydrochloric acid. This objection might, however, be overcome by aseptic feeding or the ingestion of antiseptics. That the feasibility of continuous, complete neutralization by the use of certain alkalies, with certain foods and methods of feeding, has already been demonstrated is asserted by Hamburger. Therapeutic demonstrations in connection herewith are promised.

Among the various clinical applications of the actions of sodium bicarbonate above discussed, the most important, from the immediate symptomatic viewpoint, is that of relieving gastric pain. For this purpose sodium bicarbonate is by many considered one of the best of the alkalies. According to Huchard, it is far more efficient in this direction than magnesium oxide or prepared chalk, owing to the large amount of carbon dioxide liberated from it.

The use of sodium bicarbonate before meals to augment the flow of gastric juice in the stomach for the digestion of the subsequent meal has already been touched upon. According to some, such use of the drug will relieve the pain or discomfort arising from delayed digestion in cases of hypochlorhydria. For indigestion manifested in discomfort at the cardia, with eructations, somnolence, low spirits, and irritability of temper, the following mixture has been recommended:



R Sodii bicarbonatis, .....5iss;  
 Infusi gentianæ compositi (N. F.) .....3vi  
 M. et Sig. One tablespoonful an hour before meals.

E. Binet, in similar cases, orders the following powders taken one hour and one-half hour before the meal, and if necessary, also one-half hour and one hour after the meal:

R Sodii bicarbonatis, .....gr. xii;  
 Magnesii oxidi ponderosi, .....gr. iv;  
 Belladonnæ foliorum pulvis, .....gr. ¼.  
 Pone in chartulam No. 1.

With each of the above formulas, in the type of case referred to, acceleration of gastric motility through carbon dioxide liberation, promoting better admixture of the gastric juice with the food, and hastening evacuation of the stomach, is doubtless an important factor in the relief procured.

(To be continued.)

**X Ray Therapy in Muscular Sclerosis Following Contracture.**—M. Mercier (*Paris médical*, December 2, 1916) points out that in military practice, sclerotic muscular conditions following persistent contracture or myositis have given considerable trouble. Four cases presenting retraction of the biceps, the result of wounds of this muscle or of its tendon by shell fragments, were recently treated by the x rays, with promising results. None of these patients had been able to extend the forearm more than 90°. Converging rays to the extent of two H. units were used upon the muscle tissue of the biceps, first on one side, then on the other. A filter of one to 1.5 mm. of aluminium was used, and weekly treatments were given. After eight or ten sittings these patients were all able to extend the forearm up to 150° and even 160°—a gain of 60° to 70°.

**Carrel's Method in the Treatment of Infected Wounds.**—P. Desfosses (*Presse médicale*, November 30, 1916) describes, with illustrations, the use of Dakin's solution as used with success in French military practice. In surface wounds the tube carrying the solution to the part is perforated with many small holes and laid over the injured surface. In horizontal through and through wounds a similar tube is tied shut at one end and passed through the wound track; in vertical wounds it is, in addition, surrounded with sponge tissue to keep the solution from immediately running out below. In deep wounds with a single opening above, a tube with a few holes near the tip is merely passed down to the bottom of it. Where the opening is below, and the patient cannot be turned on his face, the tube is surrounded with sponge tissue where it enters the wound or, if the orifice of the wound is too broad, several tubes with small holes are used and the fluid injected with considerable pressure. Intermittent instillation, employed for most wounds, is accomplished by releasing a clip on the tubing every two hours for a few seconds, about twenty to 100 c.c. of the fluid thus passing through the wound. When the wound has been rendered sterile—usually in eight to eleven days—the number of bacteria in the discharge having progressively decreased to nil and this condition having been maintained two or three days, the wound is closed with adhesive strips or sutures.

**Therapy of Bronchial Asthma.**—Wolff Freudenthal (*New York State Journal of Medicine*, December, 1916) states that the proper treatment of bronchial asthma should be based upon the probable cause of the condition and its removal where possible. In the form due to nasal conditions much relief can often be obtained by correction of the conditions. Nasal obstructions should be removed surgically, infected sinuses, including the ethmoid, should be drained, and chronic nasal catarrh should be cured by proper methods of treatment. In cases of true bronchial asthma there is usually a thickening and local disease of the lining of the bronchial tubes, which should be treated by direct applications. These should be made with the aid of the bronchoscope and a modified Ephraim's flexible spray. Chloride of zinc in one-half to one percent. solution, or hammamelis, or tannic acid, containing some oil of peppermint, are the most useful agents to employ as sprays. The endobronchial application of galvanic and faradic currents is of value in delaying or arresting the onset of hyperirritability of the bronchi. Asthma resulting from sexual neuroses and the form which is of purely neurasthenic origin are both difficult to treat and most intractable to cure, usually undergoing relapses as soon as any line of satisfactory treatment is stopped.

**The Streptococcus as a Factor in the Treatment of Tuberculosis.**—K. M. Ferguson (*Virginia Medical Semi-monthly*, December 8, 1916) points out that whereas under absolute rest, fresh air, and increased nutrition many cases recover, after the stage of softening and excavation has been reached, when organisms other than the tubercle bacillus are found in the sputum, chiefly the streptococcus, tuberculosis is curable only with great difficulty. Elimination of the streptococcus has, therefore, seemed to him an important feature of the treatment of the disease, and he has tried autoserotherapy in a tuberculous woman of thirty years, with temperature ranging from 102° to 105° F., pulse rate of 135, loss of weight from 125 to eighty pounds, night sweats, bedsores, and daily expectoration of a half pint of thick sputum. A piece of canthos plaster about one inch and a half square was covered with petrolatum or olive oil, carefully wiped off, and placed on the chest at bedtime. From the blister formed by morning one c. c. of serum was withdrawn with a hypodermic syringe and injected into the muscles of the arm, or elsewhere. This procedure was repeated every four days, and soon improvement was noticed. After six months of the treatment the patient had gained more than twenty pounds, expectoration was reduced to two or three drams, and the temperature ranged from normal to 100° F., with a maximum of only 99° F. on days in which the patient remained quiet. Attempts at discontinuance of the injections early in the treatment were soon followed by aggravation of the symptoms, and with noticeable improvement when the injections were resumed. Two years after the beginning of her symptoms, and about a year after the beginning of the treatment, the patient's menstruation returned, she ate and slept well, and her weight was stationary. The sputum still showed tubercle bacilli. Autoserum injections were still being administered every week or ten days.

**Treatment of Infected Gunshot Wounds.**—Joseph Rilus Eastman (*Surgery, Gynecology, and Obstetrics*, January, 1917) states that in treating infected wounds, the following resources are employed in the American Hospital in Vienna: 1. Removal of infected bits of clothing, or other infected foreign matter. 2. Wide incision and drainage. 3. Immobilization. 4. Continuous irrigation by the drop method with Dakin's solution of sodium hypochlorite, or continuous immersion in hot antiseptic solutions, as acetate of aluminum. 5. Stimulation of lymph drainage with Wright's solution of sodium citrate one part, sodium chloride four parts, and water ninety-five parts. 6. Regular and prolonged daily exposure to the rays of the sun. 7. Continuous exposure of all wounds to the air without dressings whenever possible to avoid foreign body reaction.

**The Heart of the Recruit and Soldier.**—E. Kilbourne Tullidge (*Military Surgeon*, January, 1917) is of the opinion that the treatment of that condition now generally known as the irritable heart of soldiers should be devoted not only to the mental side of the condition, but to the increase in the health of the body as a whole, in such a manner as will increase assimilation, natural resistance to infection, and elimination of detrimental toxic influences, by building up the man both physically and mentally. Open air and graduated exercises are needed, regular hours for sleep and rest, wholesome easily digested food, and a daily talk, all of which are conducive to a recuperative termination that will enable the soldier to resume his duty at the front. Digitalis is in reality useless in the nervous forms of these disorders. Sleep, combined with psychotherapy, are the chief factors in the cure, extending over a maximum period of from two to three weeks.

**Removal of Stones from the Kidney.**—William J. Mayo (*Surgery, Gynecology, and Obstetrics*, January, 1917) says that pelviolithotomy is the most generally useful operation for stone in the kidney. As shown by Brodel, the anterior row of calyces and the anterior half of the posterior row in about ninety-five per cent. of the cases are supplied by the anterior renal arteries and the kidney is notched on the posterior surface. In the small remainder the contrary is true. The kidney is separated from its fatty capsule and brought well up into the wound so as to expose the pelvis in the notch. If the stone is felt, it is removed by direct incision, and a search is made with the finger within the pelvis for others. The pelvis is then sutured with catgut, the kidney dropped back into position, carefully surrounded by its fatty covering, which should not have been lacerated in the separation, and two or three rolls of rubber tissue are introduced into the kidney space to provide temporary drainage. If the stone cannot be felt, needling or pummeling in an effort to confirm the x ray diagnosis injures the kidney and serves no good purpose. The pelvis of the kidney should be exposed by dissecting the fatty tissues back from it in a flaplike manner, and the stone located by the finger introduced through an incision into the pelvic cavity and removed. The capsule should then be sutured and the fascial flap sutured

in position. The kidney should then be dropped back within the fatty capsule and the rubber tissue drains introduced. Drainage of the pelvis of the kidney is rarely required after pelviolithotomy for uncomplicated stones in the pelvis. If necessary, it should be done not through the pelvis, but by counter puncture through one of the calyces, preferably the posterior inferior calyx.

**Salvarsan in the Treatment of Syphilis.**—H. N. Cole (*Ohio State Medical Journal*, January, 1917) states that he uses as a routine initial dose 0.2 gram salvarsan intravenously in a female and 0.3 gram in a male. The injections are given at intervals of from four to seven days and are increased by 0.1 gram each week up to a maximum dose of 0.4 gram in a female and 0.5 gram in a male. Five or six injections constitute a course of treatment. The number of injections necessary in a given case varies—the most he has given has been twenty-eight. He does not use salvarsan alone, but combines it with gray oil, which is administered intramuscularly. The Canadian preparation, diarsenol, dissolves readily, but the Philadelphia product, arsenobenzol, requires more violent shaking with glass beads and heated water. They are all neutralized by the addition of fifteen per cent. sodium hydrate solution. He does not approve of using a syringe and injecting it into the arm, but prefers the cylinders. Neosalvarsan is not employed except for intramuscular injections in children. The untoward symptoms are usually not severe. With the Canadian product they are about two or three times as frequent as with salvarsan. Arsenobenzol is recommended as being superior to diarsenol.

**Treatment of Trichinosis with Thymol.**—Bradford A. Booth, William N. Goehring and Max Kahn (*Journal A. M. A.*, December 30, 1916) state that thymol has been advocated in the treatment of trichinosis for the removal of the parasites from the intestine, but cases are seldom seen or diagnosed before lodgment of the parasite in the tissues has taken place. The oral administration of thymol for the destruction of the parasite after lodgment is futile since the drug, when thus given, has its antiparasitic powers neutralized by the liver. If introduced parenterally a large portion of the drug might be expected to be taken into the blood stream and be carried to the muscles before passage through the liver. This was accomplished in a case, reported in detail, by the subcutaneous or intramuscular injection of the drug, with the result that recovery from the symptoms of muscular invasion was very prompt. Some of the thymol was recovered from the urine as such, the remainder appearing in the combined form in which it is found after absorption from the gastrointestinal tract. The administration of the drug was shown to destroy the parasites in the muscles by the production of an immediate and enormous rise in the number of eosinophiles in the blood. The drug was given in solution in olive oil of such strength that each mil represented sixty-five milligrams of the drug. This oily solution was carefully autoclaved before and after the addition of the thymol. The dose used was two to three mls daily for a week. No toxic effects were produced.



**Treatment of Anorectal Hemorrhage.**—Samuel Goodwin Gant (*New York State Journal of Medicine*, December, 1916) asserts that bleeding from the stomach, small intestine, or colon associated with rectal hemorrhage should be treated by placing the patient in bed, withholding all solid food, and giving morphine to relieve pain and diminish peristalsis, a mild laxative to secure soft stools, and calcium chloride, gelatine, or bismuth. Normal horse serum may be administered for very severe intractable bleeding. Styptics should not be depended upon and heart stimulants should be avoided. When the hemorrhage comes from recurrent coloproctitis, irrigations rectally or through an appendicostomy should be given. These should consist of four per cent. boric acid; ichthyol, three to five per cent.; balsam peru, four per cent.; or of two per cent. potassium permanganate. A high enema of warm silver nitrate solution is also valuable. In the rectum bleeding lesions are healed by adding to the irrigations the topical application of eight per cent. balsam of peru, twenty per cent. argyrol, or by touching the spots with a cautery. Active bleeding can be controlled by packing the rectum with gauze soaked with perchloride of iron, alum, tannic acid, or epinephrin. Ligation of the bleeding vessels, clamping them, or the application of the actual cautery may be necessary, and the use of a Gant pyramidal compress over the anus is also of great service in some cases.

**Comparative Study of Salvarsan and Neosalvarsan.**—William B. Trimble and John J. Rothwell (*Journal A. M. A.*, December 30, 1916) state that the conflicting statements made in the literature and heard among medical men induced them to carry out a comparative study of the effectiveness of these two preparations and of their advantages in the treatment of syphilis. The drugs were given intravenously, the doses for each arbitrarily fixed, the patients unselected, and the remaining treatment made nearly uniform. Salvarsan was given in an initial dose of 0.3 gram and in subsequent doses of 0.6 gram; neosalvarsan was given in an initial dose of 0.45 gram and in subsequent doses of 0.9 gram. The effects of the treatment were carefully recorded and compared when the work was completed. Clinically no difference could be detected between the two preparations so far as their therapeutic value was concerned. The disappearance of the lesions was as rapid and complete after the one as after the other. The reactions produced by salvarsan were much more frequent than those occurring from neosalvarsan, and several severe reactions followed the former drug, while none occurred after the latter. Serologically, neosalvarsan seemed decidedly the better drug, for in patients receiving the same number of doses of each of the drugs, there were forty per cent. of negative reactions produced by neosalvarsan as against about seven per cent. by salvarsan. The former drug had the further advantage of easier administration. In the course of this study the fact was also brought out that a course of four injections of either of these arsenicals alone is insufficient treatment, and should always be followed by mercurial treatment. More than four doses of the arsenical should also be given to most patients.

**Treatment of Filariasis and Elephantoid Conditions by Intramuscular Injections of Salvarsan.**—J. G. McNaughton (*Journal of Tropical Medicine and Hygiene*, November 1, 1916) reports from the Ellice Islands good results with 0.3 gram intramuscular injections. The conditions benefited included both elephantoid fever and the tissue enlargements characteristic of elephantiasis. The fever was at times overcome within a few hours of the injection, and the filariæ disappeared from the blood under the influence of the remedy. Enlargements of at least ten years' standing in the extremities seemed to diminish in size after the treatment. He is enthusiastic about the remedy, believing the disease should be completely wiped out through its use.

**The Influence of Acidosis on Hyperglycemia in Diabetes Mellitus.**—Albert A. Epstein and Joseph Felsen (*American Journal of Medical Sciences*, January, 1917) draw the following conclusions from their observations: 1. The withdrawal of food from certain cases of diabetes provokes or aggravates the acidosis. 2. The acidosis causes an increase in the blood sugar content in two ways: by augmenting the mobilization of sugar, and by affecting the sugar secreting function of the kidneys. 3. Liberal, but judicious administration of carbohydrate may control the acidosis provoked by the withdrawal of carbohydrates or complete fasting, thus leading to a general amelioration of the diabetes. 4. A progressive rise in the blood sugar content, associated with a gradual fall in the alveolar carbon dioxide, is indicative of impending coma.

**Treatment of Circulatory Failure in Acute Infections.**—Malcolm Goodridge (*American Journal of Medical Sciences*, January, 1917) reaches the following conclusions: 1. There is neither clinical nor experimental evidence to support the belief that failure of the vasomotor centre is the cause of the symptoms of circulatory failure which occur in acute infectious disease. 2. While it has been shown experimentally that the heart is not exhausted in animals dying of acute infectious diseases, there is no positive proof that the myocardium is wholly efficient in its effort to maintain the circulation in the body of the living animal under such circumstances. 3. The hypothesis which suggests the existence of a third centre controlling the flow of blood is important, even though it is not yet proved. 4. Alcohol and strychnine are absolutely worthless drugs in the treatment of circulatory failure. 5. Epinephrin and pituitary extract are useful in the treatment of sudden circulatory collapse, but their action is not a sustained one. 6. The nitrites are valuable additions to our therapeutic armamentarium in the treatment of pulmonary edema under certain circumstances, because of their selective action in constricting the pulmonary arteries. 7. Caffeine increases the flow of blood when the supply to the heart is inadequate, probably by an action on some mechanism outside of the heart. 8. One of the most important contributions of recent times on the action of digitalis is the proof electrocardiographically that it exerts precisely the same effect on the heart in febrile conditions that it exercises in non-febrile states, and whether the rhythm is initiated in the normal pacemaker or not.



**Localized Hyperhidrosis.**—Arthur William Stillians (*Journal A. M. A.*, December 30, 1916) states that the most efficient remedy for this very annoying condition is aluminum chloride. It should be used in the form of a twenty-five per cent. solution in water and gently mopped upon the affected part every second or third day for three applications. After each application the skin should be allowed to dry thoroughly. This course will usually control the symptoms, but it may be repeated if there is a return of symptoms. One application may be used weekly if desirable to prevent further recurrence. Excessive use of the drug will cause itching or stinging sensations and carelessness of application or subsequent scratching may induce a dermatitis. These occurrences can be controlled by stopping the use of the application and employing cold cream containing twelve per cent. of boric acid or of calamine lotion with or without half of one per cent. of phenol. The aluminum chloride applications should never be made to portions which have become irritated from scratching or other applications until the skin has been treated and has returned to normal.

**Treatment of Fracture of the Nose.**—J. Molinie (*Presse médicale*, November 20, 1916) lays stress on a vertical position of the nasal septum as a *sine qua non* of successful treatment of fracture of the nose; failure to secure this condition interfering both with the permeability of the nasal cavities, and external symmetry of the nose. Applying this principle in the treatment of cases occurring in military practice, he has constructed a flat jawed forceps with parallel motion which permits seizing the septum in its entire altitude, straightening it, and bringing the whole of it back into the vertical median plane. To maintain it in position during the period of consolidation he uses an apparatus comprising bilateral and jointed internal splints that can be folded and opened at will. These are introduced through the nostrils in the folded position, then spread and applied on each side of the septum. Exclusively external treatment of nasal fractures is thus done away with. Such external treatment leads almost always to nasal stenosis, especially when fracture has resulted from the passage of a projectile through the face.

**Electrical Treatment of the Wounded.**—W. J. Turrell (*Lancet*, December 16, 1916) states that the methods of electrical treatment of various disabilities, including those resulting from military wounds, are not appreciated at their real worth. Ionization with two per cent. sodium chloride solution gives excellent results in a variety of conditions, such as subacute and chronic rheumatism, neuritis, sciatica, impetigo, syphilis, stiff joints, and septic and idiolent wounds. The applications should be made with large pads and strong currents and they should be of as long duration as possible. Such ionization followed by massage and manipulation gives good results also in cases with fibrous bands and adhesions restricting motility of a joint. In the case of indolent wounds, zinc may well be substituted for the common salt, and after a few applications change may profitably be made to the use of ultraviolet radiation. In foul, sloughing wounds sodium chloride

ionization quickly checks the odor and promotes prompt healing with soft scars. In cases of nerve injury rhythmically reversed faradism is applied if the nerve reacts to the faradic current; if not rhythmically reversed galvanism is applied. Tone may be restored and maintained in damaged muscles by the use of Bergonie's apparatus. Cases with very severe pain can be relieved promptly by the use of diathermy, which also reduces the congestion and promotes the removal of stasis. Diathermy is also very serviceable in the alleviation of the pain of sciatica, neuritis, lumbago and allied conditions, and in overcoming muscular spasm. In the use of diathermy the current should be applied slowly and in the right direction, should be continued for a minimum of fifteen to twenty minutes, as great a heating effect as is consistent with safety should be secured, and the size of the pad and electrode should be selected to fit the part. Both high frequency vacuum tube application and ultraviolet radiation are useful for the pain of trench feet and other similar conditions. For the breaking down of adhesions the Morton static wave current is very efficacious. It also hastens the absorption of fluid from inflamed joints, diminishes stasis, and reduces local congestion.

**Removal of Foreign Bodies from the Mediastinum.**—René Le Fort (*Bulletin de l'Académie de médecine*, November 28, 1916) states that instances of foreign bodies, such as a rifle bullet, shrapnel, or shell fragment, in the mediastinum are by no means rare. Operative removal, however, is seldom undertaken. This is due chiefly to deficiencies in the classical methods of exposing the mediastinum. Experience has convinced Le Fort that the best route of extraction is, in the majority of cases, both for the anterior and the posterior mediastinum, through the pleura anteriorly. A flap with external base is made, comprising generally three ribs—the second, third, and fourth above, the third, fourth, and fifth below, and the sixth in the case of bodies behind the heart in contact with the diaphragm. Extensive resection of the sixth rib alone also proved serviceable for exploration of the interior mediastinal region. Through the costal flap, inspection and palpation of the heart, ascending, horizontal, and descending aorta, from heart to diaphragm, all the great vessels, and, in a word, of the whole mediastinum from sternum to spinal column, are easily feasible. The resulting pneumothorax is easily withstood by the patient. Pleural adhesions do not contraindicate the transpleural procedure; in a case with complete adherence, the lung was simply stripped from the surrounding tissues with a compress, as in the procedure followed in hernia cases in loosening the sac. Various foreign bodies were thus removed from behind the heart and in contact with the great vessels in a series of twelve cases, all of which recovered. In a single instance, the foreign body had to be left in—a shrapnel ball situated behind the left pulmonary veins near their points of origin, the tearing of tissues necessary to free the projectile causing alarming periods of cardiac arrest. Removal of foreign bodies from the mediastinum should always be preceded by a complete x ray examination.

**Treatment of Pellagra.**—L. H. Howard (*Charlotte Medical Journal*, December, 1916), as the result of treating hundreds of cases, asserts that over eighty-five per cent. of cases are curable; that diet alone will not cure; that the true cause of pellagra has not yet been found, and that it is transmissible. In the treatment he has found arsenic in the form of cacodylate of sodium, gold in the form of solutio aurii et sodii chloridi, nuclein and protonuclein in tablet form, and Cooper's well water of great value. The following foods are recommended in the order of their importance: Fresh beef, milk, eggs, fresh fish, oysters, game or wild fowls, vegetables, nuts, fruits, bread, and cereals.

**Treatment of Strictures with the Pneumatic Sound.**—C. E. Woods (*Urological and Cutaneous Review*, January, 1917) uses a pneumatic sound which is made of rubber, tubular in shape, and closed at one end only. Its walls have a greater resistance than the walls of the stricture. The pneumatic sound is lubricated and introduced in the same manner as a soft rubber catheter. If the stricture is a 20 F., then an 18 F. pneumatic sound can be comfortably inserted. The nozzle of the pump is lubricated and inserted firmly into the opening of the sound, and then pressure is exerted until the patient begins to feel that the stricture is comfortably stretched. Then the sound is clamped and a reading is made. When the maximum distention is reached the tube is clamped and allowed to remain in place for from ten to twenty minutes. The air is then slowly withdrawn and the sound removed. Treatments can be given every second day, in some cases daily. As a result of his experience he concludes that: 1. The resistance of strictures has been greatly overestimated; 2, this method produces more dilatation and better drainage without trauma than either the steel sound or dilator; 3, the pressure is exerted uniformly on the stricture and the diameter of the stricture increases in direct proportion to the diameter of the pneumatic sound; 4, the stricture can be treated without pain and the time required for a cure is twenty-five per cent. to fifty per cent. less than the time consumed in treating by steel sounds or dilators.

**The Heat or Percy Treatment of Cancer of the Uterus.**—J. D. Rogers (*Virginia Medical Semimonthly*, November 24, 1916) writes very favorably of this method, which is based on experimental work showing that a temperature of 115° F. applied for fifteen minutes will kill cancer cells and can be made to penetrate two and a half inches, while normal tissue withstands 130° F. In applying the method, the abdomen is first opened and the extent of pelvic and abdominal metastases, if such exist, ascertained. The intestines are packed off in the usual manner and, if possible, the internal iliac and ovarian arteries ligated to prevent secondary hemorrhage. Tincture of iodine or Harrington's solution is applied to the entire vaginal surface, a water cooled vaginal speculum inserted, the cervix grasped with a vulsella, and a small tip Percy cautery inserted. Grasping the uterus, the hand in the abdomen directs the cautery and determines the degree of heat applied. Heat is applied to different parts of the growth, larger sizes being

used as one proceeds, care being taken never to employ such a degree of heat that the uterus cannot be held in the gloved hand. The procedure lasts one hour, or until all tissues that were at first fixed in the pelvis have become freely movable. The operation requires experience and good team work in the operating room, but unlike radium and x ray treatment, its cost is not prohibitive. Many of the patients show marked improvement, both locally and constitutionally, after the treatment. Many cases otherwise considered inoperable on account of extension into the parametrium are converted by it into good surgical risks for simple or radical hysterectomy. It should be resorted to as a preliminary step in most hysterectomies for carcinoma, especially of the cervix. In very early cases the application of heat and hysterectomy might be done at one sitting. An advantage of the heat treatment is the lessened virulence of metastasis if the latter occurs in an advanced case.

**Surgical Treatment of Exophthalmic Goitre.**—George W. Crile (*Ohio State Medical Journal*, January, 1917) summarizes the treatment of exophthalmic goitre, based on the results of 1,477 operations for goitre performed by himself and his associates. Of these, 674 were for exophthalmic goitre. He asserts that the treatment comprises: 1. A period in which nonsurgical treatment has been tried. If this has been done without avail then; 2, surgical procedures to break the force of the disease are indicated; and 3, a period in which the greatest possible degree of restoration for those organs which may have been damaged by the disease is accomplished by rest, and by dietetic and hygienic management.

**Fecal Incontinence.**—Samuel G. Gant (*Pennsylvania Medical Journal*, December, 1916) describes the prophylactic treatment of this condition, consisting in preserving the nerves and not nipping the anus muscle in anorectal operations. A fistula should be divided once and at a right angle. Rectal wounds should be drained and not packed, and the fingers should be used in place of a mechanical dilator when divulsing the sphincter. Nonoperative treatment is not reliable, but tonics, cold astringent solutions, massage, vibration, and galvanism may strengthen the sphincter. The preparation for fecal incontinence operations consists in thoroughly emptying the bowels with laxatives and enemata and then inhibiting it with morphine, flushing the rectum with twenty-five per cent. hydroxid just before the operation, swabbing the bowel with an antiseptic, and painting the perianal skin with iodine before work is begun. Where elaborate perineorrhaphy is performed chromicized catgut is used for buried sutures, and plain catgut for superficial sutures. He has devised an operation which can be done under local anesthesia, and which requires only about ten minutes. In seventeen cases reported it was completely or partially cured in sixteen. In deplorable cases where plastic operations fail an artificial anus is established. The best operative treatment consists in restricting the diet to fluids, regulating the stools, cleansing and protecting the wound, and prescribing morphine and belladonna hypodermically to ease pain and quiet the muscles until the wound is healed.



# Miscellany from Home and Foreign Journals

**Fraud and Skin Eruptions.**—John Collie (*Lancet*, December 10, 1916) states that the characteristics of artificially produced skin eruptions may be summarized as follows: 1. The condition is unlike that found in any of the usual skin diseases. 2. The eruption or lesions appear in situations easily reached by the right hand in right handed persons and the left in left handed persons. Favorite sites are the fronts of the arm and forearm, and of the leg and thigh. 3. The regions about the mouth, nose, ear, scalp, knees, hands, and genitalia usually are not affected and between the shoulder blades the skin is almost always found to be normal. The soles of the feet are also seldom affected. 4. The lesions are often characteristic, running longitudinally along the limb, or having curious shapes, such as perfectly circular ulcers; parallel scratches, running in straight lines; having straight margins or presenting evidences of a drop of irritating fluid having run down from the point of application. 5. The surrounding skin is healthy. 6. Sensation of the part is usually abnormal, being either excessively painful or almost anesthetic. 7. The lesions may appear to order, as following an incidental suggestion by the examiner. Finally much help in diagnosis can be obtained in many cases by smelling the lesion to detect irritants, by applying an efficient permanent occlusive dressing, and by examining for stigmata of hysteria, such as anesthetics and paresthesias and loss of sensation in the palate. In other cases the deception may be more difficult to detect than in the purely artificial skin lesions through the willful maintenance of a preexisting skin disease. Finally, some of the forms of trade or occupational dermatitis may be kept up by the victim in order to secure the rewards for illness without having to work.

**Clinical Diagnosis of Luetic Aortitis.**—I. J. Levy (*Archives of Diagnosis*, October, 1916), having in mind the early diagnosis of this condition, before the anatomical destruction is beyond repair, divides the course of the disease into three clinical periods, based upon the different pathological stages. In the primary stage, transient pains in the chest may be the only complaint. Physical examination and the x rays are negative. A positive Wassermann reaction, however, in a subject in the early forties with indefinite chest pains, is strong presumptive evidence of a beginning luetic aortitis. Indeed, ninety per cent. of individuals with positive Wassermann show evidence of luetic changes in the aorta, providing the disease has been present fifteen years; and sixty per cent. of these patients die of their aortitis. In the second, or advanced, stage, few if any symptoms may similarly exist, the decreased aortic elasticity being usually compensated for by concentric cardiac hypertrophy. Anginalike pains, or true angina, may be the only warning signal. Dyspnea on exertion and palpation are also early symptoms, and there may be general physical weakness or neurasthenic manifestations. Probably late in this stage the aortic valve becomes diseased, and the x rays may reveal diffuse aortic dilatation;

but a positive Wassermann is practically obligatory for a reliable diagnosis. Only in the third, or final, stage is the classical clinical picture of luetic aortitis observed, with frequent and severe anginal pains, dyspnea, and edema of the lower extremities, and nocturnal asthmatic attacks. Diffuse aortic dilatation is an important factor in the diagnosis, and there is a characteristic ringing quality to the second aortic sound. A positive Wassermann, if the specific infection is not of recent origin, is practically conclusive evidence. The cases with aortic insufficiency are much more easily diagnosed. In these the diastolic murmur is often more distinctly audible over the mitral area. When the heart has broken under the strain, one sees little response to rest and digitalis. The patient may, however, be left paralyzed before cardiac decompensation supervenes, and undoubtedly general paresis or tabes sometimes closes the scene in a latent aortitis.

**Bronchial, Pulmonary, and Pleural Disease.**—Frederick T. Lord (*Journal A. M. A.*, December 30, 1916) lays great emphasis upon the value of a proper history and of physical examination in the diagnosis of disease of the respiratory tract. The evolution and progress of individual symptoms and their order of appearance are of very great diagnostic value. These points are of especial importance in such conditions as lobar pneumonia, pulmonary infarction, aspirated foreign bodies, bronchial and cardiac asthma, in the detection of the cause of an apparent chronic bronchitis, and in the determination of the etiology of hemoptysis and of pleurisy. Physical signs may be divided into two classes: 1. Dullness, bronchial breathing, and increase of voice, whisper, and of tactile fremitus; all of which are common to lobar pneumonia, bronchopneumonia, pulmonary infarction, and retraction or compression of the lung. 2. Dullness, diminished or absent breathing, voice, whisper, and fremitus; which are common to massive pneumonia, tumors of the pleura or lung, pulmonary cysts, and atelectatic areas from bronchostenosis. Resonance replacing the dullness of the second group is indicative of pneumothorax. Certain other points of value are brought out by him. For example, in a case of aspirated foreign body immediate effort should be made to remove it through the bronchoscope; the usual therapeutic procedures such as shaking, the use of emetics, etc., should not be tried; and finally the chance of spontaneous expulsion does not justify delay in treatment. Postoperative pulmonary conditions occur in not less than two per cent. of cases of general anesthesia and constitute one-fourth of all deaths following operations under general anesthesia. Pulmonary abscess is not at all uncommon as a postoperative complication of operations in the nasal or pharyngeal tract. The etiology of chronic bronchitis was found to be some form of cardiac failure, arteriosclerosis, or nephritis in sixty-three per cent. of the cases coming to autopsy. Pulmonary tuberculosis was the cause of the next largest group of cases thus diagnosed.



**Second Primary Cancers.**—Douglas Drew (*British Medical Journal*, December 16, 1916) reports two cases of what seemed to be second primary carcinomatous growths in the remaining breast after the removal of the other at an earlier date for carcinoma. In one case the second growth appeared in the remaining breast thirty-nine months after the removal of the other breast; in the second case the interval was twenty-one months. He regards the cancers in the remaining breasts in these two cases as instances of second primary cancers because there were no evidences in either case of any recurrences of the original growth during the interval following the removal of the breast first affected.

**Meningococcal Infection Without Meningitis.**—W. M. Elliott (*Lancet*, December 16, 1916) reports the case of a soldier, nineteen years old, having symptoms strongly suggestive of typhus fever. There were general malaise, general pains in the back and extremities, shivering and high fever. A rash consisting of erythematous blotches, petechial spots, and very shallow vesicles was present. The mental condition of the patient was perfectly clear. There was a critical fall of fever on the sixth day. Physical examination showed no definite signs and there were no evidences of meningitis, even the spinal fluid being normal. Specimens of the patient's blood showed agglutination of the meningococcus and very marked complement deviation when tested against emulsions of this organism.

**Milk Borne Infection.**—Eugene R. Kelley (*Journal A. M. A.*, December 30, 1916) states that, taking diphtheria, septic sore throat, scarlet fever, and typhoid as the commonest epidemic diseases which may be spread through milk contamination, all outbreaks of these were carefully studied for a period of five years to determine the frequency with which milk was to be regarded as the actual means of their dissemination. The results showed that the transmission of the disease could be definitely assigned to milk in seventy-nine per cent. of the cases of septic sore throat, in six per cent. of the cases of typhoid fever, in 1.6 per cent. of scarlet fever, and in 0.19 per cent. of cases of diphtheria. Taking all of the diseases together milk was the agent of spread in only four per cent. of the cases which occurred in the state of Massachusetts during the five year period under examination. From the point of view of the deaths caused, milk was responsible for three per cent. of typhoid deaths, 0.08 per cent. of diphtheria deaths, 0.8 per cent. of scarlet fever and ninety-eight per cent. of septic sore throat deaths. This gives an average for the entire group of only two per cent. of the total deaths from these diseases as due to milk. From these figures it is evident that milk is of great importance in the transmission of septic sore throat, which, however, is of relatively rare occurrence; that it is negligible as a factor in the cases of diphtheria and scarlet fever; and that it is of minor importance in the spread of typhoid. The menace of tuberculosis would seem to be the best justification for the propaganda for the supervision and control of our milk supplies, in so far as this seeks to suppress communicable diseases.

**Demography and Its Relation to the Vital Statistics of Armies.**—Weston P. Chamberlain (*Military Surgeon*, January, 1917) states that in the ten year period, 1890-1899, diseases of the digestive system were a little more common among whites, the proportion being 355.98 to 243.29. For the last decade in the United States, digestive disturbances were considerably more prevalent among white troops than among the colored, while in the Philippines the reverse condition was found. As regards one of the most serious of the tropical digestive diseases, viz., dysentery, Johnson points out that a race out of its own habitat is a greater prey to dysentery, owing to the adoption of a mode of life and diet unsuited to the necessities of the climate. He asserts that the mortality is usually greater among the native populations. In our own service during the past decade, it is shown that the relative number of admissions for dysentery in the Philippines varied greatly from year to year, but averaged over twenty per cent. lower for negro than for white troops. They were less than half as great for Filipinos. Death rates averaged per thousand for whites 0.4, for negroes 0.2, and for Filipinos 0.1, but the total number of deaths are too few to give these figures a great deal of value.

**Exophthalmic Goitre and the War.**—Léon Bérard (*Bulletin de l'Académie de médecine*, November 28, 1916) states that since the beginning of the war he has met with a relatively large number of cases of exophthalmic goitre in men from twenty to forty-five years of age. Some of these subjects had previously had small stationary goitres for a more or less prolonged period. The exophthalmic symptoms developed from physical or mental overwork, intoxication from poor food or water, or microbic infections—dysentery, typhoid, or paratyphoid—in the form of light attacks of thyroiditis. In three cases, however, exophthalmic goitre appeared suddenly, following violent emotions, repeated anxiety, or strenuous physical exertions. In a few days these three subjects found their necks growing larger, eyes protruding, pulse rate increasing, and mental state exhibiting restlessness and anxiety. All three had diarrhea and lost considerable weight. Nervous shock, manifested essentially in vasomotor disturbances and transient or permanent changes in the ductless glands and central nerve cells, is held to be the starting point of such cases. The therapeutic indications in all varieties, whether due to fatigue, mental shock, or infections attending war, include prompt isolation of the patient in calm and comfortable quarters, where he may feel himself completely safe. Hydrotherapy with tepid water should be utilized and one gram of quinine sulphate and two grams of sodium salicylate given on alternate days. Ingestion of fresh thymus and subcutaneous injection of the serum of thyroidectomized animals may also cause notable improvement. Where, after five or six months of such treatment, systematically carried out, the disturbance is only slightly reduced, surgical treatment should be resorted to, the more boldly since these subjects are, as a rule, young and resistant, with less serious cardiac impairment than prevails in the more chronic or older cases encountered during peace.

**The Toxemias of Pregnancy.**—J. R. Losee and Donald D. Van Slyke (*American Journal of Medical Sciences*, January, 1917) say that the toxemias of pregnancy can be attributed neither to failure in diamination of the aminoacids nor to the moderate degree of acidosis observed. The nature of the toxin or toxins remains unknown. The same is true of the nature of the functional disturbances which cause the abnormal nitrogen metabolism, yet the constancy of the low urea ratios in the urine in eclampsia, and of high ammonia in pernicious vomiting, lends support to the opinion that the nitrogen distribution of the urine, in connection with all the data in the case, should assist in diagnosing the toxemias of pregnancy, and in differentiating them from such conditions as nephritis and transitory gastric disorders.

**Primary Tumors of the Fasciæ.**—G. Bolognesi (*Revue de chirurgie*, June, 1916) reports three cases of this type. Little on the subject was found in the literature. Leaving aside apparently fascial growths of the abdominal wall, the precise origin of which is, as a rule, doubtful, primary tumors of the fasciæ are commonest in the lower extremities, the next point of frequency being the back of the neck. Differentiation from tumors of muscles by palpation during contraction of the muscles of the part is a difficult and uncertain matter. The various types of tumor, including the two main varieties of connective tissue tumors—fibroma and sarcoma—and mixed forms, are all represented in these growths. One of the three cases was of giant cell sarcoma, another of hard fibroma, and the third of ossifying fibroma. The treatment is wholly surgical. In diffuse neoplastic forms, however, the fascial focus is inoperable. Differentiation of the fascial growth from involvement of the adjoining soft tissues is, in fact, an impossibility in the majority of cases.

**Glucose Formation from Protein in Diabetes.**—N. W. Janney (*Archives of Internal Medicine*, November, 1916) states that he became convinced, from a critical study of diabetes mellitus and phloridzin diabetes, that glucose formation from protein is essentially the same in these two conditions, and deemed it justifiable to apply in the study of human diabetes the much more accurate results obtainable in phloridzin experiments. With a certain technic he found it possible thus to determine quantitatively the amount of glucose formed in the organism from ingested proteins. Isolated proteins were found to yield large amounts of glucose in metabolism, varying from forty-eight to eighty per cent. according to the protein examined. The prevailing view that the animal or vegetable origin of a protein bears a relationship to its ability to yield glucose in the system proved erroneous; the amounts of sugar yielding aminoacids contained in the various proteins constitute the chief determining factor in this connection. As for the formation of glucose from body proteins themselves, these proteins were shown to yield about fifty-eight per cent. of glucose in metabolism. Cases showing a urinary glucose nitrogen ratio of 3.4 to one or higher are to be regarded as grave; the lower the ratio, the better the prognosis. As the glucose excreted by the fasting diabetic is of

protein origin, sugar formation from fat does not take place to any great extent in this disease. In food tables for diabetics, glucose formation from protein must henceforth be taken into account. Proprietary protein foods were found to present no advantages over equal amounts of bread in diabetes, the large amount of protein present leading to the formation of considerable glucose in the system. Only by exclusion of all food, as in the Allen treatment, can a complete rest be given the sugar utilizing function of the organism. A diet containing moderate amounts of protein and fat and low in carbohydrates is, after all, the most judicious one for diabetics.

**Experimental Studies on the Relation of the Pituitary Body to the Renal Functions.**—Motzfeldt (*Journal of Experimental Medicine*, January, 1917) holds that extracts of the pituitary body exert a constant, physiological influence on the functional activity of the kidneys in human beings. This action consists in a checking of the flow of urine, it being most noticeable when there is a marked flow of urine. The results of his experiments upon rabbits confirm his belief. He states, also, that during the past three years a number of cases of diabetes insipidus have been reported in which pituitary extracts have checked diuresis to a considerable extent.

**The Production of Arteriosclerosis and Glomerulonephritis in the Rabbit.**—Bailey (*Journal of Experimental Medicine*, January, 1917) calls attention to vascular lesions that occur in man following infectious diseases and reports a series of experiments made upon rabbits. Some of these were injected with diphtheria toxins alone, a second series with the toxins and pituitrin, and a number with pituitrin, and a number with pituitrin alone. The results showed that by the intravenous injections of large amounts of diphtheria toxin one can produce a vascular degeneration in rabbits of the entire aorta, the carotids to the base of the skull, the subclavians, the iliacs, and, for a varying distance distally, the brachials, femorals, and large abdominal vessels. There is also produced in the kidneys a marked vascular and parenchymatous degeneration. The pituitrin by itself did not produce any vascular degeneration in the rabbits used.

**Experimental Purpura and Resistance of Erythrocytes.**—Jöhn H. Musser and E. B. Krumbhaar (*Journal A. M. A.*, December 23, 1916) states that purpura was produced by the injection of an antiplatelet serum, but it was not possible to prepare a serum from pure platelets, there always being some red cells included with them. The mechanism by which the purpura was produced, therefore, might have been due in part to the hemolytic property of the serum, conferred by the presence of the erythrocytes. It was believed, however, that the hemolysis was due to that property common to all cytolytic sera, rather than to a specific hemolytic factor. These observations suggested that purpura might be due to a substance which simultaneously destroyed platelets and decreased the resistance of red cells. In the experimental animals, as in human purpura, there was noticed both a prolongation of coagulation time and an increased fragility of the red cells.

# Proceedings of National and Local Societies

## AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

*Twenty-ninth Annual Meeting, Held at Indianapolis, Indiana, September 25, 26, and 27, 1916.*

The President, Dr. HUGO O. PANTZER, of Indianapolis, in the Chair

**Appendicular Abscess Complicated by Hemorrhage and Death.**—Dr. MAGNUS A. TATE, of Cincinnati, Ohio, spoke of this condition as rare. The patient was a young woman who had her first attack. Her abdomen was opened through the right rectus, and drainage was profuse for six days. At the end of the tenth and eleventh days her condition was good; on the twelfth day she complained of pain and nausea; on the morning of the thirteenth day there was hemorrhage from the wound, and on the fourteenth day her condition was alarming, death occurring the same evening. Autopsy revealed a gangrenous sac, the size of a silver dollar, which was found in the mesentery, probably the site of hemorrhage.

Dr. ALBERT GOLDSPOHN, of Chicago, said that this case reminded him of an experience he had after a vaginal hysterectomy in a septic case a number of years ago where, after a normal course following operation, the patient began to bleed about two weeks after the wound had nearly closed. After futile attempts to stop the hemorrhage by local tamponing and the use of clamps, he saved the patient's life by doing an abdominal section and ligating the internal iliac arteries.

**Drainage for Pus Conditions in the Pelvis during Pregnancy.**—Dr. FRANCIS REDER, of St. Louis, Missouri, stated that the most frequent cause of a pus accumulation in the pelvis during pregnancy must be attributed to a diseased appendix. A pelvic abscess was the most insidious, with the exception perhaps of a subphrenic abscess. The reason for this was that the diagnosis of appendicitis was often obscured by pregnancy. If the pains and frequent indispositions, which usually accompanied the pregnant state, were not scrutinized correctly and promptly interpreted by the physician, the primary clinical picture of an attack of appendicitis might be readily overlooked, and only recognized when the more serious phases of the disease had manifested themselves.

Pregnancy did not in any way predispose to appendicitis. On account of the anatomical changes which took place in the pelvis during pregnancy, appendicitis might terminate in a pus formation more rapidly than in the nonpregnant state. A close study of the symptoms of an appendicular lesion during pregnancy might bring out some clinical points which differed from the usual clinical picture as it was found in women who were not pregnant. For instance, before any pus formation had taken place, the pulse and temperature might show little or no change. The pain was usually located in the epigastric region and remained there until the disease had reached the stage when all pain ceased.

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lower abdomen was so obscured by other conditions that it was usually blurred, and its presence therefore lost. Even in an advanced pregnancy a readily recognizable rigidity of the right rectus was seldom encountered, and only exceptionally did palpation reveal a tender spot over McBurney's point. Nausea and vomiting, two alarming symptoms in an attack of appendicitis, counted for naught during pregnancy because they were frequently associated with the toxemia of the latter condition.

Pregnancy favored the rapid development of the pathological stages of appendicitis, and a pus collection might be found in the pelvis in a very short time. In one patient, pregnant five months, a distinct fluctuation could be detected in Douglas's pouch by rectal palpation on the fourth day after a severe attack of so called indigestion. This patient felt indisposed for only two days. On the third day she became very sick. No physician had been consulted before the third day. Operative treatment of pus accumulations in the pelvis during pregnancy was very important. The danger involved two lives, and prompt intervention was demanded as soon as a diagnosis had been made.

The most satisfactory and convincing evidence as to the presence of pus in the pouch of Douglas could be obtained by a rectal examination. If the accumulation was considerable, no difficulty should be experienced in promptly detecting a fluctuating mass, even if the examining finger was inexperienced. In the treatment of a pelvic abscess complicating pregnancy two factors became absolutely axiomatic; first, prompt recognition of the collection of pus and, second, the simplest surgical measure for relief.

Surgery during the pregnant state must have its limitations, and they must be more respected in the latter stage of gestation. An abdominal operation, for example, could be done with less risk of interrupting pregnancy before the fourth month than after. Furthermore, the thoroughness with which an operative measure during early pregnancy could be carried out was fraught with less danger than in the latter stages. Great antipathy still existed to attacking a pelvic abscess through the rectum, largely because of the likelihood of infecting the abscess cavity. This was doubtful, inasmuch as it was one of nature's ways in relieving the organism of a pus accumulation in the pelvis. Patients relieved in this manner had usually suffered no untoward results and their recoveries had been satisfactory.

Dr. HERMAN E. HEYD, of Buffalo, New York, said that in cases of appendicitis complicated with pregnancy miscarriage was apt to take place. Miscarriage was likely to occur in typhoid fever complicating pregnancy. Undoubtedly a bacteriemia was established, and the fetus was injured by reason of the infected blood, and as a result the woman had a miscarriage.

Dr. W. A. B. SELLMAN, of Baltimore, stated that he had had experience with two cases of appendicular abscess complicating pregnancy, in a woman pregnant four months and the other in a woman



pregnant six months. One method of dealing with these abscesses was opening through the vagina posteriorly into the cul de sac and by that means reaching the abscess, as suggested by Doctor Reder. The second method was opening the abscess through the rectum. He selected the abdominal route, made an incision, drained the cavity, leaving the drainage tubes in. His experience was that in appendicular abscesses it was necessary to drain the cavity for a longer period than that suggested by Doctor Reder.

Dr. ROLAND E. SKEEL, of Cleveland, Ohio, said that as regards making a puncture through the rectum in these abscesses he had used that procedure for ten years, but he would emphasize the fact that there must be an abscess cavity. If there was no abscess cavity with a thin wall, it would be dangerous on account of peritonitis or rectal infection. He could recall cases of appendicular abscess which opened and drained through the rectum spontaneously.

Doctor Reder, in closing, said that in these cases he contented himself with draining and did not care to use a split tube for fear some irritation by pressure might excite infection.

**Rupture of the Uterus; Recovery.**—Dr. RUFUS B. HALL, of Cincinnati, Ohio, reported a case of rupture of the uterus, followed by sepsis, with a walled off abscess, which was operated in thirty-seven days after delivery. The patient made a slow but satisfactory convalescence and is now perfectly well. Rupture of the uterus during labor was a rare and dangerous accident. It was so dangerous that it was our duty to report every case in detail, whether the patient recovered or not, that the profession might profit by the facts revealed in each individual case. From the history of the case and the subsequent findings at the time of the operation, the question was asked if it was possible that the unrecognized small rupture, causing leakage into the abdomen, might not be more frequent than was generally believed. The case reported would suggest that as a possibility, because there were no symptoms connected with the case that would suggest rupture of the uterus, and it was not suspected until revealed at the time of the operation.

Dr. HENRY SCHWARZ, of St. Louis, Missouri, said that there should be some history accounting for cicatricial tissue or some weakening in the uterine wall. Without such a history, and without the symptoms of scar, tallying with the symptoms of rupture of the uterus during delivery, he would hesitate to accept this case as one of rupture of the uterus occurring at the time of delivery.

Dr. EDWARD J. ILL, of Newark, New Jersey, said he did not think Doctor Hall's patient had a rupture of the uterus. Rupture of the uterus always occurred in the lower and hardly ever or never in the upper segment. He spoke of no blood being in the abscess. There must have been some blood there if the woman had a rupture of the uterus. He had seen many cases of chronic suppurative metritis following labor in which abscess occurred near the anterior horn and after being opened and drained the patient got well, provided it was a single abscess.

Dr. J. HENRY CARSTENS, of Detroit, asked if this case might not have been one of embolism of the

uterus, where the muscle tissue degenerated, broke loose, and finally resulted in an infection of the abdominal cavity.

Dr. ROLAND E. SKEEL, of Cleveland, stated that rupture of the uterus belonged to one of two categories; first, those cases in which there was a disproportion and after a prolonged labor there was a thinning out of the lower uterine segment and rupture occurred in the uterine cavity; second, where degeneration of the uterine muscle took place, rupture might occur early in labor anywhere in the body of the uterus.

Dr. SYLVESTER J. GOODMAN, of Columbus, said he wished to report two cases of rupture of the uterus which occurred in his service in the last few months. In the first case the diagnosis was not made until a week after the rupture occurred. Infection took place with general peritonitis and pus everywhere. The abdomen was opened, and a dead, macerated fetus removed, hysterectomy done, and abdominovaginal drainage instituted; the woman recovered. The other one was a case in which the diagnosis was made promptly by the attending physician. Appendicectomy was done by Doctor Baldwin, abdominovaginal drainage instituted, and the patient made an uneventful recovery.

Dr. O. H. ELBRECHT, of St. Louis, stated that if we recalled the different types of bicornate uteri and the different types of double uteri, occasionally we would see one that was open or very thin, and there was a disproportion between the one uterus and the other, the one being parasitic on the other, the tubes and ovaries being two in number only. There was a possibility that Doctor Hall's case was one of this type inasmuch as the patient did not manifest any of the classical symptoms which were found in a typical rupture of the uterus.

Dr. JAMES E. DAVIS, of Detroit, stated that Cullen some years ago reported a hundred and fifty cases of cysts occurring from the Wolffian duct remains, between the anterior part of the uterus and bladder. Last year he had such a case. The cyst had become infected, in fact, most of these cysts became infected and were recognized following obstetric deliveries. In his case the woman manifested a septic temperature, beginning on the fourth day which continued for some eight weeks. When she came to operation an abdominal section was done and nothing was found to account for the conditions until he began to separate the bladder from the anterior portion of the uterus, and then he opened into a cystic cavity, which was infected, and which he diagnosed as belonging to this type of cyst. Doctor Hall's case might belong to this class of cases.

Dr. VAN AMBER BROWN, of Detroit, said there might be something in the history of Doctor Hall's case that might throw light on the question.

Dr. E. GUSTAV ZINKE, of Cincinnati, said there was an absence of injury to the organ, and if a rupture had taken place it was probably spontaneous, due to some disturbance in the uterine wall. What was it that could disturb the uterine wall so as to result in a rupture of the uterus during delivery? Nearly everything was mentioned except one thing, and that was, there was a possibility that the placenta in some of its parts had undergone

chorionic epitheliomatous degeneration and had destroyed the uterine musculature of that region. It might have been very limited in extent. We could never tell when these malignant changes took place. There must have been a pathological process which produced the rupture of the uterus.

Dr. CHARLES L. BONFIELD, of Cincinnati, said that the woman might have received some injury to the uterus through the abdominal wall which might have caused a limited thrombosis.

#### Rupture of the Uterus in Cæsareanized Women.

—Dr. JOHN NORVAL BELL, of Detroit, drew the following conclusions: 1. A Cæsareanized woman was always in danger of uterine rupture in subsequent pregnancies and should be under careful observation for the last half of her gestation. 2. In case her puerperium following the first section was afebrile she might be allowed to go to term if she could be in the hospital for the last month of gestation; otherwise the labor should be anticipated and operation done at least two weeks prior to term. 3. That implantation of the placenta over the scar area undoubtedly increased the danger of rupture, as did also afebrile puerperium following operation.

**Rupture of the Cæsarean Scar.**—Dr. ABRAHAM J. RONGY, of New York, drew the following conclusions: 1. Spontaneous rupture of the Cæsarean scar occurred in about three per cent. of cases. In most instances rupture took place during labor. Infrequently it took place during the latter half of pregnancy, especially in the last six weeks. 2. We had no means by which we could judge the strength of the scar. Rupture would occur in cases which ran an afebrile course and in which union of the wound was apparently by first intention. 3. One third of all cases that were operated for repeated section showed evidence of inflammatory reaction in and about the uterine wound. The result in such cases was a weakened scar. 4. Proper suturing of the uterine wound and exact approximation of the edges would not always prevent subsequent rupture of the scar. 5. The mortality rate of repeated section was smaller than that of primary Cæsarean section, because these patients were more carefully watched by competent men. 6. A patient who had had a Cæsarean section should not be allowed to go through a tedious or severe labor. If labor did not progress rapidly, repeated section should be performed. 7. When advising a patient to have a Cæsarean section the management of subsequent pregnancies should be taken into consideration and discussed with one of the members of the family. 8. As a general rule, it might be stated that fully seventy-five per cent. of women who had had a Cæsarean section were delivered by repeated section during their subsequent labors. 9. The obstetrician should always bear in mind that Cæsarean section created a new problem for the woman, and therefore he must carefully weigh the indications before he decided upon the abdominal route. He must remember that the dictum, "once a Cæsarean section, always a Cæsarean section," held true in fully seventy-five per cent. of cases.

Dr. PALMER FINDLEY, of Omaha, said that if ninety-seven women out of a hundred went through labor with a Cæsarean scar successfully without intervention, the thing to do was to put the woman

in a hospital, if possible, and be ready to interfere, but we should not adopt the method of Cæsareanizing every woman who had had a previous Cæsarean scar in the uterus. He did not think we should be guided by any three per cent. of chances except this: we should take every precaution to safeguard the woman in the event of imminent rupture of the scar.

Dr. J. HENRY CARSTENS, of Detroit, said he had had about fifteen patients upon whom he had performed Cæsarean section a second time. In all of the cases there was pelvic deformity. There was not one of them that was Cæsareanized for placenta prævia or eclampsia. He made it a point to have these patients go to the hospital early, if possible, and operated on them two weeks before the expected time of labor. He hesitated twice before he would sterilize a woman who had had no children.

Dr. HENRY SCHWARZ, of St. Louis, said that he endorsed every word Doctor Findley had said. Within the last year he had delivered two women through the natural passages. One was a woman on whom Doctor Webster, of Chicago, had performed a Cæsarean section on account of obstruction to delivery by an ovarian tumor. He had a Cæsarean section on the other patient years ago. The woman was brought to the hospital with a temperature of 104°; she was intensely sapremic; there was an offensive discharge from the uterus, with a dead, macerated fetus in the uterus. He removed the fetus. She was a young woman, and this was her first pregnancy. After emptying the uterus and removing a subserous fibroid, which was situated on the left side of the uterus, close to the external os and blocking the pelvis, and after removing a smaller fibroid near the fundus, he closed the uterus, because the woman was young and had had no children. He delivered this woman about seven months ago through the natural passages.

Dr. JAMES E. DAVIS, of Detroit, stated that the problem from a pathological standpoint was this: First, we had a reduction of muscle tissue, and a degradation of normal tissue; then we had a degradation of the connective tissue by the interposition within the connective tissue cells of syncytial cells. The connective tissue, while it might be in certain instances as strong as the muscle tissue, yet was not as resistant to the syncytiolysins which were formed from the syncytial cells, and wherever we had syncytial cells we had a tissue of very low resistance so far as its ability to withstand pressure was concerned.

Dr. IRVING W. POTTER, of Buffalo, said that he had done Cæsarean section on a number of patients a second time without any trouble. One could not see the scar in the majority of cases from the outside, but if he felt from below up, he would find a thinning in many of the cases, although it was not enough to make any special difference.

Dr. A. RONGY, of New York, said that he had never sterilized a woman, unless she had had two children. He did not do a hysterectomy in these cases, but resected the tubes on either side and then embedded the cut ends of the tubes in the wall of the uterus. That was a safe procedure.

**Gunshot Wounds of the Abdomen in Pregnant Women.**—Dr. LEWIS F. SMEAD, of Toledo, Ohio, reported the case of a woman shot through the

abdomen, with the recovery of both mother and child. The bullet perforated the colon and the uterus of the mother, the placenta, and the hand of the child. Gunshot wounds of the abdomen were more dangerous during pregnancy than at other times. The abdomen should be opened in all cases if possible. The uterus at full term should be emptied by Cesarean section and at earlier periods if the organ was badly injured. A uterus during labor was likely to spread any infection which was free in the abdomen and a pregnant uterus was therefore a menace to the patient if peritonitis developed.

The uterus would usually be emptied by Cesarean section or hysterotomy because the abdomen was open. Hysterectomy was usually not indicated in gunshot wounds of the abdomen unless the uterus was badly lacerated. Drainage should always be used in these cases and irrigation very rarely. He gave an abstract of about thirty cases of gunshot wounds of the abdomen in pregnant women.

Dr. JOHN D. S. DAVIS, of Birmingham, Ala., reported a case of gunshot injury in a woman pregnant three and a half months. She was handling a small rifle when it went off and shot her through the abdomen, producing twenty-five perforations, six through the transverse colon, and nineteen through the small intestines. She was brought a distance of eighty-five miles. He saw her twelve hours after the reception of the injury. There were five perforations on the mesenteric border of the small intestine, and two perforations on the mesenteric border of the transverse colon. He closed back the serosa and turned in the musculature and put the serosa over that. Instead of doing two resections of the gut, he took out five feet of the intestine between the nineteen perforations. She recovered and gave birth to a living child at the ninth month.

**Version with Report of Five Hundred Cases.**—Dr. IRVING W. POTTER, of Buffalo, N. Y., stated that in the advocacy of all procedures we should have a clear idea as to the results. In these 500 cases there was not a maternal death, and there were no injuries to the mother's soft parts that required repair. In other words, there were no tears of the cervix or the perineum that necessitated suturing. There were no alarming hemorrhages, and the period of involution in these cases was shorter than ordinary with less flow during the puerperium. The convalescence was more rapid, due to the elimination of the shock that was experienced by patients going through a long second stage of labor. There was also apparent greater strength of the patient at the end of the puerperium. In reference to the fetus, there were fifty-seven stillbirths, the greatest cause being prolapse of the cord; in thirty cases alone death was due to this cause.

**Conclusions.** Version should be more often done to shorten the time of labor, lessen the shock to the mother, and eliminate undue pressure to the child's head.

That the majority of occipitoposterior positions were best treated by version. That version can readily be accomplished in primiparæ and should be more often done.

That the fetal mortality in version should not be as great as in prolonged instrumental delivery.

That head injuries to the child were lessened by a properly performed version.

**Lymph Gland Extract, Its Preparation and Therapeutic Action.**—Dr. DAVID HADDEN, of Oakland, Cal., stated that he had used in several cases of streptococcemia the magnesium sulphate solution advocated by Harrar. The magnesium sulphate solution alone produced no leucocytosis, but used in conjunction with leucocytic extract, a marked leucocytosis resulted of a more profound character than the extract alone produced. These patients recovered. Two cases of easy bleeders, one with hemorrhage from the abdominal incision, the other with free oozing from the mucous membrane had a complete and permanent cessation of the bleeding almost immediately following the one dose. His associates had been using this lymph gland extract in cases of hemophilia, pulmonary hemorrhage, and tonsillar bleeding with very favorable results. He had used, during the last two years, lymph gland extract, in all inoperable cases of carcinoma, and discounting fully the possibilities of spontaneous improvement, he believed he was justified in the conclusion that the effects had warranted the use of the extract. He probably would never use body extracts in operable cases of malignancy as a substitution for operation, but if proved of value in animal work, they would have their place from a prophylactic standpoint. In inoperable cases, it gave one method that undoubtedly prolonged the patient's life and relieved many of the distressing symptoms, so that the amount of opiates necessary was lessened, but above all it put in our hands a means to make the patients really feel something was being done for them.

The present important field for the lymph gland extract was, however, undoubtedly in cases of hemorrhage and especially so in patients whose blood changes resulted in lowered coagulability.

Doctor Archibald and Doctor Moore were anxious to see the extract tested more extensively in tuberculosis and other chronic infections for they felt that their laboratory experimental work had demonstrated its effect in these cases.

Dr. JAMES E. DAVIS, of Detroit, said he would like to ask Doctor Hadden if in using the lymphocytic extract he knew how the platelets were produced. Some believed that the platelets had nothing whatever to do with the coagulation; others had raised the question as to just what the platelets were, whether they were fragmentary portions of the lymphocytes, and he wondered whether light had come to Doctor Hadden in the particular instance of the platelets.

Doctor Hadden, in closing, said that personally he could not express any opinion with reference to the function of the blood platelets. He knew they markedly increased. After a series of injections in lower animals Doctor Moore had proven conclusively, although he was not willing to give the evidence publicity, that we were dealing with an enzyme and the presence of the enzyme produced these changes.

**Observations on Blood Pressure during Operations.**—Dr. CHARLES W. MOOTS, of Toledo, Ohio, said, that having made observations and records of



the pressures in ninety-eight per cent. of his cases for the past eight years, he had, as a result of his experience alone, come to certain conclusions which he wished to offer at this time. 1. The systolic pressure alone was of very slight, if of any value. 2. The diastolic pressure alone was of much more value than the systolic alone. 3. The pressure ratio was the essential factor, and offered the earliest danger signal. 4. There were certain elements in technic which had marked and constant effect upon the pressures. These were as follows: a. The psychical or emotional state of the patient. b. The position of the patient upon the table, the extreme Trendelenburg being the worst. c. Overdosing by the anesthetist. d. The amount of traumatism inflicted by the actual operation, such as cutting and tearing the tissues with scissors, the hands, and other dull instruments; the packing of large gauze packs instead of rubber tissue into the abdominal cavity. e. The preservation of the fluids in the body up to the hour of the operation, this being absolutely necessary to maintain the usual pressures.

Dr. R. R. HUGGINS, of Pittsburgh, said that if anyone cared to take the blood pressures of patients previous to operation when he was suspicious of any weakness on the part of the circulatory apparatus of the patient, he should take the pulse pressure with the patient in the lying position and if he then found that it went down, as the speaker had described, that patient was a bad risk. A patient with a blood pressure of 170 or 180, with low diastolic pressure, should always be watched. The same thing was true of low blood pressure.

Dr. J. H. CARSTENS, of Detroit, said that he had for some time insisted on taking the blood pressure of patients a day or two before operation, and in the case of a patient with a blood pressure of 170 it was dangerous to operate before adopting some measures to reduce it.

**The Diagnosis of Pelvic Troubles.**—Dr. J. HENRY CARSTENS, of Detroit, said that these patients had pains when moving the uterus and the pelvic organs in certain directions. If you pulled the uterus to the right, they complained of severe pain in the left side, or vice versa. When you pulled the uterus away from the bladder no complaint seemed to be made, but when you pulled the uterus forward or away from the rectum, severe pain was complained of, often also in the back. These cases were due to adhesions, and he believed that the adhesions were caused by an infection from the rectum and sigmoid, as these patients were often suffering from chronic constipation. He was convinced that where the history was perfectly clear of the existence of any trouble previously, with a gradual onset of pain and distress, it was very much increased when moving the uterus and the pelvic organs.

**Conclusions:** First, naturally all pelvic troubles offered difficulties in diagnosis; second, pain on moving the uterus or pelvic organs indicated adhesions; third, these adhesions were probably caused by infection from the bowels; fourth, these obscure cases required exploratory celiotomy for perfect diagnosis and treatment.

(To be concluded.)

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*A Practical Medical Dictionary of Words Used in Medicine with Their Derivation and Pronunciation*, Including Dental, Veterinary, Chemical, Botanical, Electrical, Life Insurance, and Other Special Terms; Anatomical Tables of the Titles in General Use, and Those Sanctioned by the Basle Anatomical Convention; Pharmaceutical Preparations, Official in the United States and British Pharmacopœias and Contained in the National Formulary; Chemical and Therapeutic Information as to Mineral Springs of America and Europe, and Comprehensive Lists of Synonyms. By THOMAS LATHROP STEDMAN, A.M., M.D. Editor of the Twentieth Century Practice of Medicine, of the Reference Handbook of the Medical Sciences, and of the Medical Record. Fourth, Revised Edition. Illustrated. New York: William Wood & Co., 1916. Pp. 1102. (Price, \$5.00.)

This edition of Stedman's Medical Dictionary is the fourth that has been published within a comparatively short space of time. This fact shows that its usefulness is appreciated by the medical profession. It is essentially a comprehensive dictionary, that is to say, it comprehends within its pages all or, at any rate, almost all the information with regard to medicine and surgery that falls within the scope of a medical dictionary. The present edition has been brought thoroughly up to date and this is saying a good deal for the industry and painstaking care of the author, when the rate at which medicine and surgery advance and terms multiply are borne in mind. It is pointed out in the preface that in former editions the terms of the Basle Anatomical Nomenclature were indicated only when they differed from those in common use; in the present edition it has been found best to mark all these terms even when they do not differ from the vernacular. The author gracefully acknowledges that he has taken to heart and benefited by criticism of former editions, that is presumably when such criticism appeared justified. The result is a complete and valuable book of reference for all medical men.

*Outlines of Physiology.* By EDWARD GROVES JONES, A.B., M.D., F.A.C.S., Professor of Surgery, Emory University (Atlanta Medical College), and ALLEN H. BUNCE, A.B., M.D., Associate in Medicine, Emory University (Atlanta Medical College). Fourth Edition, Revised. 111 illustrations. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. xvi-373. (Price, \$1.50.)

This convenient handbook of physiology, now in its fourth edition, has been brought up-to-date. The majority of changes are of details, the chapters and general arrangement of the book being kept as in the third edition. A number of new illustrations are added, many others are reengraved, and the authors and publishers have expended no little effort to keep the book up to the highest standard. While the book is not a quiz compend, nevertheless it presents the essentials of physiology in a clear cut form to the student. The busy practitioner can profitably spend a few hours in reviewing his knowledge of physiology by means of the clear cut presentation of this convenient handbook.

*The Mentally Defective Child.* Written specially for school teachers and others interested in the educational treatment and aftercare of mentally defective school children. By MEREDITH YOUNG, M.D., D. P. H., D.S.Sc. of Lincoln's Inn, Barrister-at-law. Chief school medical officer, Cheshire Education Committee; Lecturer on School Hygiene, Victoria University of Manchester; Certifying Medical Officer to the Local Authority (Mental Deficiency act) for the County of Cheshire, etc. With illustrations. New York: Paul B. Hoeber, 1916. Pp. 140. (Price, \$1.50.)

The present volume is an effort to describe mental deficiency in children in such a manner as easily to be grasped by the lay reader, especially the school teacher,

and seems to be on the whole a successful one. Doctor Young has presented his subject in simple language and has been concise, sometimes sacrificing complete description to brevity. The English view of mental deficiency is the one taken throughout, and is at times at variance with the American one, particularly in the classification of these cases. The inevitable Binet-Simon tests are of course presented with some discussion of them. A few case histories are quoted and a chapter is given to treatment. A large part of the book is given up to the quotation of English legislation on the subject. The writer is handicapped throughout by the very small compass of the volume; it is much too small to contain a proper presentation of mental deficiency to a lay audience. Many more case histories should be quoted, and much more space should be given to tests, including the Yerkes-Bridges, the Healy, Fernald, etc.

## Meetings of Local Medical Societies

**MONDAY, January 22nd.**—Medical Society of the County of New York.

**TUESDAY, January 23rd.**—New York Academy of Medicine (Section in Obstetrics and Gynecology); New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; New York Otological Society; Onondaga Medical Society, New York; New York City Riverside Practitioners' Society (annual); Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York; Woman's Hospital Society, New York; Therapeutic Club (annual).

**WEDNESDAY, January 24th.**—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Surgical Society; New York Society of Internal Medicine; Schenectady Academy of Medicine.

**THURSDAY, January 25th.**—Ex-Intern Society of Seney Hospital, Brooklyn; Medical Union, Buffalo (annual); Hospital Graduates' Club, New York (annual); New York Physicians' Association.

**FRIDAY, January 26th.**—Society of New York German Physicians; New York Clinical Society; Manhattan Medical Society; Society of Alumni of Sloane Hospital for Women; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

**SATURDAY, January 27th.**—New York Medical and Surgical Society (annual); West End Medical Society; Harvard Medical Society; Lenox Medical and Surgical Society.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending January 10, 1917:*

**ASHFORD, F. A.**, Passed Assistant Surgeon. Relieved from duty at Montreal, Canada, and directed to proceed to Ellis Island, New York, and report to the chairman of a board at the bureau, Washington, D. C., January 11, 1917, for examination to determine his fitness for promotion to the grade of surgeon.

**CLARK, T.**, Surgeon. Directed to proceed to the National Junior Republic, Annapolis Junction, Md., to make a mental examination of the boy inmates of that institution.

**FROST, E. H.**, Passed Assistant Surgeon. Ordered to report to the chairman of a board at the bureau, Washington, D. C., January 11, 1917, for examination to determine his fitness for promotion to the grade of surgeon.

**KEMPF, G. A.**, Passed Assistant Surgeon. Directed to proceed to Wilmington, Del., to carry out studies of school and mental hygiene in Newcastle County.

**MULLAN, E. H.**, Passed Assistant Surgeon. Ordered to report to the chairman of a board at the bureau, Washington, D. C., January 11, 1917, for examination to determine his fitness for promotion to the grade of surgeon.

**ROBERTS, NORMAN**, Surgeon. Detailed to supervise the cyanide fumigation of vessels at the New York Quarantine Station.

**SMITH, F. C.**, Surgeon. Relieved from duty at the Cape Charles Quarantine Station and directed to proceed to Ellis Island, N. Y., for duty.

**STONER, J. B.**, Surgeon. Relieved from duty at Ellis Island, New York, and directed to proceed to Montreal, Canada, for duty in the medical examination of immigrants.

**SYDENSTRICKER, E.**, Public Health Statistician. Directed to proceed to Washington, D. C., to assist in studies relating to industrial hygiene.

**WELDON, L. O.**, Assistant Surgeon. Directed to proceed to Wilmington, Del., to carry out studies of school and mental hygiene in Newcastle County.

**WILDMAN, H. V.**, Assistant Surgeon. Directed to proceed to Wilmington, Del., to carry out studies of school and mental hygiene in Newcastle County.

**WITTE, W. C.**, Assistant Surgeon. Directed to deliver a lecture on diseases caused by insects before the School of Civics and Philanthropy, Dallas, Texas.

### Boards Convened.

Board of which Assistant Surgeon General W. G. Stimpson is chairman reconvened at bureau January 11, 1917, for the examination of certain passed assistant surgeons for promotion. Also convened January 30, 1917, for the examination of certain assistant surgeons for promotion.

Board of medical officers convened at Marine Hospital, San Francisco, Cal., January 15, 1917, for the examination of certain officers of the Coast Guard for promotion. Detail for board: Senior Surgeon L. L. Williams, chairman; Assistant Surgeon D. S. Baughman, recorder.

## Births, Marriages, and Deaths

### Died.

**CAMPBELL**.—In Williamsport, Pa., on Sunday, January 7th, Dr. Eugene Boyd Campbell, aged sixty-six years.

**CLARY**.—In New Britain, Conn., on Friday, January 5th, Dr. George Clary, aged eighty-seven years.

**DAMRELL**.—In Tulsa, Okla., on Sunday, December 17th, Dr. Carter Edmund Damrell, aged forty-two years.

**FEAGIN**.—In Mobile, Ala., on Saturday, December 23rd, Dr. Ernest Samuel Feagin, aged thirty-five years.

**FOGARTY**.—In Brooklyn, N. Y., on Friday, January 5th, Dr. William Ralph Fogarty, aged twenty-eight years.

**GALER**.—In DeGraff, Ohio, on Monday, January 1st, Dr. Frank M. Galer, aged seventy-three years.

**GRABENSTATTER**.—In Buffalo, N. Y., on Wednesday, January 3rd, Dr. George W. Grabenstatter, aged forty-eight years.

**GRAEBER**.—In Meriden, Conn., on Monday, January 1st, Dr. Charles Augustus Graeber, aged seventy-five years.

**HARRIS**.—In Norwich, N. Y., on Sunday, December 24th, Dr. Blinn A. Harris, aged fifty-four years.

**KIMBALL**.—In Los Angeles, Cal., on Wednesday, January 3rd, Dr. James H. Kimball, aged seventy-two years.

**KORNEMANN**.—In Newark, N. J., on Monday, January 8th, Dr. Henry A. Kornemann, aged eighty-four years.

**MCLAUGHLIN**.—In Greencastle, Pa., on Saturday, January 6th, Dr. Charles Kimball McLaughlin, aged fifty-five years.

**MYERS**.—In York, Pa., on Friday, January 5th, Dr. Alfred Myers, aged sixty-two years.

**PHENIX**.—In Colorado, Texas, on Sunday, December 31st, Dr. Newton J. Phenix, aged fifty-five years.

**REED**.—In Lancaster, Pa., on Wednesday, January 3rd, Dr. Joseph A. E. Reed, aged eighty-five years.

**ROGERS**.—In Cleveland, Tenn., on Wednesday, January 3rd, Dr. Karl E. Rogers, aged thirty-four years.

**WEIDMAN**.—In Jacksonville, Ill., on Tuesday, January 2nd, Dr. Peter S. Weidman, aged ninety-one years.

**WILLIAMS**.—In Summerfield, Ohio, on Saturday, January 6th, Dr. John H. Williams, aged sixty years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 4.

NEW YORK, SATURDAY JANUARY 27, 1917.

WHOLE No. 1991.

## Original Communications

### THE PREVENTION AND RETARDATION OF CARDIOVASCULAR DISEASE.\*

BY CHARLES LYMAN GREENE, M.D.,  
St. Paul.

Among physicians and laymen alike we recognize a certain pessimism and passive acceptance with relation to heart disease strikingly similar to that which prevailed with respect to pulmonary tuberculosis fifty years ago, when enforced late recognition and an aimless and impotent therapeutics created universal hopelessness and fatal neglect. Both conditions represent infection and hence are measurably preventable. Both tend to chronicity, and once firmly seated as a chronic process each exhibits an inexorable tendency to a slow progression greatly accelerated if allowed to take its own course. Each inflicts enormous losses upon civilized races, and constitutes one of the chief causes of disability, suffering, and untimely death.

Only within the past few years has it become possible for the medical man measurably to retard and, to a considerable degree, prevent cardiovascular disease. Hitherto, depending solely upon the classical clinical expressions of impaired reserve, often so gross and frank as to be almost as manifest to the layman as to the physician, and recognizing in and through them his sole justification for active therapeutic interference, he naturally has failed to realize the prophylactic and remedial possibilities gradually developed during the past decade.

In the light of modern knowledge a campaign might be waged on behalf of the cardiopath with what might prove to be astonishing results, not only with respect to lengthening the average term of life of those actually afflicted, but, in no inconsiderable measure, with relation to the prevention of the disease itself.

The great advance of the past few years has yielded isolated facts of the utmost clinical value when set in their proper order and perspective, the chief of which may be summarized as follows:

First, definite proof of the bacterial origin of acute rheumatism and syphilis, the two diseases chiefly responsible respectively for the juvenile and for the elder groups of cardiovascular diseases.

Second, the nature and the extreme value of the subjective symptoms of cardiovascular insufficiency.

Third, the establishment of maximal dimensions for

the heart and the placing of proper emphasis upon the relationship existing between structural type and the size of the heart normal for the individual.

Fourth, the development of better and more accurate methods of percussion applied to the determination of the true cardiac profile.

Fifth, the great advance represented by the routine use of the Röntgen ray in determining the size of the heart, its type, and the nature and degree of modifications of its contour, associated with the various forms of impairment.

Sixth, the fact that therapeutic doses of an active preparation of digitalis do not affect the normal heart, the fully compensating diseased heart, or such subjective symptoms as are unrelated to cardiovascular inadequacy.

The author will venture to add one specific contribution of his own, which he believes to be of considerable value both in the extraordinary character of its clinical relationships and in the fact that its recognition serves to clarify many clinical pictures otherwise blurred and obscured. He refers to:

Seventh, the dilatations or chronic overstrains of the so called "drop heart"—cor pendulum—a type long recognized as an anatomical entity, but almost wholly disregarded with respect to the importance of its clinical manifestations.

Only the briefest consideration of these factors which promise much for the future welfare of the cardiopath is possible. Let us consider:

1. *Prevention.*—The two infections largely responsible for cardiovascular disease are acute rheumatism and syphilis, the former producing chiefly primary mitral valvulitis of the acute endocarditic type, and the more active primary types of myocarditis and pericarditis, in infancy, childhood, and the early decades of adult life; the latter affecting for the most part the older groups and exerting its effect chiefly upon the aortic valves, arteries, and myocardium. To the patient and persistent work of Frederick Poynton, of London, we owe our present ability to place acute rheumatism with the acute infections and attribute it to a pleomorphic organism which, as E. C. Rosenow has shown, represents a strain, and probably a transmutation form of the ordinary hemolytic streptococcus, almost constantly present in diseased tonsils and frequently found in the many other septic foci now justly held accountable for the genesis of a large number of hitherto obscure ailments. Furthermore, it has been shown that certain streptococcal strains active in acute rheumatism give evidence of a selective affinity for the endocardium or myocardium. The opinion has gained ground steadily during the past few years that myocardial toxemia is seldom or never lacking

\*Read at the seventeenth annual meeting of the American Therapeutic Society, at Detroit, Michigan, June 10, 1916.



in this and many other acute prostrating infections, and that endocardial damage also occurs far more frequently than at present is recognized or believed, though in neither case need permanent degenerative or inflammatory residual changes result. If this view is correct, in many instances the question of permanence or impermanence of damage must be determined in great measure by the management of the case. More and more fully medical men are coming to realize the absolute necessity of safeguarding the heart in acute prostrating infections, especially in acute rheumatism, not only during the illness itself, but throughout a prolonged convalescence. The writer would emphasize the necessity of following such cases further in order that lesions undetectable during the illness, but becoming manifest later, may not in the future be so generally overlooked as at present. Mitral stenosis, for example, is seldom recognizable until several weeks after apparent recovery from the attack of acute rheumatism usually responsible.

In connection herewith attention may be called to the great value of the work done by D. J. Davis, Rosenow, and many others at home and abroad with respect to the bacterial flora of the chronically diseased tonsils, and to these structures, natural incubators, commissaries, and transformers, we must attribute nearly all the cases of acute rheumatism which arise and, therefore, a large proportion of the cardiac cases of the juvenile type. Rational and radical treatment of these prime generators of heart disease must greatly diminish its prevalence in the future. The almost invariable occurrence of antecedent tonsillitis in cases of acute rheumatism has been obscured hitherto by the fact that the disease develops as a slow sepsis and in many, if not in most, instances, shows arthritic symptoms only after the lapse of a period varying from several days to two or even three weeks, during which time the primary tonsillar infection, often slight, will usually have disappeared. In the rheumatism of very young children, articular symptoms may be wholly lacking or so slight as to escape notice or be accepted by the parent as "growing pains."

The prevention of permanent heart disease is also in no small measure dependent upon the ability of the physician to recognize during an illness the less obvious signs of cardiac involvement. Both in teaching and in practice, more emphasis should be placed upon the question of integrity of the heart muscle, absence of minor dilatation, and the presence of normal sounds, and less upon the relatively unimportant differential diagnosis of valvular lesions and the mere recognition of heart murmurs. The student or physician who auscultates the heart with the conscious primary purpose of determining the presence or absence of normal heart sounds, by his very attitude of insistence upon the normal, is placed in the best position to detect and appreciate the abnormal both in quality and accentuation. The usual opposite method is responsible doubtless for an immense number of missed diagnoses.

The etiological role of syphilis is far greater than was thought possible prior to the introduction of the Wassermann and luetin tests. In most instances the initial effect is produced early in the secondary stage, the degenerative processes progress with ex-

traordinary deliberation but inexorable persistence, and the disease frankly declares itself in the late tertiary period when the basic infection may be recognizable only by the results of the luetin test.

Two points of especial importance might be mentioned: One, the now fully proved worthlessness of a denial of syphilitic infection, whatever the apparent impeccability of the patient; the other, the untrustworthiness and inconclusiveness of the Wassermann test when performed by any but thoroughly trained and up to date serologists. The effect of the revelations relating to syphilis in the cardiovascular field has been such as to emphasize greatly the prophylactic and retarding value and importance of early, efficient, long continued, and, if necessary, frequently repeated antiluetic treatment.

2. *The value of subjective symptoms in diagnosis.*—We owe a debt of gratitude to Dr. James Mackenzie and Dr. Henry Head for having drawn the attention of the medical profession to the character and clinical value of certain of the many subjective clinical expressions of cardiovascular disease. At intervals, for years before the grosser signs of decompensation occur in cardiovascular disease, periods of minor insufficiency arise, such as must inevitably tend, by their persistence over considerable periods, to accelerate any existing degenerative process and thereby shorten further the impaired life of the sufferer. These demand attention precisely as would a case of pulmonary tuberculosis during an accession of the infection, and it is through subjective symptoms with or without demonstrable minor dilatations that we must detect them. At present such patients are safeguarded almost wholly through their own subjective discomfort, which by enforced limitation of activity, most strenuously resisted by the unaware victim, inadequately and imperfectly acts as an automatic brake.

These subjective symptoms are of the most varied description and their localization is often most misleading in its remoteness until the therapeutic test is applied. To an astonishing extent, moreover, both the minor and the major discomforts and pains of cardiovascular insufficiency are referred partially, maximally, or even wholly to the upper abdomen and especially to the region of the epigastrium. In the light of his own experience, the author would most emphatically reverse the old rule which said that when a patient complained of his heart his stomach should be looked to, for not only do we know that cardiac pain and discomfort may be and often is actually referred along physiological pathways to the upper abdomen, but we also know that with an overstrained heart and myocardium, even a moderately distended stomach may produce varying degrees of discomfort and actual pain. The author has known of many instances of operation proposed or actually performed upon patients under conditions of great hazard and with futile or even fatal results, where a careful interrogation of the cardiovascular field would have revealed the actual source of the localized pain and, occasionally, tenderness as well. Anyone who has studied carefully the distribution of pain and tenderness in angina pectoris, in the light of Dr. Henry Head's researches, will readily understand how such errors arise.

Pain of cardiovascular origin may be most intense or be represented by a mere sense of discomfort, gripping oppression, clutching, or a feeling of crowding or constriction of the heart. A rather common and much misinterpreted associated sign is that of tenderness over the region of the apex and inferior left border of the heart, usually regarded as an hysterical zone, because of its relation to the breast and its not infrequent appearance bilaterally. In many instances of subsiding acute dilatation it will be found to move inward as the heart border recedes. Another symptom, readily misinterpreted as globus hystericus, is the very common discomfort experienced over the upper sternum or in the throat in cases of minor insufficiency, especially such as occur in the drop heart. It usually disappears with significant promptness under rest and digitalis. We can but mention the various disturbances of sleep, laying particular emphasis upon the not uncommon occurrence of persistent day drowsiness in certain cases of myocardial degeneration and mitral lesions, changes of disposition, loss of the power of concentration and sustained application, mental confusion, easily induced physical fatigue, numbness and tingling, increased susceptibility to cold, a host of symptoms of gastric localization, and many other clinical expressions usually placed conveniently under the ample cloak of so called "neurasthenia." Dyspnea is a not uncommon symptom and may take any one of many forms. A mere sense of respiratory inadequacy or discomfort; inability to sit in a close room; a tendency to unconscious sighing or the taking of deep breaths, or inability to hold the breath. Dyspnea on exertion may, of course, occur, and be of the utmost significance.

The most important of the primary and cardinal single symptoms of minor decompensation is the limitation of cardiac reserve evidenced in the narrowing of the patient's field of symptomless or relatively effortless activity, manifest only when the neuromuscular units involved are other than those brought into constant use in the patient's daily activities. This accords with the well known fact that an actual breakdown of a compensating, frankly diseased heart may occur in a person performing daily and without distress, hard manual labor, when he undertakes some other strenuous physical exercise.

3. and 4. *The size of the normal heart.*—Until Moritz, von Tabora, and Veith gave us their carefully worked out orthodiagraphic measurements representing, when combined, the dimensions of normal hearts at all ages and for all heights and weights, we lacked any proper standard. The normal heart even in an athletic subject seldom exceeds 13.5 cm. in total transverse diameter and, as the author has stated on many previous occasions, the drop heart, normal and undilated, may measure transversely only 7.5 cm. Anyone who marks the maximal area of 13.5 or 14 cm. upon a large series of chests will realize that formerly he has passed as normal a great number of pathologically enlarged hearts. If he reduces these measurements to nine, ten, or 10.5 cm., common figures for the undilated drop heart, he will be impressed still more strongly.

For determining the cardiac outline modern per-

cussion should absolutely displace the old flat finger method, and strict adherence should be given to the rule that all strokes should be made at right angles to the anterior plane of the heart. For this purpose the writer personally prefers his own method of percussion.

One great advantage derived from the establishment of a normal maximum dimension has been the aid given with respect to the detection of the dilated and hypertrophied silent hearts, a host of which daily escape detection. Such hearts account for most of the sudden deaths, generally attributed to "acute indigestion" or "acute dilatation of the stomach," because of the attendant nausea, vomiting, and discomfort, or the intense angina of epigastric localization.

5. *With respect to the routine use of the Röntgen ray*, the author can only say that he finds it invaluable and indispensable to the work of the specialist. As a check upon percussion it seldom reveals serious errors, but when errors do occur they are likely to be so gross as to emphasize the need of such special methods.

6. *The diagnostic value of therapeutic doses of digitalis.*—Cloetta, Hanson, and others have established the fact that the normal or fully compensating diseased heart is wholly unaffected by the ordinary therapeutic doses of digitalis, and this knowledge yields us an invaluable diagnostic measure in the form of test doses of an active preparation of the drug.

We note the effect exercised primarily, upon subjective symptoms, and secondarily, upon the heart outline itself. The latter is often strikingly affected, but in other instances the amelioration or removal of symptoms seems to be due largely to the direct effect of the drug in rehabilitating an impaired myocardial tonus. It is of peculiar usefulness in connection with the overstrained or dilated drop heart whose true dimensions can usually be determined only through the use of digitalis, often necessarily combined with physical rest. Under such conditions the shrinkage in outline may be extraordinary, though by no means always well retained unless the general nutrition can likewise be improved.

7. *The drop heart.*—The correct descriptive term would be undoubtedly "the heart of universal congenital asthenia," for it is distinctly a part, and only a part, of that constitutional state so characterized by Berthold Stiller and now very generally accepted by the most prominent European authorities. It is really a *ptotic* heart, and the condition is associated invariably with a greater or less degree of general visceroptosis in individuals presenting outwardly the peculiarities of body conformation and structure which we have associated in the past with the so called tuberculous predisposition and general visceroptosis. Such patients are unusually susceptible to infection, laggard convalescents with respect to actual full recovery of flesh and strength, furnish an ideal soil for the development of tuberculosis, and doubtless are for the most part victims of past infection, fortunately obsolete in most instances. Insufficiency of structure, a tendency to subnutrition, and instability of function characterize these cases. The presence or at least, the

activity of their symptoms usually corresponds more or less directly with their state of nutrition and varies with it. These patients compose the greater part of that great body, conveniently but inaccurately classified as passive or depressed neurasthenics and nervous dyspeptics, who in the past have been a constant lure and temptation to our surgeons, with mutual disappointment in most instances.

The drop heart or heart of congenital asthenia is peculiar, both when normal for the individual, and when dilated or actually diseased. It is long, attenuated, and narrow, seems to be suspended by its great vessels and their fascial attachments above, presents as its right border, not the corresponding auricle as in the case of a normal heart, but the right ventricle, the auricle lying above. As seen fluoroscopically, it presents the appearance of a pulsating bag, rotating to the front with each cycle in the direction of the moving hands of a watch, usually causing a sharp impact against the chest wall and a somewhat diffuse apex beat.

Such a heart seems to be peculiarly susceptible to myocardial toxemia, overstrain, and dilatation, and correspondingly productive of symptoms whenever the nutrition of its possessor falls below a certain point. Its chief interest to the clinician lies in the fact that even when widely dilated it is not likely to yield a percussion outline greater than normal. Only by a knowledge of the condition itself, therefore, and of the inherent tendency to dilatation and recourse to the therapeutic test can we avoid missing one of the important sources of obscure symptoms of most varied nature and localization. In some instances, indeed, and for the same reason, we may overlook a decidedly dangerous dilatation.

Such hearts, though less frequent in men than in women, must inevitably cause much temporary disability among the soldiers now engaged in the European War, for they are of exactly the type and possessed of just the possibilities of abnormal response to psychic shock, on the one hand, and limitation of cardiac reserve, on the other, most likely to constitute a source of genuine discomfort to such of their possessors as are exposed to the shocks and strains of war.

#### CONCLUSIONS.

It would appear that the foregoing statements justify the following conclusions:

1. It has now become possible measurably to retard and, to a considerable degree, prevent cardiovascular diseases.
2. It is imperatively necessary in the interests of the cardiopath and of the race that a justifiable optimism should replace the almost universal pessimism now existing.
3. A knowledge of the specific bacterial origin of diseases of the heart should be promulgated, together with the means best adapted to the control of causative conditions.
4. Our old ideas with relation to cardiac dimensions should be radically revised and brought into correspondence with the facts as at present definitely established.
5. Modern methods of percussion, accurate and definitive, should replace the older practice still in vogue.

6. The cardinal value and importance, together with the nature and diversity, of subjective symptoms of cardiac insufficiency should receive their full value as means of early diagnosis and indicators for therapeutic initiative.

7. The extraordinary usefulness of test doses of digitalis, with or without physical rest, constitute the very foundation of timely diagnosis.

8. A thorough understanding of the anatomical peculiarities of the drop heart is essential because of its association with a definite constitutional state, its remarkable prolixity with respect to symptoms of a most varied and obscure character, together with the misleading narrow diameters present even in dilatation.

9. The common occurrence of the drop heart, its constant relationship to general visceroptosis of which it is a part, its frequent association with so called nervous dyspepsia, and the almost universal tendency to lose sight of the true cause of its symptoms by referring them to the bastard symptom conglomerate long known as "neurasthenia" are facts of decided clinical importance.

10. The existence of the drop heart in the male is a matter of great importance with respect to the fitness of its possessor for hard manual labor and actual service in warfare.

11. An application of those newer discoveries in the cardiovascular field as are here enumerated cannot fail to exercise a striking effect on both the prevention of cardiovascular disease and the retardation of established cases.

LOWRY BUILDING.

#### SECONDARY MASTOIDITIS.

*Complete Atresia of External Auditory Canal with Subperiosteal Abscess. Radical Mastoid Operation with Secondary Skin Graft.*

By ROBERT C. MYLES, M. D.,

New York.

AND J. MORRISSETTE SMITH, M. D.,

New York.

When this patient, a boy seventeen years of age, first presented himself to us, he had a subperiosteal swelling of seven days' duration behind the right ear and a complete atresia of the external auditory canal. He gave a history of having had a mastoid operation seven years ago following middle ear infection, the mastoid drained for quite a while, and then closed. Two years later he had scarlet fever, and a swelling again appeared behind the right ear. The swelling ruptured spontaneously and healed after draining a while. Two months later another swelling appeared and a second mastoid operation was performed. The mastoid wound healed, and the external auditory canal closed completely. Twice following this, the swelling appeared behind the ear, and subsided following a simple incision.

We advised immediate operation, and upon making the post auricular incision a subperiosteal collection of pus was evacuated, the mastoid was sclerosed, and a small but deep cavity was found filled with pus and granulation tissue.

At the previous operation a radical mastoid oper-



ation had evidently been attempted, but not completed, since we found a deep antrum with the lower part of the bridge between the facial ridge and the dural plate still intact. This was removed, and a radical mastoid operation was performed. The middle ear was completely filled with pus and granulations. After cleaning it out thoroughly, a flap was cut, a new canal made, the post auricular incision closed, and the usual dressing applied.

In spite of our efforts, the middle ear rapidly filled with granulations, and the canal contracted so much that the patient was given another anesthetic, the granulations were scraped out, and the canal was enlarged. Ten days later a secondary skin graft was done without reopening the post auricular incision, the graft being placed in the cavity through the external auditory meatus. The canal remained open, although it contracted. A paste composed of scarlet red, one part, and Beck's paste, three parts, as suggested by Doctor Myles, was used in the after-treatments.

The middle ear dried up, and the patient can now hear a spoken voice in that ear, and a C2 fork in the air.

11 EAST FORTY-EIGHTH STREET.

171 WEST SEVENTY-FIRST STREET.

## BRONCHIAL ASTHMA AND ITS CURABILITY.

BY JAMES L. TRACY, M. D.,  
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Every feature of bronchial asthma, as shown by its clinical history, from the time of the appearance of its first symptom to the last effort at treatment of the patient, fully proves it to be a deeply seated disease. There is in fact no other disease which offers less hope of some day finding a single sure treatment for it than does this. These facts should not, however, discourage its study. Indeed they are, on the contrary, prime reasons for studying the disease from every possible viewpoint.

*Pathology.*—A man has had bronchial asthma since he was sixteen years old. His elder brother, in the same surroundings, has never had asthma nor any of the diseases which are looked upon as having possible relationship to asthma. Some questions suggest themselves: Is the asthmatic brother's trouble representative of familial diathesis? Is it an acquirement? Is the nonasthmatic brother's health representative of transmitted family vigor? Has he a natural or acquired immunity to asthmatic infection?

Whatever the answers to these questions, it will be conceded that all manifestations of health, and of disease as well, must of necessity have their foundations in special histological conditions of anatomical structure. Whether the conditions are inherited or acquired, does not matter. In the case of the younger brother, it is evident that there is a standard of systemic purpose which so reacts to environment as to produce asthma. And it is this constitutional standard, itself the production of some formative force, which is the pathology of asthma. Bronchial asthma has a neuropsychic

basis peculiarly its own. Some force so dominates as to set up a pathological nerve cell histology. This histology is responsible for the presence and fact of the abnormal nerve impulses, and also for the erratic mental conditions which are found in asthma. Hence, without a specialized nerve cell structure there can be no asthma. The asthmatic nerve cell structure and its functioning, when taken as a whole, constitute asthma. The phenomena from the functionings of such nerve cell structure, when taken alone, are the disease symptoms.

The neuropsychic base of itself, however, only represents asthma as a possibility or as a probability. And, besides, the presence of such nerve cells, together with the consequent asthmaticward impulse, there must be the addition of a specific asthmatic excitant—or an excitant which is specific to existing histological conditions before there can be an asthmatic attack. The nerve force and impulse and the concomitant mental are of themselves—systemically speaking—a stored up force, potential for evil, to be sure, but in fact an undisturbable equilibrium of energy, until some asthmatic stimulus or depressant of controlling centres tips the balance, and then there is asthma. Obviously, there must have been in asthmatics a preexisting nerve cell histology with its nervous productions for the excitant to act upon, as the exciting cause of asthma is common to many people, and yet it causes asthma in only one victim. The cause is specific only to a specialized nerve cell structure. The cause may be either a plus or a minus quality, that is, it may unbalance nerve force by raising or lowering systemic tone.

If asthma were in the infectious thing itself—so to speak—then everyone coming in contact with that particular infection would have asthma. In most other infectious diseases this rule is reversed, and the disease is the infecting agent. These statements regarding infectious diseases refer, of course, to the rule and not to the exceptions. Common experiences of life seem to prove that at certain times most people are immune to pathogenic infection. The argument here is that there are very many agencies which may precipitate an asthmatic attack, but only one agent which can bring on an attack of typhoid fever—a very distinct difference. Given asthmatic preparedness, and almost anything will cause an asthmatic attack. Given almost any kind of systemic condition, and the typhoid germ will produce typhoid fever.

Inheritance, as the word inheritance is referred to in the question at the beginning of this paper, is not thought of as carrying over to the one who is to become asthmatic, the identical nerve cell of the ancestor; but there is carried forward from the one to the other that composite of cell life which dominated the cell's functions in the ancestor. To call cell life inheritance does not explain very much, but it does help a little in explaining how asthma is passed over through the cell, to point to the fact that physiognomy is passed over in the cell in exactly the same way.

In the case of the elder brother the cell had apparently dropped the asthmatic tendency, and had brought forward the ancestral form; while it is possible that the cell of the asthmatic brother had left

behind the parental physical, and had brought over a familial systemic trend, or that which is called the atavistic strain instead. It amounts to this in the case of the younger brother, that the systemic variation from the physiology of the elder brother has become the pathology of asthma. On the other hand, until asthma had set up in the younger brother, he was just as well off as was the nonasthmatic. Inasmuch as it must be admitted that asthma, as a disease, had at some time a starting point, pathogenesis must grant the possibility of the disease setting itself up as an innovation in a family whose history had hitherto been free from diseases which are looked upon as consanguine to asthma. However, the study of asthmatics so generally discloses inheritance weakness, as to put the burden of proof strongly upon the assumption of an asthmatically clean family history. The nerve cell in asthmatics is, in essential life purpose, a normal systemic nerve cell and functions health impulses after its kind. But the impulse from such so called healthy nerve cell is ready upon occasion to precipitate spasm, and in this it is not physiological. This nerve cell quality of instability under specific pressure is, of course, either a gift of inheritance or else it is an acquirement. Here it is regarded as an inheritance. Whatever its origin, experience in trying to handle it abundantly proves that it is not a quality that can be readily controlled by treatment. That is to say, asthma is in no sense a trivial disease.

The argument locates the asthma in the nerve cell, and thus pathologizes the cell. But there is more than this in the pathology of asthma. Why does the neuron function unphysiologically? At the present time, idiosyncrasy, as explanation for such aberrant direction of physiological function, no longer explains the anomaly. Diathesis, which would account for the upbuilding of the spasmodic tendency as being due to an inherent neuron quality, is passing. Error in inhibition or error of inhibition as a nerve cell handicap or as an impoverishment, is becoming an answer to the question regarding the nerve cell's instability. If the otherwise unexplainable deep seated nature of the disease is derived from the pathogenesis of inheritance, then the channels through which the inheritance reaches the neuron and exerts its force upon it, naturally become subjects of prime importance. But here, again, a change in terminology is virtually all that is offered in the above outlined shifting of hypotheses respecting the neuron acquirement of the inheritance force, and the manner of operation of that force which finally brings on the asthmatic attack.

As a matter of physiological fact, it is about as easy to conceive of the force of inheritance connecting itself up with one anatomical structure as with another. There ever remains a bridgeless space between the neuron and the ancestral force which dominates its functionings. To locate the point in a more or less inhibitory nerve centre does not help much. At the present time, speculation as to just how this immaterial becomes material, is useless. But in the study of asthma it is helpful to keep in mind the fact that its pathology is cell life influenced by the power of inheritance. The immaterial—whatever that immaterial was or is—which was

dominant at birth, is still dominant in the asthmatic patient. This statement represents the hard and fast facts regarding the pathology of asthma.

*Etiology.*—In order that there might be something definite in the mind for the exciting cause—the etiology of asthma—to be thought of as active agent, the study of the pathology of the disease has preceded the discussion of its etiology. It would be very difficult, though, to write all of the pathology of asthma, and only its pathology, above a straight line, and only the etiology and yet all of the etiology of asthma below the line. Pathology and etiology of asthma overlap or at least intermingle.

The elusive point referred to as the place of contact of the inheritance force with the nerve cell, has really to do with the processes of life itself, and no one has ever got very deeply into the secrets of those processes. Nevertheless, the initial functional derangement which begins to differentiate the pathological from the physiological, must ever be the fascinating objective and aim of all pathological study. As a matter of fact, however, efforts at tracing any particular derangement of function are as yet soon confused and frustrated, by meeting the workings of the law of the interdependence of all systemic functions. The single derangement at once takes on systemic proportions. In looking in this way into the etiology of asthma, it is seen to be the province of functional pathology that just as soon as the inheritance governed nerve cell has produced the asthmatic mental; as soon as the nerve cell has produced the asthmaticward impulse; as soon as these meet the specific stimulus; just so soon does the mental, the nerve impulse, and the nerve cell become mutually helpful to the stimulus and to each other, in the workings out of their atavistic depravity instincts.

That which actually tips the balance and ushers in asthma, is not easily expressed in words. But after it has seemingly clothed itself in the theory of anaphylaxis, or in the resulting bronchitis, rhinitis, coryza, or in phenomena of thymic incompetency; after pyorrhœa alveolaris is present; when there is sinusitis, submerged tonsils and adenoids, astigmatism, flat foot, disease of the ductless glandular system, eczema, urticaria, erythema nodosum, or angioneurotic edema; or when some other pathological condition is prominently present, then these demonstrable irritations naturally take the place of the sought for, but intangible real cause for the asthmatic attack. Also, food fails to digest, or there is malassimilation. Constipation develops, and the resulting choline in some way may, and no one know how often it does initiate the attack. It is easy to recognize the etiology of asthma after it has become flesh and blood, so to speak, but not before.

These conditions and diseases are not asthmatic pathologies, although some of them may be present in each case of asthma. Neither of them is either more than secondarily an etiological factor, although the asthma may stop and never return after the condition is arrested. But given the before described nerve cell groundwork, there may be asthmatic attacks from sight and smell—and even from association. There is asthma that is of purely mental origin. Anger and grief and fear may bring on the asthmatic attack. Further, there

is asthma which is doubtless due to changes in atmospheric pressure, changes in carbon dioxide pressure, changes in oxygen pressure. And still further, there is asthma which, to all possible human investigation to prove the contrary, is out of a clear blue sky. So far as is known to medicine, there is no other recognized disease which is ushered in by so many like and unlike agencies, as is the spasmodic syndrome called bronchial asthma. The same conditions which apparently precipitate spasmodic asthma exist in other people, and yet the mind does not become introspective, apprehensive, nor is it swayed by suggestiveness, the sympathetic nervous system maintains its equilibrium, the diaphragm does not give way to spasm, pulmonary stasis does not ensue, the blood does not back up in the right side of the heart, and the patient is not seized with violent oxygen hunger.

The etiology of bronchial asthma—not that power which apparently precipitates the attack, but the real origin of the disease—is practically inseparable from its pathology. If the pathology of asthma is regarded as the material neuron, then the etiology of asthma is the transmitted immaterial force which dominates the neuron. No good can come from looking upon the etiology of asthma as being of less depth than it really the case. Much harm can come from attaching too great importance to visible abnormalities.

*Treatment.*—Herein, treatment is based upon the biological fact that so far as can be known, the younger brother, when a baby, took precisely the same kind of food as the other brother had had, and that out of that nourishment he built up, not a physiological constitution, but one that was dominated by an asthmatically inclined nerve cell. Treatment must be in outline only.

The asthmatic nerve cell was clearly not due to a particular food. That is to say, if the babies had been alike to begin with, they would have been fathers to like constitutions. Metabolism as it worked out in the bodies of those two babies, is a big word. Asthma is dependent upon the metabolism in the younger brother. The curability of asthma is entirely dependent upon the ability to change that metabolism. Here, the aim is to reduce metabolism to specific lower terms. There is no one factor of metabolism which is more specific than is the action of the alimentary canal upon the food in the canal. Specificity so used is, of course, a "bull," but differentiation between the babies was worked out in those alimentary canal actions upon food, and the place to begin to change the asthmatic tendency is where the tendency was first nourished. Moreover, everything in the treatment of bronchial asthma that has been of betterment to the asthmatic, logically connects itself with some change in metabolism. And in cases which have ended in complete recovery, there has been a metabolic regeneration of the neuron type. Asthmatic preparedness is no longer present. The proof of which is that asthmatic attacks are not brought on by their former causes.

Then, to point out in a few lines the different measures which will most quickly and surely change metabolism: In the first place, home life is, in a hun-

dred ways, a handicap to the successful treatment of bronchial asthma. Home life perpetuates surroundings, and almost of necessity routes the same mental processes in the same well worn channels, and those channels lead to asthma. Whether metabolism is before mentality, or mentality before metabolism, may never be definitely determined. But radical change in the patient's intellectual ground work is as essential to metabolic change as is the change of foods and their manner of preparation. The patient need not change his business, but the everyday associations which feed his mind and prepare it for business, should be changed. Associations need be neither less nor more cheerful and enjoyable, but the sympathy of home life seldom tones the nervous system in a beneficial way. More humane than the bestowing of sympathy are enforced associations which stimulate the will of the patient. The taking up by the patient of a side line occupation which burdens him with new responsibilities, is helpful. In fact, anything which obliterates mental ruts and reroutes the mind on cardinal principles of right living, is humane treatment.

As has been pointed out, it is impossible to explain the effects of the mind upon systemic function and of systemic function upon the mind. But in very early life the mental and the physical were working in harmony in this younger brother. Symptomatic treatment largely aims at removal of exciting causes of the spasmodic attacks. Specific treatment seeks to remove constitutional defects which become disorderly under stress, and is better.

Next in importance to change of the patient's surroundings is the change of his intestinal flora. This means a radical change in food, both in kind and quantity. It means the continuous sweeping out of the intestinal canal. It means chemical changes in intestinal secretions. It means possibly the introduction of combative germ life. Complete control of the patient is necessary. Physical exercise taken out of doors—when the exercise is not thought of as a curative measure—makes for constitutional change. In some amusements and entertainments there is an inherent quality which prompts healthy thinking. They feed the mind wholesome food. They create a desire and dare for better things. There are other amusements and entertainments which just as surely do the opposite. The effects of one are physiological, and the effects of the other are pathological. To prescribe recreation for the asthmatic patient so as to benefit the patient, requires scientific study of amusements on the part of the physician. Mere sentiment in either physician or patient ought not weigh in the least in making choice of sports for the patient. Each case is a separate study, and yet the general plan of treatment, to try to bring about rational changes in everything affecting the patient, applies in all cases.

At first thought such measures of constitutional treatment of bronchial asthma are visionary and impractical. On the other hand, the opprobrium to medicine from the results of symptomatic treatment of the disease, points to the need of its deeper study. A surgical operation may and often does



relieve the patient, and sometimes it actually cures the disease; but if constitutional measures could remove the asthmatic tendency, then the surgery would be not for the treatment of asthma, but for the removal of diseased conditions. As a matter of fact, too, the effect of the surgery upon asthma is almost entirely psychical. The formidableness of the operation, the glamour and the hoped for benefit from the surgery, coupled with the thought of being a martyr, in actuality sometimes transport the patient to a new mental world.

The taking of a new medicine or a change in physicians also induces hopefulness, but the psychic impression is less profound and not so lasting as surgery brings about. Mere hopefulness seems to be mildly preventive of asthmatic attacks, but the despair that is sure to follow is always antithetically in every way equal to the good which had come from the hopefulness. That is to say, for permanent good to follow, there must be a constitutional background for hope. But to carry the analysis a little further, with a physiological constitution once established, there is not the least need for hope. Possibly hopefulness may be of use in inspiring the patient to faithfulness in carrying out measures for bringing about constitutional change, but the determination of a dogged will is worth much more. This brings up the thought of suggestive therapy, but such is only mentioned to be condemned. As well slide to the idiotic level of Mrs. Eddy and be done with it.

It must be admitted that there is less of brilliancy in a cure of asthma which has been brought about through the tedious process of a change of life's habits, than is offered in the proposed cure by surgery; but at the same time there are better grounds for expecting a cure in the painstaking undermining of old systemic order, and in upbuilding a new. The cure of the disease is, in fact, half accomplished when the patient is rightly started in measures of constitutional treatment. It would, though, be as far from truth to say that neither surgery nor medicine is necessary after such treatment has been begun, as to say that in the treatment of asthma nothing but surgery and the giving of medicines are ever required. As has been said, everything medically and surgically possible should be done to correct other abnormalities, but always with the emphatic assertion to the patient that the treatment of coexisting conditions and diseases is but a means toward the aimed for deeper physiological end. Bronchial asthma is curable—is cured by drawing out of the patient's mind thoughts that are in accord with strict physiological facts, and by the addition to this body of physiological thought, the supporting entity of nerve cell force generated by a physiological neuron.

WEST WOODRUFF AVENUE AND SCHOOL PLACE.

**Sodium Cacodylate in Syphilis.**—H. N. Cole (*Journal A. M. A.*, December 30, 1916) states that ten cases of syphilis, representing the various manifestations of the disease, were treated with sodium cacodylate, given intravenously up to the maximum of tolerance. The results were negative.

## POSSIBLE CLUES TO THE NATURE OF GENIUS.

BY ARTHUR C. JACOBSON, M. D.,  
New York.

We are gradually coming to understand better the phenomena of divided consciousness, thanks to the labors of Flournoy, Janet, Prince, Sidis, White, and others. So called secondary selves coexist in the subliminal mental life, and in certain circumstances may usurp the reign of the primary self for varying periods of time.

A medium is one who is supposed to be controlled in speech and action by the will of another person or of a disembodied being. There is, of course, nothing supernatural about mediumship. The medium is merely controlled for the time being, not by a disembodied spirit or the will of another, but by a secondary personality that has come up out of his (usually her) own subconscious mind. It is hard to understand why men like Conan Doyle attempt to put a supernatural interpretation upon such facts as these. There is no excuse whatever for a man of Hyslop's scientific training to leave in his writings and in his talk the implication that there may be a supernatural significance in the phenomena known as "communications."

Secondary personalities may behave rationally, or, in persons of low intellect, irresponsibly, which accounts for the mediums. The secondary personality of a medium concerns itself with mystical things, and imagines itself in touch with the spirit world. The trivial data heaped up by the psychical research societies betray very clearly the third rate minds that gave them birth. The medium, usually an abnormal woman of inferior and uncultivated mentality, transmits phenomena which are always a measure of this inferiority.

What we are really concerned with is elucidation of the thought that genius may reside in the secondary personality of a person of superior mental endowment. Genius may not be an element in the primary self at all. The genius is a superman—a man plus a secondary personality, his genius residing, not in the primary self, but in this secondary personality.

In the one case we have the medium—low mentality, irresponsible secondary personality; in the other case we have the genius—high mentality, super-rational secondary personality.

Is there not a striking analogy between a Paganini, or a Shelley, or an Edison in the throes of creation, oblivious to all about him, the primary self completely eclipsed for the moment, fairly possessed by his *demon*, or secondary self, and the medium in a trance?

There would appear to be nothing in the primary self of the so called genius accounting for his creative powers save his superior mind—a *sine qua non* for the successful operation of a genius endowed secondary personality. This type of mind affords a delicately attuned instrument for the facile operation of the latent power residing in the secondary personality. When successfully set free—*sublimated*, as the Freudians say—this becomes creative power, or genius manifest in works. In this light we can see both the trance of

the medium and the inspired performances of the genius as demonstrations of successful conflicts against repressions, seeking spiritualized avenues of expression far removed from the old and conventional sexual channel. Flournoy has already attributed the origin of differing personalities to the sexual cenesthesia of the subject.

Thus do we get that wonderful complex—the often unattractive physical tenement—Socrates, Francis Thompson, Carlyle, Steinmetz—the primary self inclusive of a first rate mind, and the genius endowed secondary personality—the *deus ex machina*.

Bateson conceives of evolution and life as “an unpacking of an original complex.” All men, he thinks, have divine potentialities packed in them somewhere, somehow. A longshoreman has the same essential equipment as a Shakespeare. So the genius, instead of being one to whom something has been added from without, is one who for some reason or other has experienced a release of his powers. In him the forces that mask the hidden faculties of commonplace beings are abated or lost.

What does this mean, if not usurpation by a secondary personality? Paralyze the inhibitions of a peasant and you get a Bobbie Burns. Viewed in this light, the personality that took possession of the country bumpkin christened William Shakespeare is shorn of much of its mystery.

The real miracle that invites our contemplation is the paralysis of inhibitory mechanisms. What happens is becoming clear enough, but why does it happen? Now that we have a glimmering, if not a fair insight into what happens—which is a big and unprecedented step—we are in a position to prosecute an inquiry into determining causes.

We may say that certain relevant data have already been accumulated, though naturally their exact significance and correlation have not been fully grasped. We think it would be wholly possible, utilizing the good working hypothesis which we have submitted, to arrive at determining factors in instances which offer full facilities for expert study and analysis. The societies for psychical research seem to confine their attentions to mediums. A much saner field of inquiry would be the study of genius and geniuses. Why delve so exhaustively into the lesser sphere, and fool with Calibans, when the Prosperos, waving their magic wands, stand before us?

If we are challenged to cite from the clinic of life any outstanding proof of the existence of an agency paralyzing inhibitions at propitious times and releasing the spirits that give wings to the soul, or, in other words, setting free creative powers resident in a secondary personality, we are obliged to call the following galaxy as witnesses in favor of alcohol: Charles Lamb, Walt Whitman, Tasso, Swinburne, Byron, Verlaine, Goethe, Baudelaire, Hoffmann, Samuel Butler, Burns, Poe, Wilde, Horace, Coleridge, De Quincey, Ben Jonson, Tennyson, Æschylus, Anacreon, Omar, Marlowe, Cervantes, Goldsmith, Addison, Swift, Steele, Pope, Gay, Bacon, Herrick, Balzac, Schiller, Dickens, Sheridan, Tom Moore, Catullus, Ovid, Alcibiades, Cicero, Hobbes, Cowley, Rossetti, Thomson, Alfred de Musset,

Gerard de Nerval, Guy de Maupassant, Lionel Johnson, Mürger, Richard Savage, Thomas Carew, Kleist, Helius, Charles Churchill, Thomas Parnell, Jack London, Richard Le Gallienne, Schubert, Dusek, Händel, Glück, Turner, Cruikshank, Morland, Phil May, Victor Daley, Frans Hals, Jan Steen, Caracci, Adrian Brouwer, and Barbatelli.

In an intensive study of genius along the lines indicated alcohol would be found an infrequent factor, since it is only a small group of geniuses of peculiar constitution that furnish evidence of such idiosyncratic response. In our Chattertons and Platos and Edisons we should have to consider many other things.

The toxins of tuberculosis have facilitated the release of creative personalities in many notable instances. Again from the great clinic of life we call as witnesses Charlotte Brontë, Rousseau, Milton, Ruskin, Kingsley, Locke, Hawthorne, Robert Pollok, Michael Bruce, Channing, Kant, “Thomas Ingoldsby,” Béranger, Hannah More, Madame de Staël, James Ryder Randall, Scott, Shelley, Keats, Tom Hood, Sterne, Elizabeth Barrett Browning, Molière, Thoreau, Stevenson, Lanier, Rachel, Bichat, Calvin, Watteau, Laënnec, Bastien-Lepage, Emerson, Jane Austen, Francis Beaumont, Spinoza, David Gray, Georges de Guérin, Voltaire, Amiel, Nevin, von Weber, Chopin, Paganini, Washington Irving, John R. Green, Richard Baxter, Marie Bashkirtseff, Hurrell Froude, Richard Lovelace, George Herbert, John Addington Symonds, Westcott, Blackmore, Adelaide Ann Procter, Joseph Rodman Drake, Kirke White, E. P. Roe, N. P. Willis, George Ripley, Grace Aguilar, Stephen Crane, H. C. Bunner, John Sterling, J. T. Headley, Henry Timrod, and Paul Laurence Dunbar.

The release of creative secondary personalities would seem to depend largely upon some sort of intoxication, with resulting paralysis of inhibitions. This is obviously true of alcohol, also of the toxins of tuberculosis.

Dr. William A. White, in his *Mechanisms of Character Formation*, suggests that the body is really a transformer of energy taken in by many overlooked receptors, that our food may not be the chief source of supply, the energy derived from it being mainly for the upkeep of the body itself, and that the sun may be a principal source. The tremendous energy dispensed by some persons would seem, could it be concentrated, controlled, and transmitted, sufficient to light a city. Certainly the power of an idea, acting strongly and for generations upon society, cannot be related to caloric intake.

White's conception gives us another glimmering into our problem, but at once the further thought occurs—not only do we have to consider inhibitions preventing the release of highly charged secondary personalities, but also inhibitions having to do with the receptors of energy and preventing the adequate charging of such personalities.

No doubt the progress of the next few years will permit us to discuss without risk of confusion or ridicule the problem which we have posited, if not wholly to resolve it.

115 JOHNSON STREET, BROOKLYN.

## ANESTHESIA AND ACIDOSIS.

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All that was expected in the early use of the agents of modern anesthesia was that they keep the patient free from pain during operation and in such a state as to be capable of resuscitation at its completion. Today we go further and demand that its nature and administration be such as to reduce the danger to life to a minimum. It must produce complete analgesia, quiet, and relaxation. Its nature and administration must be such as to interfere least with respiration, circulation, and other vital processes. It must aid in reducing general shock to the lowest degree. It must produce the minimum amount of toxemia, and not cause serious or lasting aftereffects. It must be pleasant for the patient to take and not cause him discomfort on awakening.

A few years ago, many of the methods and means to cure disease were almost as distressing as the disease itself. Today patients require sugar coated pills and general therapeutic measures of a pleasant, as well as effective, nature. Many patients are kept from operation because of the dread of the anesthetic and its aftereffects. If then we are to make surgical relief more attractive, we must lessen its attending discomforts.

Excepting the personal ability of the anesthetist there is nothing which goes further toward producing satisfactory narcosis than the right preparation of the patient. Many of the elements of the older methods of preparation tend to make the postoperative discomfort more severe.

The great bugbear of all anesthetics is vomiting. Preparatory treatment has recently been shown to play a large part in banishing this dreaded complication. We are indebted to a long list of physiological chemists for elaborate experiments regarding this matter. Many theories have been advanced as to its cause. It has been thought to be influenced by the kind, amount, and method of administration of the anesthetic. The swallowing of ether soaked saliva was presumed to set up a gastritis which caused vomiting until the ether was eliminated. It was supposed to occur most in neurotic patients, those nauseated from slight causes, those frightened and fearing operation, and those whose physical condition predisposed to this complication. The nature of the operation and the manipulations of the surgeon also came in for their share of the blame.

Physiological experiments and clinical observations have led many students to conclude that while the factors mentioned above are undoubtedly elements in the causation of this complication, "post-anesthetic vomiting is, to a large extent, the result of some constitutional disturbance involving the body metabolism and resulting in the formation of toxic substances of an acid nature, and the best means of preventing such vomiting lies in the adoption of certain precautionary measures previous to the period of induction" (Buckler).

Verworn has shown that anesthetics act by reason of their loose physiochemical combination with the lipoids, causing them to lose their normal relationship to the other cell elements. This results in

cellular inhibition so that the cell absorbs or utilizes less oxygen. This lessening of the oxygen supply to the cell and in turn to the organ produces an increase of acidity therein.

Acid intoxication in the body occurs because of abnormal fat metabolism. The combustion of fats requires the simultaneous catabolism of carbohydrates, in the absence of which fatty acids and acetone are formed. The carbohydrate deficiency results from the disturbance of the glycolytic function of the liver. This follows the action of the anesthetic or other disturbing factors on the liver cells or upon the splanchnic nerves controlling the glycogen output. It has been demonstrated that in every patient more or less acidosis develops after anesthesia. The severe types such as the so called "delayed chloroform poisoning" have long been recognized, but that all surgical patients show preanesthetic acidosis, or a tendency to it of such a degree as to require treatment, is just beginning to be appreciated by the profession. The acidosis may not be of such degree as to give reactions in the urine for betaoxybutyric acid, acetone, or diacetic acid, but that the hydrogen ion concentration of the blood is increased and the carbon dioxide tension decreased by all the conditions necessitating and connected with operative measures, and that develops acid intoxication in these patients very readily, has been amply demonstrated (Roth and others).

Martin Fischer has shown by his colloid theory that raising the acid content of a cell increases its capacity to take on water, with consequent edema of the cell. More water being held by the cell and tissue diminishes the amount free in the body for secretion. This explains why the patient acidosed by the anesthetic is thirsty and his secretions are reduced.

From the foregoing it is evident that preanesthetic treatment should provide carbohydrate, alkali, and water. Where emergency does not prevent such care, the surgical patient should be placed upon a special diet for three or four days previous to operation. This diet should not be the light or starvation diet of the older methods of preparation, which contributed to acidosis. It should consist in the minimum of protein with correspondingly large amounts of carbohydrates. The dietary should include well cooked cereals served with plenty of sugar or honey; malted milk and any of the prepared foods containing dextrose and maltose; potatoes, best baked, and all the vegetables; the fruits, especially apples, oranges, raisins, dates, and cantaloupe, with white bread or crackers.

When possible, the patient should be fed to within six hours of operation. Castor oil makes the best laxative, as it produces no gas. Where enemas are used, those of sodium bicarbonate, one ounce to the quart, are most effective in supplementing this treatment.

For the alkali element of the treatment, natural or artificially prepared alkaline waters, especially those containing the carbonates and bicarbonates of calcium, sodium, and magnesium, are both pleasant and efficient. Sodium bicarbonate and sodium citrate, in one dram doses, calcium acetate, in half dram doses, every three to four hours, may be used with plain water. These may be combined with mal-



tose or lactose, if desired. The purpose is to have the patient come to operation with urine alkaline to litmus or rosolic acid and passing at least fifty ounces in twenty-four hours.

Fear is a large contributing factor in the production of acidosis. It is also true that it contributes to shock. Therefore the reduction of fear and the production of rest add much to the patient's welfare. This object is accomplished by tactful reassurance and by giving the patient ten or fifteen grains of veronal two hours before bed time the night preceding operation.

The use of morphine and atropine preliminary to general anesthesia is now very widely practised and it does much to prevent anesthetic complications. Gwathmey, in a series of experiments made at New York University, showed that dogs which had been given preliminary doses of morphine required from one fourth to one half as much more anesthetic to kill them than those not so protected; also that it took one fourth more time to kill those having a preliminary dose of narcotic than those to which it had not been given.

Crile and Menton, after elaborate experiments, have shown that morphine given before anesthesia, not only makes it quieter and reduces the amount needed, but greatly lessens the degree of acidosis; also that the preliminary dose of morphine not only lessens the degree of acidity produced by the anesthetic, but that it in no way interferes with the return of the blood to its normal alkalinity; "on the contrary, and the following observation is of great significance, if morphine was given after acidity had been produced by the anesthetic, it postponed the time of neutralization, and if given in large doses prevented the animal from overcoming the acidosis." In emergency, patients who have a severe preexisting acidosis, chloretone, veronal, and the bromides should be used beforehand, and the same drugs may be used for postoperative pain.

Most of the details we have been discussing up to this point are in the hands of and are carried out by the surgeon, but the anesthetist should be conversant with them and with the case which he is to handle. It sometimes happens that the anesthetist is brought face to face with the patient at the time of induction of the narcosis without either knowing anything about the other. This cannot always be avoided, but the sense of comfort enjoyed by both patient and anesthetist when the latter knows his case and is able to select the best anesthetic and method, and prepare for possible contingencies, go far toward a happy outcome.

Prepared in the way outlined, the patient generally comes to the operating room in a state of mental calmness. She should be placed upon the operating table before the narcosis begins, and as much of the final preparation completed as possible. In such a mental state an anesthetizing room is unnecessary, provided that conditions in the operating room are right, i.e., the instruments are covered and the room is quiet. Removal of a patient from the stretcher to the table in the early period of anesthesia is a dangerous procedure which often causes respiratory arrest, vomiting, and disturbance of the plane of anesthesia. It also contributes to

acidosis and shock, often transforming a quiet narcosis into a troublesome one requiring resuscitative measures or large doses of the anesthetic to restore the patient to a satisfactory condition.

The induction of the anesthesia should be brought about by the most pleasant possible means. The writer generally finds this to be nitrous oxide in adults and ethyl chloride in children. The aim is to avoid suffocation and eliminate the stage of excitement. Restraint should not be used, unless absolutely necessary, as it only causes more vigorous resistance. Once established, the narcosis should be as even as possible and just deep enough to produce muscular relaxation. Alvin Powell found in a long series of cases that with imperfect relaxation patients showed more irritation of the kidneys than when they were anesthetized longer and more deeply. On the other hand, excessively deep anesthesia was followed by more albumin and casts. Imperfect muscular relaxation leads to the production of a large amount of acid products because of the unconscious struggle of the patient in his efforts to resist the surgical trauma. It is important that the patient be kept warm during the operation, as Boothby has shown that there is a great loss of vital heat at this time which tends to shock and acidosis.

It may be said that with properly given anesthesia, cases frequently end in recovery without vomiting. This is true, but patients often vomit severely and persistently after skillful anesthesia of brief duration. The most striking evidence of the role than an acidintoxication plays in postanesthetic vomiting, and the efficiency of prophylactic treatment, is seen in patients who have had several anesthetics followed by severe vomiting, but none at all when thus protected. Some patients are more susceptible than others. The nervous and badly frightened children, the exhausted, the starved, the shocked, the severely injured, the infected (Crile) are especially prone to it. Persons with dilated and displaced stomachs, gallbladder disease, intestinal obstruction and all others with preexisting vomiting are apt to have this complication. In all such cases lavage with bicarbonate solution should be practised before the patient is removed from the operating table.

When the patient is returned to the warm bed, he should have a pillow unless shock treatment is required. The room should be quiet, darkened, and well ventilated. A retentive enema of one pint of a five per cent. solution of lactose and sodium bicarbonate two per cent. is given at once. Eight ounce retentives of the same solution are given at three to four hour intervals. Quinine muriate in ten grain doses added to the first four of the enemas, prevents backache and gas pains. If preferred, the solution may be given by the drip method.

In cases of severe infection, Hogan recommends a five per cent. solution of anhydrous dextrose by the drip method, adding, "I have found the rectal or intravenous injection of sterile hypertonic anhydrous dextrose solutions—up to eighteen per cent.—to produce most spectacular results in anuria, ileus, coma, persistent vomiting, and glaucoma."

As soon as the patient can take liquids by mouth, sips of the sodium or calcium bicarbonate water should be given. Fruit juices with sugar added, forming a "fruitade," make them more grateful to the patient. The sugar furnishes the additional carbohydrate needed, while the fruit acids are oxidized to bases constituting a further feeding of alkali. Later, carbohydrate feeding may be increased by use of malted milk, cereal gruels, then fruit albumin and peptonoids.

Pain and restlessness are relieved by the use of the bromides, chloretone, and veronal. When vomiting does occur, vigorous sugar alkali treatment should be pushed, and lavage with the alkaline solution practised, if necessary. Sodium bromide or chloretone given per rectum is helpful.

A powder, of cocaine one fortieth grain, menthol one tenth grain, tincture of nux vomica one minim, bismuth subnitrate one grain, and cerium oxalate two grains gives relief in some severe cases.

Some who have tried this treatment have reported that it did not give the results which its advocates have stated. I believe this is because they have not fully followed out the really simple details of the technic as given above. I am sure this was so in a number of the cases which I have observed.

One of the first reports which the writer heard on the use of the alkali sugar treatment covering a large number of cases, was from Buckler, of Baltimore, in his paper read before the American Association of Anesthetists at Atlantic City, in June, 1914. Working with Stickney of the Woman's Hospital he reported their results as "astounding." "There were no cases of severe vomiting and many with absolutely none."

Doctor Buchanan in a private communication to me, reports over five hundred cases treated with the sugar alkali method. His conclusion is "that there has been a decided improvement in the recovery of my cases since I have instituted these methods."

Dr. James J. Hogan says of this treatment: "So prepared, patients recover rapidly from the effects of their anesthesia. They are without headache, absence of brain edema; vomit little or none at all; absence of edema of the medulla; they urinate an hour or two after operation; absence of kidney edema and early presence of free water; the urine is practically free from albumin, casts and excess ammonia. Moreover, the traumatized tissues at the seat of the operation swell less and are less painful, owing also to decreased edema."

The writer has followed this treatment, wherever possible, for the past two years and has been much pleased with the results. In a long series of operations on the head and mouth, in which he had charge of both preparatory and aftertreatment, the effect has been most gratifying. There were no cases of severe vomiting such as are often seen in these patients; in most of them none after they were conscious, and in many none at any time.

In the larger group of general surgical cases, where the method was used more or less perfectly by the operator, there have not been any reports of severe vomiting, while the majority have had little or none.

I believe that the technic here outlined, conscientiously carried out, will do much to increase the safety and comfort of the surgical patient and add to the reputation of the surgeon.

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856 PARK PLACE, BROOKLYN.

#### A CASE OF ADDISON'S DISEASE.

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Through the courtesy of Dr. William Egbert Robertson, chief of the medical department of the Samaritan Hospital, we are enabled to present a true and well marked case of Addison's disease, first seen by Dr. A. C. Menger, the patient's family physician, who referred the case to the hospital for further study and treatment.

The patient, a white man, first seen at home, in bed, appeared fairly comfortable, of average intelligence and good physique. We were struck by the man's color contrasted with the white covering of the pillow on which his head rested. The asthenia was marked, the patient being exhausted in answering the few questions asked as a routine before conveying persons to the institution in the ambulance. The following history was obtained:

CASE. Mr. R. R., married, fifty-one years of age, native of Austria, white, a polisher of roller bearings by occupation, admitted complaining of weakness, pain in left loin, feeling of epigastric discomfort, nausea, and anorexia. The family history indicated nothing definite. The father always coughed, died at sixty-seven years of age, having been thrown from a horse. The mother died at sixty-eight years, presumably of cardiac disease. One sister died at twenty-three years of pneumonia; one brother living and well. No collateral history of importance. In the past personal history there was little to be noted. Was born in Italy of Austrian parentage and taken to Austria in early infancy; had measles and chicken pox, otherwise always well; married at twenty-six years. No venereal disease at any time.

From the patient's statement it appeared that he dated the onset of his present illness July, 1915, about which time he had a good deal of worry and anxiety occasioned through being annoyed by his employer, a woman in ill health and of uncertain temper, who required of the patient impossible tasks.

About nine months ago, after leaving the situation where he was employed as a houseman, the patient took a position as a polisher of roller bearings. About this time he noted that he could not eat the same quantity of food or with the same relish as heretofore, and did not work with the same vigor as in the past. It took more effort to accomplish the same amount of work. On April 27th he worked in a draft which caused him the next morning to have pain across the lumbar region; went to bed and called physician. The patient never had any bronchial trouble or cough, and until the onset of this condition the digestive system had always been good.



The patient observed about eight months ago that his skin was growing dark, but attributed this to the presence of grease and metallic dust in the atmosphere of the workroom. Complained of shortness of breath at night; was very weak, emaciated, and markedly asthenic; easily tired by conversation; vomited at intervals, regardless of taking food, though the ingestion of edibles was followed by prompt and sudden regurgitation of the ingesta. The nausea was not marked.

Physical examination showed a poorly nourished, emaciated, and asthenic white male about fifty-one years old, whose head was symmetrical, scalp in good condition, hair gray black and plentiful. Ears normal, hearing average. Face was dark brown (bronzed), lips cyanotic, expression listless and weak. Eyes sunken, pupils reacting normally to light and accommodation, conjunctivæ pale; brownish pigmentation on lower lid. Mouth had only two molars, the canines and two incisor teeth; no teeth in lower jaw. Slight inflammation of the gum; mucous membranes of the buccal cavity, the tongue, which was dry and slightly coated, and gums showed areas of brown pigmentation. Throat injected.

Glands in both axillary regions enlarged; small posterior cervical on the right side. Skin pigmented but showed scattered areas in which the bronzing was more marked, these especially noticeable around the forehead, neck, over the shoulders, around the waist, and below both knees. Muscles fairly well developed, poor tone. Bones and joint normal. Chest was long, emphysematous, and had an acute angle, scattered rales all over the chest, particularly at the right apex. There was an area of dullness, decreased tactile and vocal fremitus with distant breath sounds at the right base and some fullness on the lower right side of the chest.

Apex beat one inch outside the nipple line; heart dullness one inch to the right of the right margin of the sternum and one inch to the left of the left midclavicular line. There was also an area of dullness in the first and second interspaces, extending from one half inch to the right of the right margin of the sternum to two inches to the left of the left margin of the sternum. First sound was weak, second sound relatively accentuated. Vessels fibrosed, pulse small volume, rapid, weak; very low tension and equal on both sides. Blood pressure 80 and 70.

Abdomen scaphoid, rigidity present over right hypochondriac and right iliac regions; no pain or tenderness. Liver came down to one finger's breadth below the costal margin and began at the sixth interspace. Stomach, lower border one inch above umbilical line. Kidneys and spleen not palpable. Finger nails cyanotic. Lower extremities presented no edema. The crests of the tibia, especially the left, were saw edged; tenderness along the nerves of legs; patellar reflexes gone; no Babinski or ankle clonus. Meatus was inflamed.

Temperature 96.2° F.; was never above 97° and once so low as to preclude reading with the ordinary clinical thermometer. Pulse 92. Respirations 24 a minute.

Urine light amber, specific gravity 10.22, acid, sediment flocculent, albumin a trace, negative for sugar, urea 21.7 grams a litre, occasional squamous and pus cells; showers of hyaline and granular casts. Indican, large trace. Bile, diazo and urochromogen were negative.

The blood showed a red count of 4,640,000, whites 11,800, hemoglobin seventy-five per cent., cyanotic and difficult to obtain. A differential count could not be made. Sputum contained many pus cells and micrococci, but no tubercle bacilli. The Wassermann and Noguchi reactions on the blood were negative. The Moro reaction was tried, but the patient died about twenty-four hours after admission and it indicated nothing; in fact, had he survived we doubt if a positive reaction would have been obtained because of his low resistance and marked general asthenia.

The usual routine admission treatment was given and stimulation begun. It was our purpose to have given by mouth the desiccated adrenal gland coincident with intravenous injections of epinephrin in saline solution, as we have found that drugs given intravenously act more promptly and give as good, if not better, clinical results than when administered by mouth. The patient, however, was seen so late

that we were unable to carry out the plans we had formulated, as he passed away very suddenly on the evening following admission. We may be permitted to doubt if treatment would have availed at this stage.

The post mortem findings are given here, and it was found that the tubercle bacillus was the offender.

The post mortem examination of R. R.—clinical diagnosis Addison's disease—shows a middle aged, white male, emaciation marked. Bronzing of face and neck marked, pigmented areas scattered over face, neck, thorax, abdomen, and extremities. Not much subcuticular fat. Nipples markedly pigmented. Muscles of chest wall quite red. Left lung apparently free from adhesions, except at apex, running posteriorly—no free fluid. Lung crepitates throughout, congested, and red; moderate amount of pigmentation; at apex several indurated areas extend into lung about 0.5 c. c.; much congestion in lower lobe. Section shows lung markedly congested.

Right lung presents adhesions to anterior and lateral chest walls which do not run posteriorly. Very dense adhesions at apex; seems to be bound down to pericardium; fibrinous exudate over surface. Lower lobe; moderate congestion, crepitates; at apex, torn in removing, is a hard, indurated mass, size of a walnut, microscopic section through this shows several calcified tubercles.

Small amount of fat over pericardium; small amount of fluid; heart larger than normal in size, extremely flabby, and has a large amount of fat.

Aorta normal; no clots; aortic valves normal. Abdomen distended. Liver slightly increased in size; fair consistence, few adhesions over superior surface; on section liver is dark and friable; markedly pigmented, moderate parenchymatous and some fatty degeneration.

Gallbladder enlarged, adherent, and distended. Greater omentum extends down to left iliac region; dense adhesions are present on the right. No free fluid in the abdomen. Spleen is normal in size, flabby, and on section the substance oozes; no tubercles. Stomach dilated and extends to left diaphragm; is filled with a large quantity of brownish colored fluid. Pigmentation of mucous membrane of stomach, slate gray in color; part of mucous membrane dotted with grayish white plaques.

Pancreas normal in size and consistence, head a little harder than normal, though normal on section. No palpable mesenteric glands.

Left kidney normal in size and consistence. Capsule strips with moderate ease. Kidney pale, cortex increased in size; on section pyramids stand out prominently. Section of left adrenal shows a hard indurated area at lower pole of adrenal, also some creamy pus. Gland is enlarged and fibrous in nature. Right kidney rather long and narrow, capsule strips easily; cortex enlarged and pyramids stand out prominently. No masses in pelvis. Apparently no pus in right adrenal, on section no caseated mass, but nodular areas present. Both kidneys show moderate parenchymatous degeneration. Section of the adrenals shows tuberculous caseation necrosis.

3302 NORTH BROAD STREET.



## INFLUENZA VS. TUBERCULOSIS.

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During the summer influenza is frequently complicated by disorders of the digestive and nervous systems, as witness the infantile paralysis (1) and gastrointestinal complications of the gripe of last summer; while during the winter, late fall, and early spring its most common complications are diseases of the respiratory organs. These latter often present great difficulties in etiology, diagnosis, and treatment, more especially when they become chronic, although even in their acute stage some of them may tax to the utmost the resources of the most astute diagnostician, as the following interesting case may illustrate:

CASE I. Last winter I was called to treat a man forty-five years old, a painter of Manhattan, who gave the following history: Two weeks previously he contracted a cold which was accompanied by some elevation of temperature and an enlargement of some of his cervical and axillary glands on the right side. He applied for treatment to a local dispensary, and was referred to a well known hospital in the same neighborhood, where his case was diagnosed as Hodgkin's disease, for which nothing could be done.

I found him with a temperature of 101.5° F., pulse 100, and respirations twenty-six, irregular bowel movements, scanty, high colored, and very acid urine, which showed an excess of urates, but no albumin or casts. He was poorly nourished, very nervous, and complained of extreme distress from insomnia. He had a slight cough and his physical examination revealed some dullness and diminished breathing over his right lower lobe posteriorly, but no rales. Neither then nor at any subsequent time was there any further enlargement of his glands. Under treatment with laxatives, nerve sedatives, and alkaline diuretics he improved markedly within a few days; his temperature came down to normal, the restlessness subsided, he slept better, and seemed to be on the high road to recovery, when all of a sudden his temperature rose to 103° F. and assumed a hectic character, his cough and physical signs became more pronounced, and the general condition much aggravated. I told his relatives that, although some of the symptoms simulated tuberculous pneumonia, I suspected an empyema and suggested an exploratory puncture, but they insisted on his being taken to a hospital.

About a week later his wife came to my office to complain against the hospital physicians for transferring her husband to a tuberculous ward. I communicated with the physician in charge and was told that some tubercle bacilli were found in the sputum of the patient, but he insisted that his sputum was not even collected, and therefore could not have been examined. I had him taken home at once and sent the sputum for examination to the board of health and also to the National Pathological Laboratory. All reports were negative as to tubercle bacilli in these and subsequent examinations, but from the National Pathological Laboratory numerous streptococci were reported present.

During the following three weeks his condition fluctuated markedly; his physical signs would clear up and the temperature come down to normal with considerable improvement in his general condition, only to be followed by a sudden relapse with high hectic fever, severe cough, and physical signs of consolidation at the base of his right or left lung, which in turn would resolve and disappear within a few days.

I finally came to the conclusion that I had to deal with a case of influenza, with repeatedly recurring pyemic temperature accompanying the development of localized pneumonic patches, which presented some features of metastatic abscesses. Repeated attempts to place him in a hospital failed, the admitting physicians insist-

ing on a diagnosis of pulmonary tuberculosis, and it was with great difficulty that I finally succeeded in having him admitted to the New York German Hospital. He was suffering at the time from one of his relapses, and his cachectic appearance, together with the hectic fever and the history of the case, strongly suggested a tuberculous origin of his fresh pneumonic process, but close observation and a thorough bacteriological study of the case enabled the attending physicians to rule out tuberculosis. On the other hand, the fact that numerous colonies of streptococci were found in cultures of his blood tended to confirm my diagnosis of influenza, the causative agent of which I believe to be streptococci and not Pfeiffer bacilli (2). This theory of the streptococcic origin of gripe is supported by recent investigations of Doctor Moody, of Chicago.

But the greatest difficulties in etiology, diagnosis, and treatment are encountered, as I observed before, in the chronic cases with a dry paroxysmal cough recurring for months or even years after even slight exposures, and accompanied at times by hemoptysis or attacks of asthma, leading possibly to bronchiectasis, putrid bronchitis, pulmonary abscess, and during some acute exacerbations also to pneumonia or empyema.

Although the gross lesions of some of these respiratory complications of influenza may be recognized by their physical signs, their etiology is frequently misunderstood, cases accompanied by hemoptysis or pleurisy being especially apt to be mistaken for pulmonary tuberculosis. In fact, many physicians to this day believe almost all pleurisies to be of tuberculous origin.

The following cases, which I selected from among many others similar to them, may serve as illustrations:

CASE II. L. H., a young girl of about twenty-two years and previously in perfect health had an attack of the gripe in the fall of 1912, accompanied by a dry paroxysmal cough which, although yielding to treatment after a time, continued recurring after every exposure. Subsequently these attacks became accompanied by hemoptysis, but at no time could any tubercle bacilli be found in her sputum, nor were there physical signs of any pathological process in the lungs until the winter of 1914, when with an unusually severe attack she manifested a temperature of 102° F., quite profuse hemoptysis, and dullness with diminution of breathing over her right lower lobe posteriorly. Although greatly puzzled by this case, I did not consider it to be one of pulmonary tuberculosis; but a prominent internist, who was now consulted by the patient, made a diagnosis of galloping phthisis and gave the gravest prognosis. A few days later, however, the patient began to cough up pus, and this effective drainage of her pulmonary abscess—for that is what it proved to be—brought about her rapid recovery. A few months spent in the country during the following spring and summer caused her to regain her health and the lost weight, but she is still subject to recurrent attacks of a dry cough with some hemoptysis.

CASE III. L. B., a married woman aged forty-five years has been suffering for the past fifteen years from repeated "colds" accompanied by severe cough, and hemoptysis. The latter, only slight at first, became more profuse during the last four or five years, her attacks also becoming more frequent and severe, and accompanied by symptoms of emphysema, asthma, and chronic bronchitis, and also by some loss of weight; but tubercle bacilli are absent in her sputum.

Professor Zinsser, of the College of Physicians and Surgeons of Columbia University, was kind enough to take an interest at my request in Cases

II and III. He had these patients come to his bacteriological laboratory, where a complement fixation test was applied, I believe, by Doctor Miller, who, together with Professor Zinsser, has done a great deal of important work on that subject. The test was negative in both cases, showing the absence of any active tuberculous process.

CASE IV.—P., a Bronx butcher, forty years old, contracted an attack of gripe in the fall of 1914, accompanied by a sharp pain in his left infrascapular region and some elevation of temperature. There were no physical signs on which his physician could base a definite diagnosis, but the pain and temperature persisted for a couple of weeks, until finally, after a severe fit of coughing followed by vomiting, he brought up a large amount of fetid pus. He continued coughing up pus during the following few weeks, gradually regaining his health, which was interrupted by recurring attacks of cough with some hemoptysis. Last spring he had a severe attack, accompanied by high fever and by symptoms of what his physician diagnosed as pneumonia. He was removed to Lebanon Hospital, where in a few days his temperature came down to normal and his condition improved to such an extent that he was permitted to leave the bed and was promised his immediate discharge, when—as so often happens in influenza—there was a sudden relapse accompanied by a violent rise of temperature. Within a few days his temperature came down, although it remained above normal, and he complained of a sharp pain in his left infrascapular region. Repeated exploratory punctures failed to reveal any pleural exudate (for two weeks) until one day, two weeks later, pus was found by the exploring needle. A rib was then resected and effective drainage established, after which he rapidly recovered, although up to the present he is still suffering from repeated attacks of cough with slight hemoptysis after exposures. His sputum on repeated examinations showed absence of tubercle bacilli.

CASE V. E., fifty years old, has been suffering for over eight years from frequent attacks of asthma, with severe dyspnea and cough, accompanied by hemoptysis. His sputum was always negative, but physical examinations disclosed some dullness over his right apex with diminished respiration and crepitant rales. These signs made a very prominent pathologist diagnose the case as pulmonary tuberculosis four years ago, and three years ago an internist predicted his speedy death. Despite all that, however, the patient held his own very well and under better hygienic surroundings improved markedly and regained some of his lost weight, while the attacks, although not ceasing altogether, became much less frequent and severe.

CASE VI. A., a butcher of fifty-four years, contracted a "cold" last winter and manifested a severe paroxysmal cough with profuse fetid expectoration and a moderate remitting temperature. His sputum showed many streptococci, but no tubercle bacilli, and there were no physical signs to support the tentative diagnosis of pulmonary abscess; its central location was therefore suspected. In the course of a few months his attacks became more severe and were accompanied by more or less profuse hemoptysis. This was relieved by complete rest in bed combined with opiates; but when subsequently the patient, disregarding my repeated warnings, overexerted himself, a severe and rapidly fatal hemorrhage followed.

CASE VII. Mrs. E., the wife of a dentist, about twenty-three years old, had an attack of gripe in the winter of 1913, accompanied by a dry cough with some pain in her left side and dyspnea. When I saw her a few days later I found absence of the respiratory murmur with complete flatness over the lower half of her left chest and made a diagnosis of pleurisy with effusion, which I believed to be serofibrinous, in view of the comparative mildness of her general symptoms, including the temperature. As the chest was filling up rapidly, and the dyspnea became more marked, I advised immediate aspiration, and her nervous parents called in a specialist to do it. The latter removed a large quantity of fluid, and made a positive diagnosis of tuberculous pleurisy, predicting a refilling of the chest within a few days, which would necessitate repeated aspirations; he therefore advised her removed to a hospital. I however insisted on my former diagnosis of serofibrinous pleurisy complicating influenza, which was also

corroborated by the subsequent course of events, as the patient made a perfect recovery and has remained in good health ever since. The fluid still left in the pleural cavity after the incomplete aspiration was gradually absorbed, and there was no subsequent refilling of the chest.

During epidemics of gripe I have frequently observed certain of its forms, which I have not seen mentioned in medical literature. I refer to the latent, subacute, or chronic gripe. These forms may occur independently of any acute attacks, they may follow such attacks during the periods of apparent convalescence, or they may bridge over the periods intervening between the repeatedly recurring acute attacks.

The most pronounced feature of these forms of gripe is the accompanying asthenia with no apparent cause to account for it. These patients complain of extreme weakness; they can hardly drag themselves about and prefer lying down most of the time, every exertion throwing them into a profuse perspiration, and causing a feeling of utter exhaustion, so that at times they are "ready to drop dead," as they graphically express it.

This asthenia is usually accompanied by loss of appetite, sometimes amounting to complete aversion to food, and by extreme sensitiveness to changes of temperature. These patients feel best in a warm room, and the most effective means for the prevention of acute exacerbations and of severe complications to which their weakened resistance predisposes them is plenty of rest in a moderately warm room, at a temperature of about 70° F., and with adequate ventilation arranged in such a way as to prevent the patient from coming in contact with currents of cold outside air before it is warmed to the temperature of the room; he must therefore not be permitted to be near open windows. The popular slogan of "wide open windows in gripe," which is interpreted as meaning that it is beneficial for gripe patients to lounge around and sleep near open windows, has been the cause of many cases of pneumonia and other complications. For, although the benefit of open air treatment is well established in pulmonary tuberculosis and some other conditions, gripe is the disease most adversely affected by exposure; this is a fact that cannot be emphasized too strongly for the benefit of the afflicted. These forms of gripe have usually a rather protracted course, are frequently accompanied by some loss of weight, and, when complicated, as they sometimes are, by acute exacerbations with a more or less severe cough accompanied by some hemoptysis, or with resulting pneumonia or pleurisy, are very apt to be mistaken for pulmonary tuberculosis.

There also seems to be some analogy between the more or less sudden lighting up of acute processes in previously quiescent cases of pulmonary tuberculosis, and the frequent recurrence of acute respiratory diseases with these forms of latent or chronic gripe.

In pulmonary tuberculosis these relapses are explained by the liberation of tubercle bacilli from encapsulated quiescent lesions through the breaking down of their fibrous capsule. Whether such acute relapses, occurring with these forms of gripe, can be similarly explained by the liberation of previously encapsulated streptococci remains to be seen.



Be that as it may, the fact remains that, because of our failure to recognize their influenzal origin, many of these chronic respiratory complications of gripe cannot be made to fit into any of our classifications previously established, and therefore cannot be diagnosed. On the other hand, some of them, and more especially those accompanied by hemoptysis, pleurisy, etc., often present symptoms simulating pulmonary tuberculosis and are frequently mistaken for that disease.

That is how some of these patients sometimes find their way into tuberculous institutions, despite the very wise ruling that limits admission to tuberculous wards only to patients with tuberculous sputum, whereas in the sputum of these influenza cases tubercle bacilli are invariably absent.

These mistakes are of course made in perfect good faith; for the fact that tuberculous patients may for some time show no tubercle bacilli in their sputum is well established, and some physicians, after making what appears to them to be a positive diagnosis of pulmonary tuberculosis, admit such cases to tuberculous wards either without any preliminary sputum examination—as happened to my case—or even after an examination of the sputum fails to show the presence of any tubercle bacilli.

In view of this there seems to be urgent need of a thorough reexamination of all those patients in tuberculous institutions whose sputum fails to show the presence of tubercle bacilli, because, if even a few cases of what I would call pulmonary influenza are discovered and removed from such surroundings, our labor would be rewarded, for contact with cases of active pulmonary tuberculosis at the time when their own resistance is at its lowest exposes these influenzal cases to the grave danger of really contracting that disease.

#### CONCLUSIONS.

Many respiratory diseases following gripe are not correctly diagnosed because of our failure so far to recognize the origin of such disorders.

Some of these cases, especially when accompanied by hemoptysis, pleurisy, etc., are frequently mistaken for pulmonary tuberculosis, often to the detriment of the patient.

Failure to recognize and properly treat latent gripe exposes the patient to the danger of serious complications through unguarded exposures, etc. The triad of extreme asthenia with no apparent cause to explain it, anorexia, and unusual sensitiveness to changes of temperature, occurring during an epidemic of gripe, in the absence of neurasthenia or any febrile disorder, is quite pathognomonic of latent gripe.

Rest and avoidance of exposure are among the most effective means at our command for the prevention of severe relapses and dangerous complications in gripe. They must be enforced not only during the height of an acute attack, but also during the period of convalescence, as well as in latent, subacute and chronic gripe. In this way many of the chronic respiratory diseases following gripe could also be prevented.

For the treatment of such chronic respiratory diseases of gripe, besides all available measures for the building up of the general health—which would

include improved hygienic surroundings, such as residence in the country, removal from all sources of worry, etc.—autogenous vaccines should also be employed, taking all the necessary precautions to guard against any possible dangers from anaphylactic reactions.

#### REFERENCES.

1. FRANKEL: Enteritis, Infantile Paralysis, and Influenza, *NEW YORK MEDICAL JOURNAL*, December 2, 1916.
2. MOODY: Bacteriology of Gripe, *Journal A. M. A.*, November 4, 1916.

1234 MADISON AVENUE.

### HUNTINGTON'S CHOREA.\*

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The exact explanation of Huntington's chorea is still a question. Neither the etiology nor the pathology of the disease is known, and the definition of the disease as an "hereditary chorea" is now the same as first given by Huntington. From the clinical standpoint, it appears that though the essential feature of the disease is the choreiform movements, still it may exist in the so called *forme fruste* where the choreiform movements are not present. As a matter of fact, there are two essential points which form the picture of a developed case: the choreiform movements and the dementia, the latter appearing as a late manifestation. Practically all the cases reported—of long standing—showed these conditions. Still it is known at present, that the *forme fruste* may show dementia without choreiform movements. This will explain somewhat how the disease appears in a patient who gives a negative family history. The mental instability, due to degenerative changes in the brain, existed in the parent, but developed further in the child, so that in the latter the choreiform movements appeared. Therefore, wherever heredity is a dubious factor, we probably deal with an undeveloped form in the parent.

The movements in Huntington's disease are dissociated. Dr. Ramsay Hunt, in discussing our case, pointed out the difference between associated movements, like walking, and dissociated movements, as in Huntington's chorea. He expressed the opinion that we dealt with a lesion not in the cortex.

Our patient and his family history were important for many reasons, as we found the *forme fruste* in some members of the family, and the developed form in other members.

CASE. Our patient was a man fifty-eight years of age, Russian Jew, by occupation a tailor. He had an attack of typhoid fever at the age of twenty years, and various attacks of articular rheumatism, but no other diseases. He denied venereals. He was married and had five children. His father died at the age of ninety-two years. He suffered for many years from dementia. His mother died at the age of forty years, cause unknown. He had one brother and three sisters. His brother died at the age of forty years, suffering from Huntington's disease and dementia. One sister was in an insane asylum suffering from the disease and dementia. She was thirty years old when the disease developed. Another sister was demented, but had no chorea. One sister was well. Of his own children, the oldest daughter at the age of thirty years had nervousness and showed some signs of Huntington's disease. The youngest child, seventeen years old, was nervous, and one boy of twenty years was not very strong.

\*Read at a clinical conference of the Neurological Institute.



His illness started ten months before I saw him. He had pain in the shoulders, and thought that it was another attack of rheumatism. The pain gradually disappeared and in its place a slight, jerky, and involuntary motion of his hands appeared. These involuntary jerks extended to his legs, and the muscles of the face were at times twitching. When he walked his body seemed to wriggle, and at times his arms are thrown around as if he was gesticulating. He complained of pain in the back, lumbar region, and shoulders. He was unable to sleep, as sudden jerks awoke him. Did not attend to his work, on account of his condition. His mental condition was unchanged.

The physical examination was entirely negative, except for a slight double exophthalmos. When inspecting the patient, the dissociated movements could be seen and demonstrated, and their character differentiated from the associated movements.

Recapitulating, therefore, the findings in our case, we saw that our patient presented the developed form of the disease. His father presented the *forme fruste*. Two of his sisters and two of his own children also showed the latter. One brother, one sister, and his daughter, on the other hand, showed the developed form of the disease as he did.

The descendants from his father, not including our patient's grandchildren, were sixteen in number. Of these sixteen, eight were suffering from the disease, four from the developed form; and four from *forme fruste*. Eight members of the family are well.

Regarding the age, the father of our patient contracted the dementia at about the age of eighty years, our patient had the disease at the age of fifty-eight years, his brother at the age of forty, one sister at thirty, and his own daughter at thirty years.

The prognosis in Huntington's disease is unfavorable and the results of treatment are not encouraging.

952 FOX STREET.

## MERCURIALIZED SERUM AND BICHLORIDE OF MERCURY.\*

*Their Comparative Toxicity when Injected Intramuscularly, Intravenously, and Intraspinaly; With Some Clinical Results from Intramuscular Injection,*

By PAUL S. PITTENGER, PH. G., PH. C., PHAR. D., Philadelphia.

Dr. C. M. Byrnes, in his paper, The Intradural Administration of Mercurialized Serum in the Treatment of Cerebrospinal Syphilis, *Journal A. M. A.*, for December 19, 1914, page 2182, brings out the fact that bichloride of mercury when added to normal serum combines with the albumin of the serum and throws down a precipitate of albuminate of mercury which is soluble in an excess of serum. He recommends mercurialized serum prepared in this manner in the treatment of cerebrospinal syphilis with the statement that it can be injected directly into the spinal canal without danger of precipitating the albumins of the spinal fluid.

Dr. Loyd Thompson, in his paper, The Intravenous Injection of Mercurialized Serum in Syphilis, *Journal A. M. A.*, for May 1, 1915, page 1471, recommends mercurialized serum in the treatment of

systemic syphilis with the statement that it can be injected intravenously without the pain and phlebitis which follow the use of plain bichloride of mercury. These statements prompted me to carry out a series of experiments in order to determine the toxicity of mercurialized serum compared with that of a corresponding amount of plain bichloride of mercury. I was particularly interested in determining this factor because very often preparations of various kinds are advertised and recommended to the medical profession chiefly because they are *less toxic* than similar preparations already upon the market.

With a very large proportion of these preparations, however, laboratory experiments and clinical results show that although they are less toxic they are also less active. In other words, when we reduce the toxicity of such drugs as digitalis, strophanthus, aconite, squills, etc., we also reduce their efficiency, because the therapeutic value of these drugs is in direct proportion to their toxicity. The same is no doubt true of mercury bichloride. It is very important to know, therefore, whether or not the addition of an excess of serum to bichloride reduces its toxicity or merely satisfies its albumin combining power, thereby depriving it of the property of destroying tissue by precipitating and then dissolving the albumin of the tissue, without changing its toxicity or therapeutic efficiency. It is not the object of this paper to compare the therapeutic efficiency of mercurialized serum with that of saline solutions of mercuric chloride or other preparations of mercury which have been suggested for similar purposes.

In order to determine the relative toxicity of mercurialized serum and plain bichloride of mercury, the following experiments were carried out on dogs.

### INTRAMUSCULAR AND SUBCUTANEOUS INJECTIONS.

All the intramuscular injections were made deep into the gluteal muscle. In the cases where the amount of solution was of necessity too voluminous to be entirely injected into the muscle, two or three injections of from six to eight c. c. each were given into the muscle and the remainder of the solution was administered subcutaneously in the abdominal region.

### BICHLORIDE OF MERCURY

TABLE I.

0.001 gram HgCl <sub>2</sub> per kilo.	
Monday	4:00 p. m. Injected dog 1, weight 13.5 kilos.
Monday	4:10 p. m. Increased respiration. Salivation.
Monday	4:15 p. m. Very restless. Continually kicking injected leg. Injection evidently causing pain.
Monday	4:20 p. m. Very restless. Continually kicking injected leg. Injection evidently causing pain.
Monday	4:30 p. m. Respiration normal. Lying down, but still restless.
Monday	6:00 p. m. Ate heartily.
Tuesday	8:30 a. m. Less pain at site of injection. Eats heartily.
Wednesday	8:30 a. m. Apparently O. K. No pain at site of injection.
Thursday	9:00 a. m. Apparently O. K. No pain at site of injection.
Friday	8:15 a. m. Apparently O. K. No pain at site of injection.
Saturday	9:00 a. m. Apparently O. K. No pain at site of injection.
Recovered.	

TABLE II.

0.002 gram HgCl <sub>2</sub> per kilo.	
Monday	3:15 p. m. Injected dog 2, weight 12.6 kilos.
Monday	3:20 p. m. Increased respiration, restless, salivation.
Monday	4:15 p. m. Increased respiration, restless, salivation. Limbs with pain in leg.
Monday	4:45 p. m. Respiration normal. Quiet. Lying down.

\*Read before the seventeenth annual meeting of the American Therapeutic Society, Detroit, June 9, 1916.

TABLE II (Continued).

	gram HgCl <sub>2</sub> per kilo.	
Monday	5:00 p. m.	Continually stretching and holding up leg, which is very sensitive to touch.
Tuesday	8:00 a. m.	Still holding up leg, evidently in pain.
Tuesday	6:00 p. m.	Accepts food.
Wednesday	8:00 a. m.	Leg still sensitive.
Thursday	9:00 a. m.	Leg still sensitive.
Friday	8:30 a. m.	Leg still sensitive.
Saturday	9:15 a. m.	Leg still sensitive.
Monday	8:00 a. m.	Leg not quite so sensitive.
Tuesday	1:00 a. m.	Leg not quite so sensitive.
Wednesday	8:30 a. m.	Leg no longer sensitive.
Thursday	8:30 a. m.	Leg no longer sensitive.

Recovered.

TABLE III.

	gram HgCl <sub>2</sub> per kilo.	
Thursday	4:45 p. m.	Injected dog 4, weight 10.6 kilos.
Tuesday	4:50 p. m.	Salivation, restless, limps with pain in leg.
Tuesday	6:00 p. m.	Refuses food.
Wednesday	8:15 a. m.	Continually stretching and holding up leg which is very sensitive to touch.
Monday	6:00 p. m.	Refuses food.
Thursday	8:30 a. m.	Leg still sensitive, accepts food.
Thursday	6:00 p. m.	Leg still sensitive, accepts food.
Friday	8:20 a. m.	Leg still sensitive, accepts food.
Saturday	9:10 a. m.	Leg not so sensitive, otherwise apparently O. K.
Monday	8:20 a. m.	Leg not so sensitive, otherwise apparently O. K.
Tuesday	9:10 a. m.	Leg no longer sensitive, otherwise apparently O. K.
Wednesday	8:00 a. m.	Apparently O. K.
Thursday	8:00 a. m.	Apparently O. K.
Friday	8:00 a. m.	Apparently O. K.
Saturday	8:00 a. m.	Apparently O. K.

Recovered.

TABLE IV.

	gram HgCl <sub>2</sub> per kilo.	
Thursday	4:50 p. m.	Injected dog 4, weight 8.6 kilos.
Wednesday	4:50 p. m.	Salivation, restless, limps with pain in leg.
Wednesday	5:00 p. m.	Continually stretching and holding up leg.
Wednesday	4:10 p. m.	Licking leg and whining.
Thursday	8:00 a. m.	Stretching and holding up leg. Very sensitive to touch.
Friday	9:15 a. m.	Leg still very sensitive. Accepts meat, but refuses biscuits and broth.
Saturday	8:10 a. m.	Leg still very sensitive.
Monday	9:05 a. m.	Leg not so sensitive.
Tuesday	8:15 a. m.	Leg not so sensitive.
Wednesday	1:00 a. m.	Leg no longer sensitive.
Thursday	8:00 a. m.	Leg no longer sensitive.
Friday	9:10 a. m.	Leg no longer sensitive.
Saturday	8:10 a. m.	Leg no longer sensitive.

Recovered.

TABLE V.

	gram HgCl <sub>2</sub> per kilo.	
Thursday	11:00 a. m.	Injected dog 5, weight 14 kilos.
Thursday	11:10 a. m.	Salivation.
Thursday	11:15 a. m.	Restless, increased respiration.
Thursday	11:20 a. m.	Holds up and stretches leg, apparently in pain.
Thursday	4:50 p. m.	Leg very sensitive to touch.
Thursday	6:00 p. m.	Ate heartily.
Friday	8:00 a. m.	Leg still very sensitive.
Saturday	8:30 a. m.	Leg still very sensitive.
Monday	8:00 a. m.	Leg still very sensitive.
Tuesday	8:00 a. m.	Leg not so sensitive.
Wednesday	9:10 a. m.	Leg no longer sensitive.
Thursday	9:15 a. m.	Leg no longer sensitive.
Friday	8:20 a. m.	Apparently O. K.
Saturday	8:30 a. m.	Apparently O. K.

Recovered.

TABLE VI.

	gram HgCl <sub>2</sub> per kilo.	
Tuesday	11:20 a. m.	Injected dog 6, weight 7.7 kilos.
Tuesday	11:30 a. m.	Increased respiration, salivation.
Tuesday	11:45 a. m.	Stretches leg with pain.
Tuesday	12:00 p. m.	Restless.
Tuesday	4:30 p. m.	Leg very sensitive to touch.
Tuesday	6:00 p. m.	Accepts food.
Wednesday	8:00 a. m.	Leg still very sensitive to touch.
Thursday	8:00 a. m.	Leg still very sensitive to touch.
Friday	8:30 a. m.	Holds up leg most of time.
Saturday	10:10 a. m.	Leg still very sensitive.
Monday	8:30 a. m.	Leg still very sensitive.
Tuesday	9:10 a. m.	Leg still very sensitive.
Wednesday	8:15 a. m.	Leg still very sensitive.

After one week and a half leg still very sensitive and sloughing at site of injection. Otherwise O. K.

Recovered.

TABLE VII.

	gram HgCl <sub>2</sub> per kilo.	
Wednesday	11:00 a. m.	Injected dog 7, weight 13.6 kilos.
Wednesday	11:03 a. m.	Restless. Biting at leg. Salivation.
Wednesday	11:15 a. m.	Increased respiration.
Wednesday	11:30 a. m.	Very restless, showing signs of pain.
Thursday	8:00 a. m.	Refuses food. Several bloody stools.
Friday	8:00 a. m.	Holds up leg which is very sensitive to touch. Vomited.
Saturday	8:00 a. m.	Several bloody stools over night. Leg swollen and stiff.
Monday	8:00 a. m.	Refuses food. Several bloody stools.
Tuesday	8:15 a. m.	Accepts food. Several bloody stools.
Wednesday	9:10 a. m.	Apparently O. K., except sore leg.

After one week and a half leg still very sensitive and sloughing at site of injection. Otherwise apparently O. K.

Recovered.

TABLE VIII.

	gram HgCl <sub>2</sub> per kilo.	
Monday	11:28 a. m.	Injected dog 8, weight 10.7 kilos.
Monday	11:45 a. m.	Vomited.
Monday	11:45 a. m.	Retching, vomited.
Monday	11:50 a. m.	Increased respiration.
Monday	12:05 p. m.	Stretched full length on floor (mild spasm)
Tuesday	8:00 a. m.	Several bloody stools over night.
Tuesday	5:00 p. m.	Refuses food. Leg very sensitive to touch.
Wednesday	8:30 a. m.	Several bloody stools over night. Still lying full length on floor. Leg very sensitive.

Died.

TABLE IX.

	gram HgCl <sub>2</sub> per kilo.	
Tuesday	3:50 p. m.	Injected dog 9, weight 12.68 kilos.
Tuesday	4:00 p. m.	Very restless; marked increase in respiration.
Tuesday	4:05 p. m.	Stretching and rolling, apparently with pain.
Tuesday	4:15 p. m.	Biting at chain and gasping for breath.
Tuesday	4:25 p. m.	Continually whining from pain in leg.
Tuesday	5:00 p. m.	Tonic spasms.
Tuesday	5:00 p. m.	Still very restless. The pain seems not so intense. Small watery stool.
Tuesday	6:00 p. m.	Refuses food.
Wednesday	8:00 a. m.	Stretched full length on floor.
Wednesday	8:30 a. m.	Died.

The results of the foregoing experiments show that the minimum lethal dose of bichloride of mercury when injected intramuscularly in dogs is 0.015 gram per kilo body weight of animal.

It should also be noted that every injection of bichloride was followed by pain at the site of injection, the intensity and duration of which was proportionate to the amount of bichloride injected. The larger doses destroyed the tissues sufficiently to produce sloughing in one and a half to two weeks after the injection.

## MERCURIALIZED SERUM.

TABLE X.

	gram HgCl <sub>2</sub> per kilo.	
Monday	8:30 a. m.	Mercurialized serum representing 0.006 gram HgCl <sub>2</sub> per kilo.
Monday	8:40 a. m.	Injected dog 10, weight 12.2 kilos.
Monday	9:00 a. m.	Increased respiration.
Monday	9:00 a. m.	Respiration normal.
Monday	6:00 p. m.	Accepts food.
Tuesday	8:00 a. m.	Accepts food; no sensitiveness at site of injection.
Wednesday	8:30 a. m.	Accepts food; no sensitiveness at site of injection.
Thursday	9:15 a. m.	Apparently O. K.
Friday	8:10 a. m.	Apparently O. K.
Saturday	8:15 a. m.	Apparently O. K.
Monday	8:00 a. m.	Apparently O. K.

Recovered.

TABLE XI.

	gram HgCl <sub>2</sub> per kilo.	
Monday	11:50 a. m.	Mercurialized serum representing 0.008 gram HgCl <sub>2</sub> per kilo.
Monday	12:00 p. m.	Injected dog 11, weight 8.6 kilos. (34 c. c.)
Tuesday	8:00 a. m.	Increased respiration.
Tuesday	8:00 a. m.	No sensitiveness at site of injection.
Tuesday	8:00 a. m.	Refuses food.
Wednesday	9:00 a. m.	No sensitiveness at site of injection.
Thursday	10:00 a. m.	Accepts food.
Friday	9:15 a. m.	No sensitiveness at site of injection.
Friday	9:15 a. m.	Accepts food.
Saturday	9:00 a. m.	Apparently O. K.
Monday	10:00 a. m.	Apparently O. K.
Tuesday	8:30 a. m.	Apparently O. K.

Recovered.

TABLE XII.

	gram HgCl <sub>2</sub> per kilo.	
Monday	11:45 a. m.	Mercurialized serum representing 0.01 gram HgCl <sub>2</sub> per kilo.
Monday	12:15 a. m.	Injected dog 12, weight 7.24 kilos (36 c. c.)
Tuesday	10:00 a. m.	Quiet, increased respiration. Refuses food.
Wednesday	8:00 a. m.	No sensitiveness at site of injection.
Thursday	9:00 a. m.	No sensitiveness at site of injection.
Friday	10:30 a. m.	Accepts food.
Friday	10:30 a. m.	No sensitiveness at site of injection.
Saturday	9:00 a. m.	Accepts food.
Saturday	9:00 a. m.	No sensitiveness at site of injection.
Saturday	9:00 a. m.	Bloody stools.
Monday	8:30 a. m.	Blood streaked stools. Accepts food.
Tuesday	9:15 a. m.	Accepts food. Apparently O. K.
Wednesday	8:30 a. m.	Accepts food. Apparently O. K.

Recovered.

TABLE XIII.

	gram HgCl <sub>2</sub> per kilo.	
Tuesday	11:40 a. m.	Mercurialized serum representing 0.015 gram HgCl <sub>2</sub> per kilo.
Tuesday	12:00 p. m.	Injected dog 13, weight 7.7 kilos (57 c. c.)
Wednesday	8:00 a. m.	Vomited. Increased respiration.
Thursday	8:00 a. m.	No pain or sensitiveness at site of injection.
Friday	9:00 a. m.	Several stools over night. Vomited. No apparent pain at site of injection.
Friday	10:15 a. m.	Very sick. Not sensitive at site of injection. Refuses food.
Friday	10:15 a. m.	Died.

TABLE XIV.

Mercurialized serum representing 0.02 gram HgCl <sub>2</sub> per kilo.	
Saturday 11:35 a. m.	Injected dog 14, weight 5.4 kilos (54 c. c.)
Saturday 12:00 p. m.	Cries with pain. Tonic spasms.
Saturday 12:10 p. m.	Spasm subsided. Restless.
Sunday 8:30 a. m.	Died over night.

The foregoing results show that the minimum lethal dose of bichloride of mercury in the form of mercurialized serum when injected intramuscularly or subcutaneously in dogs, is exactly the same as that for the plain bichloride, namely, 0.015 gram per kilo body weight of animal.

It should be especially noted, however, that, although quantities of mercurialized serum as large as fifty-seven c. c. were injected into one animal, not a single dose produced pain or sensitiveness at the site of injection. This is a marked contrast to the results obtained with the plain bichloride, which in every experiment produced sensitiveness, pain, and in some cases sloughing.

The results tend to prove, therefore, that bichloride of mercury in the form of mercurialized serum, when injected intramuscularly or subcutaneously, is equally toxic and therefore as efficient therapeutically as plain bichloride of mercury, and that it possesses a great advantage over the latter in that its injections are entirely painless.

#### INTRAVENOUS INJECTIONS.

All intravenous injections were given with the Boehm 606 apparatus and were made up with normal saline solution to seventy-five c. c. and were of such strength that sixty c. c. of this solution contained the required dose for the animal to be injected. By this method the animal received the full dose, as none of the actual dose was lost in freeing the needle from air, etc., this being taken care of by the extra fifteen c. c. In every case the animal received *exactly sixty c. c.*, which contained the dose desired.

#### MERCURY BICHLORIDE.

TABLE XV.

0.00095 gram HgCl <sub>2</sub> per kilo.	
Monday 12:30 p. m.	Injected dog 15, weight 8.6 kilos
Monday 12:40 p. m.	Sick, head droops.
Monday 1:20 p. m.	Vomited. Muscular tremors.
Monday 1:25 p. m.	Tremors continued.
Monday 2:00 p. m.	Watery stool.
Monday 2:45 p. m.	Watery stool. Muscular tremors less marked, whines.
Monday 3:15 p. m.	Excitable.
Monday 3:45 p. m.	Sleeping.
Monday 3:48 p. m.	Retching.
Monday 4:10 p. m.	Watery blood streaked stool.
Monday 4:50 p. m.	Retching continued, very sick.
Monday 5:15 p. m.	Blood streaked stool.
Monday 5:45 p. m.	Bloody stool, tremors continue.
Monday 6:00 p. m.	Bloody stool, tremors continue.
Tuesday 7:45 a. m.	Several dark bloody stools during night. Tremors more pronounced.
Tuesday 9:30 a. m.	Watery bloody stool.
Tuesday 11:45 a. m.	Watery bloody stool.
Tuesday 4:00 p. m.	Very bloody stool.
Tuesday 6:00 p. m.	Sleeping.
Wednesday 8:00 a. m.	Slight bloody stool over night.
Wednesday 1:00 p. m.	Slight tremors.
Wednesday 5:00 p. m.	Bloody stool.
Wednesday 6:00 p. m.	Resting.
Thursday 9:00 a. m.	Tremors.
Thursday 11:00 a. m.	Sleeping.
Thursday 6:00 p. m.	Sleeping.
Friday 9:00 a. m.	Apparently O. K. except slight blood streaked stools.
Saturday 8:30 a. m.	Apparently O. K. except slight blood streaked stools.

Recovered.

TABLE XVI.

0.0015 gram HgCl <sub>2</sub> per kilo.	
Wednesday 11:15 a. m.	Injected dog 16, weight 9.87 kilos.
Wednesday 1:45 p. m.	Vomited.
Wednesday 2:20 p. m.	Semisolid stool.
Wednesday 2:45 p. m.	Vomited.
Wednesday 3:15 p. m.	Vomited.
Wednesday 3:30 p. m.	Excessive watery stool.
Wednesday 4:30 p. m.	Sleeping. Difficult respiration.

TABLE XVI (Continued).

0.0015 gram HgCl <sub>2</sub> per kilo.	
Wednesday 4:40 p. m.	Retching.
Wednesday 5:50 p. m.	Watery stool.
Thursday 9:00 a. m.	Resting.
Thursday 2:45 p. m.	Slight blood streaked stool.
Thursday 3:00 p. m.	Accepts food.
Friday 8:00 a. m.	Slight blood streaked stool. Otherwise O. K.
Saturday 9:15 a. m.	Slight blood streaked stool. Otherwise O. K.
Monday 8:30 a. m.	Apparently O. K.

Recovered.

TABLE XVII.

0.002 gram HgCl <sub>2</sub> per kilo.	
Monday 11:21 a. m.	Injected dog 17, weight 7.7 kilos
Monday 12:00 p. m.	Watery stool.
Monday 12:20 p. m.	Watery stool.
Monday 4:10 p. m.	Vomited.
Monday 5:15 p. m.	Bloody gelatinous stool.
Monday 6:00 p. m.	Refuses water.
Tuesday 8:00 a. m.	Two gelatinous blood streaked stools over night. Marked ataxia.
Tuesday 11:00 a. m.	Copious watery stool.
Tuesday 2:00 p. m.	Very sick, stretched full length on floor.
Tuesday 5:00 p. m.	Refuses fresh meat. Drinks freely of water.
Wednesday 8:00 p. m.	Quiet, lying down.
Wednesday 10:00 a. m.	Eats heartily.
Wednesday 10:15 a. m.	Gelatinous stool.
Wednesday 10:18 a. m.	Vomited.
Wednesday 6:00 p. m.	Quiet, lying down.
Thursday 8:00 a. m.	Quiet, lying down.
Thursday 3:00 p. m.	Watery, semisolid stool. Quiet all day.
Friday 9:00 a. m.	Ate very little. More lively.
Saturday 9:00 a. m.	Ate heartily. Apparently O. K.
Sunday 9:00 a. m.	Ate heartily. Apparently O. K.
Monday 9:00 a. m.	Ate heartily. Apparently O. K.

Recovered.

TABLE XVIII.

0.002 gram HgCl <sub>2</sub> per kilo.	
Tuesday 2:40 p. m.	Injected dog 18, weight 14.5 kilos
Tuesday 3:30 p. m.	Vomited. Excitable.
Tuesday 4:25 p. m.	Lying down, quiet.
Tuesday 6:00 p. m.	Quiet, refuses food.
Wednesday 8:00 a. m.	Lively, several stools during night
Wednesday 6:00 p. m.	Refuses food, quiet all day.
Thursday 8:00 a. m.	Quiet, several dark bloody stools during night.
Thursday 5:30 p. m.	Quiet, several dark bloody stools.
Thursday 6:00 p. m.	Refuses solid food, accepts broth.
Friday 8:00 a. m.	Refuses food, accepts water.
Saturday 8:30 a. m.	Several blood streaked stools over night
Saturday 5:30 p. m.	Still refuses solid food.
Monday 8:15 a. m.	Ate heartily of solid food.
Monday 4:00 p. m.	Blood streaked stool.
Tuesday 8:00 a. m.	Apparently O. K. except for blood streaked stools
Wednesday 8:30 a. m.	Apparently O. K. except for blood streaked stools.
Thursday 8:15 a. m.	Apparently O. K. except for blood streaked stools.

Recovered.

TABLE XIX.

0.003 gram HgCl <sub>2</sub> per kilo.	
Monday 4:30 p. m.	Injected dog 19, weight 11.77 kilos.
Monday 4:30 p. m.	Semisolid stool.
Monday 5:00 p. m.	Vomited.
Monday 5:40 p. m.	Vomited.
Monday 5:50 p. m.	Vomited.
Monday 6:00 p. m.	Stool.
Tuesday 8:00 a. m.	Four stools over night.
Tuesday 8:30 a. m.	Very lively. Ate heartily.
Tuesday 1:00 p. m.	Blood streaked stool.
Tuesday 2:30 p. m.	Blood streaked stool.
Tuesday 4:00 p. m.	Blood streaked stool.
Tuesday 6:00 p. m.	Vomited water.
Wednesday 8:30 a. m.	Vomited water.
Wednesday 9:00 a. m.	Tremors.
Wednesday 10:00 a. m.	Stool. Practically pure blood.
Wednesday 12:00 p. m.	Tremors. Marked ataxia, almost unable to stand. Lying full length on floor.
Wednesday 3:00 p. m.	Vomited.
Wednesday 6:00 p. m.	Bleeding at nose and mouth. Tremors died.

TABLE XX.

0.003 gram HgCl <sub>2</sub> per kilo.	
Tuesday 3:30 p. m.	Injected dog 20, weight 0.06 kilos
Tuesday 3:35 p. m.	Solid stool.
Tuesday 3:40 p. m.	Semisolid stool.
Tuesday 4:05 p. m.	Slight watery blood streaked stool.
Tuesday 4:15 p. m.	Vomited water.
Tuesday 4:25 p. m.	Blood streaked watery stool.
Tuesday 4:30 p. m.	Quiet, lying down.
Tuesday 6:00 p. m.	Ate heartily.
Wednesday 8:00 a. m.	Lively. Several stools over night.
Wednesday 4:15 p. m.	Semisolid stool.
Wednesday 6:00 p. m.	Refuses food.
Thursday 8:00 a. m.	Quiet. Small semisolid bloody stool during night.
Thursday 3:15 p. m.	Few drops, bloody gelatinous stool
Thursday 6:00 p. m.	Refuses solid food, accepts broth.
Friday 8:00 a. m.	Refuses solid food, accepts broth.
Saturday 8:00 a. m.	Lying full length on floor. Tremors.
Monday 4:40 p. m.	Died.

TABLE XXI.

0.004 gram HgCl <sub>2</sub> per kilo.	
Wednesday 3:05 p. m.	Injected dog 21, weight 0.06 kilos.
Wednesday 3:35 p. m.	Copious hard stool, excitable.



TABLE XXI (Continued).

0.004 gram HgCl <sub>2</sub> per kilo.	
Wednesday 3:55 p. m.	Semiliquid stool.
Wednesday 4:40 p. m.	Semiliquid blood streaked stool.
Wednesday 5:16 p. m.	Vomited.
Wednesday 6:00 p. m.	Ate heartily.
Thursday 8:00 a. m.	Lively, several stools during night.
Thursday 3:35 p. m.	Small semisolid stool.
Thursday 4:15 p. m.	Black solid stool. Quiet.
Thursday 6:00 p. m.	Accepts broth, refuses solid food.
Friday 8:00 a. m.	Quiet, several stools during night.
Friday 3:12 p. m.	Small dark, bloody, gelatinous stool.
Friday 6:00 p. m.	Accepts broth, refuses solid food.
Saturday 8:00 a. m.	Several bloody stools during night.
Monday 8:15 a. m.	Refuses water and food.
Tuesday 9:10 a. m.	Refuses water and food.
Wednesday 8:15 a. m.	Refuses water and food.
Wednesday 5:08 p. m.	Died.

TABLE XXII.

0.006 gram HgCl <sub>2</sub> per kilo.	
Thursday 1:15 p. m.	Injected dog 22, weight 8.15 kilos.
Thursday 2:00 p. m.	Disturbed respiration.
Thursday 2:05 p. m.	Solid stool.
Thursday 2:20 p. m.	Watery stool.
Thursday 2:30 p. m.	Vomited.
Thursday 3:00 p. m.	Disturbed respiration continues.
Thursday 3:45 p. m.	Retching at intervals.
Thursday 4:30 p. m.	Stool almost pure blood.
Thursday 4:45 p. m.	Tubed respiration, otherwise motionless.
Thursday 5:15 p. m.	Stool practically pure blood.
Thursday 5:30 p. m.	Continual dripping of blood.
Thursday 6:00 p. m.	Bloody stools continue every 5 to 10 mins.
Friday 8:00 a. m.	Died over night.

It will be noted from the results that the minimum lethal dose for bichloride of mercury when injected intravenously into dogs is 0.003 gram per kilo.

## MERCURIALIZED SERUM.

TABLE XXIII.

MercurIALIZED serum representing 0.0015 gram HgCl <sub>2</sub> per kilo.	
Thursday 10:20 a. m.	Injected dog 23, weight 10.4 kilos.
Thursday 10:35 a. m.	Solid stool, increased respiration.
Thursday 10:50 a. m.	Vomited. Respiration normal.
Thursday 3:20 p. m.	Watery stool.
Thursday 5:00 p. m.	Refuses food. Accepts water.
Friday 8:00 a. m.	Quiet. Several bloody stools over night.
Friday 5:30 p. m.	Accepts broth. Refuses solid food.
Saturday 8:30 a. m.	Accepts solid food. Several bloody stools during night.
Monday 8:15 a. m.	Apparently O. K.
Tuesday 8:00 a. m.	Apparently O. K.
Wednesday 9:15 a. m.	Apparently O. K.
Recovered.	

TABLE XXIV.

MercurIALIZED serum representing 0.002 gram HgCl <sub>2</sub> per kilo.	
Monday 3:05 p. m.	Injected dog 24, weight 11.77 kilos.
Monday 3:28 p. m.	Copious stool. Marked increased respiration.
Monday 4:30 p. m.	Blood streaked stool.
Monday 4:45 p. m.	Vomited.
Monday 5:30 p. m.	Bloody stool.
Monday 6:00 p. m.	Drank heartily.
Tuesday 8:00 a. m.	Three gelatinous blood streaked stools over night.
Tuesday 10:00 a. m.	Refuses solid food. Accepts water.
Tuesday 12:30 p. m.	Watery stool.
Tuesday 2:15 p. m.	Watery stool.
Tuesday 6:00 p. m.	Quiet all afternoon.
Wednesday 8:00 a. m.	Quiet. Lying down.
Thursday 8:00 a. m.	Ate very little. More lively.
Friday 8:00 a. m.	Ate heartily. Apparently O. K.
Saturday 8:00 a. m.	Ate heartily. Apparently O. K.
Sunday 8:00 a. m.	Ate heartily. Apparently O. K.
Recovered.	

TABLE XXV.

MercurIALIZED serum representing 0.002 gram HgCl <sub>2</sub> per kilo.	
Monday 3:33 p. m.	Injected dog 25, weight 14.00 kilos.
Monday 3:55 p. m.	Increased respiration.
Monday 4:10 p. m.	Restless.
Monday 4:40 p. m.	Copious watery stool.
Monday 6:00 p. m.	Refuses food. Leg not at all sensitive.
Tuesday 8:00 a. m.	Eats sparingly. Several stools over night.
Tuesday 6:00 p. m.	Accepts food.
Wednesday 8:00 a. m.	Accepts meat. Refuses biscuits.
Thursday 8:00 a. m.	Several bloody stools.
Friday 8:10 a. m.	Refuses food.
Saturday 8:00 a. m.	Eats sparingly. Quiet. Several bloody stools.
Sunday 9:00 a. m.	Eats sparingly. Quiet. Several bloody stools.
Monday 9:00 a. m.	Accepts food.
Tuesday 10:00 a. m.	Accepts food. Apparently O. K.
Recovered.	

TABLE XXVI.

MercurIALIZED serum representing 0.003 gram HgCl <sub>2</sub> per kilo.	
Monday 3:40 p. m.	Injected dog 26, weight 10.87 kilos.
Monday 4:00 p. m.	Vomited profusely. Solid stool.
Monday 5:30 p. m.	Vomited profusely.
Monday 6:00 p. m.	Vomited profusely.
Tuesday 8:00 a. m.	Two stools over night.
Tuesday 8:30 a. m.	Retching.
Tuesday 12:00 p. m.	Retching.
Tuesday 2:00 p. m.	Slight ataxia.
Tuesday 4:00 p. m.	Refuses fresh meat.
Tuesday 6:00 p. m.	Drank heartily.
Tuesday 6:05 p. m.	Vomited water.
Wednesday 8:00 a. m.	Prothing at mouth.
Wednesday 8:30 a. m.	Quiet. Lying down.

TABLE XXVII (Continued).

MercurIALIZED serum representing 0.003 gram HgCl <sub>2</sub> per kilo.	
Wednesday 4:00 p. m.	Quiet. Lying down.
Wednesday 6:00 p. m.	Refuses food. Accepts water.
Thursday 8:00 a. m.	Gelatinous stool over night.
Thursday 8:30 a. m.	Drank sparingly.
Thursday 1:25 p. m.	Vomited.
Thursday 4:00 p. m.	Convulsions.
Thursday 4:30 p. m.	Died.

TABLE XXVII.

MercurIALIZED serum representing 0.003 gram HgCl <sub>2</sub> per kilo.	
Thursday 3:20 p. m.	Injected dog 27, weight 10.87 kilos.
Thursday 3:25 p. m.	Soft semisolid stool.
Thursday 4:00 p. m.	Semisolid stool. Increased respiration. Restless.
Thursday 4:15 p. m.	Respiration normal.
Thursday 5:40 p. m.	Copious semisolid stool.
Thursday 6:00 p. m.	Refuses food.
Friday 8:00 a. m.	Accepts food. Several blood streaked stools during night.
Friday 6:00 p. m.	Accepts meat. Refuses biscuits.
Saturday 8:00 a. m.	Refuses food. Bloody gelatinous stools.
Sunday 8:00 a. m.	Refuses food. Bloody gelatinous semisolid stools.
Monday 8:30 a. m.	Refuses food. Stretched full length on floor.
Tuesday 8:00 a. m.	Died over night.

TABLE XXVIII.

MercurIALIZED serum representing 0.004 gram HgCl <sub>2</sub> per kilo.	
Thursday 2:55 p. m.	Injected dog 28, weight 10.87 kilos.
Thursday 2:58 p. m.	Vomited.
Thursday 3:10 p. m.	Soft semisolid stool. Increased respiration.
Thursday 4:00 p. m.	Very restless. Respiration normal.
Thursday 6:00 p. m.	Refuses food.
Friday 8:00 a. m.	Accepts food. Refuses solid food. Several blood streaked stools during night.
Friday 6:00 p. m.	Refuses food. Several bloody stools during night.
Saturday 8:00 a. m.	Refuses food. Quiet. Bloody stools.
Sunday 8:30 a. m.	Refuses food. Quiet. Bloody stools.
Monday 8:00 a. m.	Died over night.

TABLE XXIX.

MercurIALIZED serum representing 0.0045 gram HgCl <sub>2</sub> per kilo.	
Monday 12:05 p. m.	Injected dog 29, weight 21.7 kilos.
Monday 12:30 p. m.	Stool.
Monday 12:45 p. m.	Gelatinous stool.
Monday 2:15 p. m.	Vomiting. Stool.
Monday 5:00 p. m.	Quiet. Lying down.
Tuesday 8:00 a. m.	Several stools over night.
Tuesday 8:30 a. m.	Gelatinous stool.
Tuesday 9:00 a. m.	Retching.
Tuesday 10:30 a. m.	Retching.
Tuesday 2:00 p. m.	Tremors.
Tuesday 3:00 p. m.	Tremors.
Tuesday 4:15 p. m.	Retching.
Tuesday 5:00 p. m.	Gelatinous stool.
Tuesday 6:00 p. m.	Quiet. Retching.
Wednesday 8:00 a. m.	Several blood streaked gelatinous stools during night.
Wednesday 8:10 a. m.	Marked tremors. Too weak to stand.
Wednesday 8:30 a. m.	Gelatinous bloody drippings.
Wednesday 10:50 a. m.	Died.

TABLE XXX.

MercurIALIZED serum representing 0.006 gram HgCl <sub>2</sub> per kilo.	
Thursday 8:30 a. m.	Injected dog 30, weight 8.15 kilos.
Thursday 8:45 a. m.	Increased respiration.
Thursday 9:15 a. m.	Respiration normal. Semisolid stool.
Thursday 10:20 a. m.	Semisolid blood streaked stool.
Thursday 6:00 p. m.	Accepts meat, refuses biscuits.
Friday 8:00 a. m.	Several blood streaked stools over night.
Friday 10:15 a. m.	Vomited.
Friday 6:00 p. m.	Refuses food. Several bloody stools during night.
Saturday 8:00 a. m.	Quiet, lying down. Very sick.
Sunday 4:20 p. m.	Died.

TABLE XXXI.

MercurIALIZED serum representing 0.008 gram HgCl <sub>2</sub> per kilo.	
Monday 10:30 a. m.	Injected dog 31, weight 9.96 kilos.
Monday 10:45 a. m.	Solid stool.
Monday 11:00 a. m.	Tremors.
Monday 11:15 a. m.	Vomited. Tremors subsided.
Monday 11:45 a. m.	Watery stool.
Monday 1:45 p. m.	Quiet, lying down.
Monday 2:45 p. m.	Quiet, lying down.
Monday 4:00 p. m.	Semisolid stool.
Monday 6:00 p. m.	Quiet. Refuses solid food, accepts water.
Monday 8:00 a. m.	Two stools over night. Lively.
Tuesday 11:15 a. m.	Watery stool.
Tuesday 1:25 p. m.	Drank water. Vomited it immediately.
Tuesday 2:45 p. m.	Stool.
Tuesday 3:10 p. m.	Dark gelatinous stool.
Tuesday 5:00 p. m.	Refuses fresh meat.
Wednesday 8:00 a. m.	Very weak. Four gelatinous stools during night.
Wednesday 10:00 a. m.	Refuses milk.
Wednesday 12:00 p. m.	Gelatinous blood streaked stool.
Wednesday 2:00 p. m.	Retching. Tremors.
Wednesday 3:00 p. m.	Very marked tremors.
Wednesday 4:15 p. m.	Convulsions.
Wednesday 5:05 p. m.	Died.

TABLE XXXII.

MercurIALIZED serum representing 0.0125 gram HgCl <sub>2</sub> per kilo.	
Monday 11:05 a. m.	Injected dog 32, weight 8.15 kilos.
Monday 12:00 p. m.	Quiet while given injection.

TABLE XXXII (Continued).

Mercurialized serum representing 0.0125 gram  $\text{HgCl}_2$  per kilo.

Monday	1:15 p. m.	Vomited.
Monday	1:35 p. m.	Semisolid stool.
Monday	2:08 p. m.	Semisolid stool.
Monday	2:25 p. m.	Vomited.
Monday	5:00 p. m.	Refuses fresh meat.
Monday	6:00 p. m.	Refuses fresh meat.
Tuesday	8:00 a. m.	Snail stool over night. Restless.
Tuesday	10:00 a. m.	Refuses milk. Has tasted for two days.
Tuesday	2:00 p. m.	Troubled respiration.
Tuesday	6:00 p. m.	Troubled respiration.
Wednesday	8:00 a. m.	Quiet, stretched full length on floor.
Wednesday	9:00 a. m.	Dark gelatinous stool.
Wednesday	2:30 p. m.	Died.

The results of the experiments show that the minimum lethal dose of plain bichloride of mercury and of bichloride in the form of mercurialized serum, when injected intravenously in dogs, is exactly the same, namely, 0.003 gram per kilo body weight of animal.

It is also of interest to note that when the animals received sublethal doses of mercurialized serum the untoward effects, such as blood in stools, vomiting, retching, etc., were present to the same degree as in the animals which received plain bichloride, thereby proving that mercurialized serum when injected intravenously is as toxic as plain bichloride, although all the objectionable effects such as pain or phlebitis, are, according to Thompson, practically eliminated.

## INTRASPINAL INJECTIONS.

All doses for intraspinal injections were diluted with sterile normal saline solution to exactly four c. c. and administered between the fifth and sixth lumbar processes by the gravity method after withdrawing from two to three c. c. of spinal fluid.

In making intraspinal injections the doses were not given in direct proportion to the weight of the animal, as in the case of the intramuscular and intravenous injections, because preliminary experiments showed that it was not possible to obtain concordant results by this method. This change in technic was necessary on account of the possibility of having a variation of seventy-five per cent. or more in the weights of two animals without any material difference in the size or fluid content of the spinal canal. Also, because the reaction seemed to be principally confined to the spinal canal.

## BICHLORIDE OF MERCURY.

TABLE XXXIII.

1-30 grain (0.0005 gram) $\text{HgCl}_2$ .		
Saturday	11:22 a. m.	Injected dog 34, weight 17.6 kilos.
Saturday	11:34 a. m.	Recovering from ether.
Saturday	11:45 a. m.	Practically out of ether.
Saturday	1:15 p. m.	Quiet, lying down.
Monday	8:30 a. m.	Slight ataxia of hind leg, otherwise apparently O. K. Accepts food.
Monday	5:30 p. m.	Accepts broth. Refuses solid food.
Tuesday	8:30 a. m.	Marked ataxia hind leg. Accepts food.
Wednesday	8:30 a. m.	Accepts food.
Thursday	8:30 a. m.	Hind leg partially paralyzed, otherwise apparently O. K.
Friday	9:00 a. m.	Hind leg partially paralyzed, otherwise apparently O. K.

Recovered.

TABLE XXXIV.

1-20 grain (0.00325 gram) $\text{HgCl}_2$ .		
Saturday	11:10 a. m.	Injected dog 34, weight 10.6 kilos.
Saturday	11:45 a. m.	Coming out of ether.
Saturday	11:50 a. m.	Practically out of ether.
Saturday	12:30 p. m.	Marked ataxia of hind legs. Salivation.
Sunday	9:00 a. m.	Accepts food.
Monday	8:30 a. m.	Partially paralyzed in hind legs. Accepts food.
Tuesday	10:00 a. m.	Accepts food. Marked ataxia hind legs.
Wednesday	8:15 a. m.	Apparently O. K. except for ataxia.
Thursday	8:00 a. m.	Apparently O. K. except for ataxia.
Friday	9:00 a. m.	Apparently O. K. except for ataxia.

Recovered.

TABLE XXXV.

1-10 grain (0.0005 gram) $\text{HgCl}_2$ .		
Wednesday	5:30 p. m.	Injected dog 35, weight 27 kilos.

TABLE XXXV (Continued).

1-10 grain (0.0005 gram) $\text{HgCl}_2$ .		
Wednesday	5:35 p. m.	Tonic spasm.
Wednesday	5:40 p. m.	Spasm subsided. Almost out of ether.
Wednesday	5:50 p. m.	Practically out of ether.
Wednesday	6:00 p. m.	Walking around. Slight ataxia, hind legs.
Thursday	8:30 a. m.	Slight ataxia, hind legs. Ate heartily.
Friday	9:00 a. m.	Slight ataxia, hind legs. Ate heartily.
Saturday	8:30 a. m.	Slight ataxia, hind legs. Ate heartily.
Monday	9:15 a. m.	Slight ataxia, hind legs. Ate heartily.
Tuesday	8:15 a. m.	Apparently O. K., except for slight ataxia, hind legs.
Wednesday	9:00 a. m.	Apparently O. K., except for slight ataxia, hind legs.
Thursday	8:20 a. m.	Apparently O. K., except for slight ataxia, hind legs.

Recovered.

TABLE XXXVI.

$\frac{1}{4}$ grain (0.008 gram) $\text{HgCl}_2$ .		
Saturday	12:20 a. m.	Injected dog 36, weight 8.7 kilos.
Saturday	12:30 a. m.	Almost out of ether.
Saturday	12:40 p. m.	Completely out of ether. Marked salivation.
Saturday	12:45 p. m.	Slight paralysis, hind legs.
Saturday	5:30 p. m.	Refuses food.
Sunday	8:30 a. m.	Died over night.

TABLE XXXVII.

$\frac{1}{4}$ grain (0.016 gram) $\text{HgCl}_2$ .		
Wednesday	12:00 a. m.	Injected dog 37, weight 10 kilos.
Wednesday	12:30 p. m.	Spasm, never got up after coming out of ether.
Wednesday	2:00 p. m.	Stretched full length on floor, tonic spasm.
Wednesday	6:00 p. m.	Spasm continued.
Thursday	8:00 a. m.	Spasm continued.
Thursday	3:00 p. m.	Died.

The minimum lethal dose of bichloride of mercury, when injected intraspinally into dogs, is, according to the foregoing experiments, 0.008 gram (one eighth grain).

## MERCURIALIZED SERUM.

TABLE XXXVIII.

Mercurialized serum representing 1-30 grain (0.002 gram) $\text{HgCl}_2$ .		
Saturday	12:00 p. m.	Injected dog 38, weight 10.8 kilos.
Saturday	12:10 p. m.	Recovering from ether.
Monday	8:00 a. m.	Accepts food, apparently O. K.
Tuesday	8:30 a. m.	Accepts food, slight ataxia, hind legs.
Wednesday	10:00 a. m.	Accepts food; apparently O. K.
Thursday	10:40 a. m.	Accepts food; apparently O. K.
Friday	8:30 a. m.	Accepts food; apparently O. K.
Saturday	8:15 a. m.	Accepts food; apparently O. K.

Recovered.

TABLE XXXIX.

Mercurialized serum representing 1-20 grain (0.00325 gram) $\text{HgCl}_2$ .		
Saturday	11:23 a. m.	Injected dog 39, weight 12 kilos.
Saturday	11:30 a. m.	Coming out of ether.
Saturday	11:55 a. m.	Completely out of ether.
Saturday	12:30 p. m.	Salivation.
Monday	8:00 a. m.	Ataxia hind legs, otherwise apparently O. K.
Tuesday	8:10 a. m.	Accepts food, apparently O. K., except for ataxia.
Wednesday	9:20 a. m.	Accepts food; apparently O. K., except for ataxia.
Thursday	10:15 a. m.	Accepts food, apparently O. K., except for ataxia.
Friday	8:00 a. m.	Accepts food, apparently O. K., except for ataxia.

Recovered.

TABLE XL.

Mercurialized serum representing 1-10 grain (0.00048 gram) $\text{HgCl}_2$ .		
Wednesday	11:55 p. m.	Injected dog 40, weight 11.7 kilos.
Wednesday	5:30 p. m.	Coming out of ether.
Wednesday	5:30 p. m.	Completely out of ether.
Wednesday	6:00 p. m.	Lying down. Hind legs partially paralyzed.
Thursday	8:30 a. m.	Lying down. Refuses to get up. Bloody stools.
Friday	8:00 a. m.	Sits up. Hind leg still partially paralyzed. Refuses food. Bloody stools.
Saturday	8:30 a. m.	Sits up. Hind leg still partially paralyzed. Refuses food. Bloody stools.
Monday	9:00 a. m.	Still partially paralyzed, hind legs; otherwise apparently O. K.
Tuesday	8:15 a. m.	Still partially paralyzed, hind legs; otherwise apparently O. K.
Wednesday	8:15 a. m.	Still partially paralyzed, hind legs; otherwise apparently O. K.

Recovered.

TABLE XLI.

Mercurialized serum representing $\frac{1}{4}$ grain (0.008 gram) $\text{HgCl}_2$ .		
Friday	3:10 p. m.	Injected dog 41, weight 9.06 kilos.
Friday	3:15 p. m.	Coming out of ether.
Friday	3:30 p. m.	Practically out of ether.
Friday	3:35 p. m.	Restless. Whining. Difficult respiration.
Friday	3:50 p. m.	Restless. Hind leg partially paralyzed.
Friday	3:55 p. m.	Spasm. Difficult respiration continues.
Friday	4:15 p. m.	Spasm continues. Respiration slow and difficult.
Friday	4:40 p. m.	Died.

TABLE XLII.

Mercurialized serum representing $\frac{1}{8}$ grain (0.008 gram) HgCl <sub>2</sub> .		
Thursday	11:55 a. m.	Injected dog 42, weight 10.6 kilos.
Thursday	12:00 p. m.	Coming out of ether.
Thursday	12:10 p. m.	Completely out of ether. Salivation.
Thursday	12:18 p. m.	Tonic spasm, hind legs.
Thursday	5:10 p. m.	Died.

TABLE XLIII.

Mercurialized serum representing 1-6 grain (0.01 gram) HgCl <sub>2</sub> .		
Friday	3:00 p. m.	Injected dog 43, weight 9.06 kilos.
Friday	3:10 p. m.	Almost out of ether. Increased respiration. Restless.
Friday	3:16 p. m.	Tonic spasm.
Friday	3:30 p. m.	Spasm subsided. Slow gasping respiration.
Friday	3:45 p. m.	Died.

TABLE XLIV.

Mercurialized serum representing $\frac{1}{4}$ grain (0.016 gram) HgCl <sub>2</sub> .		
Wednesday	3:15 p. m.	Injected dog 44, weight 10 kilos.
Wednesday	3:20 p. m.	Coming out of ether.
Wednesday	3:30 p. m.	Practically out of ether.
Wednesday	4:10 p. m.	Markedly increased respiration.
Wednesday	4:30 p. m.	Slow gasping respiration.
Wednesday	4:45 p. m.	Died.

The minimum lethal dose of mercurialized serum, when injected intraspinally into dogs, is, therefore, precisely the same as for plain bichloride, namely, 0.008 gram (one eighth grain).

The symptoms of ataxia and paralysis of the hind legs referred to in the experiments following the injection of mercurialized serum into the spinal canal of dogs are doubtless due to what might be called faulty technic. It was almost impossible to introduce the needle without seriously injuring the cord itself, owing to the fact that the subarachnoid space in dogs is very small and the needle comparatively large in relation to the size of a dog's spinal cord.

It should be particularly noted from the experiments that whether injected intramuscularly, intravenously, or intraspinally, mercurialized serum possesses the same degree of toxicity and is, therefore, equally efficient therapeutically as a corresponding amount of plain bichloride of mercury. These results prove, therefore, that the addition of an excess of serum to bichloride of mercury does not reduce its toxic properties, but merely deprives it of the property of destroying tissue by precipitating and then dissolving the albumin of the tissue, without changing its toxicity or therapeutic efficiency.

The increasing numbers of favorable clinical results from the use of this preparation in human beings bear out the findings of the experiments that the treatment of bichloride in this manner does not change its toxicity, but merely converts it into a form which can be injected intramuscularly without pain, or directly into the spinal canal without danger of precipitating the albumins of the spinal fluid or intravenously without pain or phlebitis, which generally follow the use of plain bichloride of mercury.

Our results also show that when poisonous doses of bichloride were administered, *whether plain or in the form of mercurialized serum*, the intramuscular and intravenous injections were followed almost immediately by increased, troubled, and sometimes apparently difficult respiration. These are merely symptoms of mercurial poisoning and are described in works on pharmacology.

This action is important to remember, as there seems to be a tendency on the part of some practitioners who have used mercurialized serum prepared with horse serum to attribute these disturb-

ances of respiration to anaphylaxis, when in fact they are usually caused by mercury poisoning. Care should be used, therefore, not to produce toxic effects by overdoses or administration at too frequent intervals.

It is interesting to note that, although more than sixty dogs have been injected with mercurialized serum prepared with normal horse serum, not a single case of anaphylaxis developed.

Although clinical results do not come directly under the title of this paper, I thought that as Doctor Byrnes will no doubt confine his data to the results obtained from intraspinal injections, and Doctor Thompson to intravenous injections, I would add just a few words in regard to intramuscular and subcutaneous administration.

The *absence of pain* following the intramuscular and subcutaneous injection of mercurialized serum in dogs (even in doses as large as fifty-seven c. c.) compared with the intense pain following the injection of plain bichloride of mercury, together with the well established fact that alien proteins when injected intramuscularly or subcutaneously, are much less likely to produce protein sensitization than when injected intravenously, led me to the conclusion that in the treatment of systemic syphilis the intramuscular or subcutaneous form of administration would possess many advantages.

Accordingly I suggested this form of administration to several of my physician friends, who volunteered to test its value clinically. The reports from these men all agree in that the injections did not cause pain or inconvenience to the patients, and that the clinical results were of the most satisfactory nature. As the reports received are all similar, I shall cite only a few typical examples.

In accordance with my promise I am covering here briefly my observations in twenty cases of systemic syphilis. In the aforesaid cases I assisted or was present when the injections were given and carefully observed the influence and results of mercurialized serum, and take pleasure in advising you that the results were most satisfactory and practically free from pain with only sensitiveness following for a day or two. All these injections were given intramuscularly.

The initial lesions, as well as later dermal and mucosal conditions responded with remarkable rapidity in all cases so treated.

C. F. KIRKENDALL, M. D.,  
Philadelphia.

My experience with mercurialized serum is confined to nineteen injections used in five patients.

Miss B., seven injections.

Mr. M., four injections.

Ralph K., six injections.

Albert S., one injection.

C. A., one injection.

None of the patients experienced any pain or inconvenience from the use of the serum. Upon one occasion my supply was exhausted and I used sterile water in Miss B., which caused more unpleasantness than the serum.

I have used these injections principally between the shoulders, one week apart.

GEORGE S. EVERHART, M. D.  
Hagerstown, Md.

Dr. T. J. d'Apéry, demonstrator of clinical medicine, Jefferson Medical College, Philadelphia, reports the following very interesting case:

The subject of this report a man thirty-eight years of age, contracted syphilis in 1900 for which he was treated for three months with protiodide of mercury, which removed the visible signs of the infection. Three years



later a small papule developed on the right buttock which was treated locally, but gradually increased in size and finally became an ulcer which spread to the anus and left buttock. For thirteen years various treatments had been tried without satisfactory results. On April 5, 1916, he presented himself to me in a terrible condition. Both buttocks and the sacral region were an ulcerated gummatous mass extending to and involving the anal region.

The patient had marked anemia—erythrocytes 3,900,000; leucocytes 1,200; hemoglobin fifty-six per cent. The heart and lungs were apparently normal. The urine showed a faint trace of albumin; microscopic examination was negative. The blood pressure was 120 mm. systolic, 90 mm. diastolic. Wassermann plus. I began at once to give hypodermic injections of mercurialized serum commencing with one twelfth grain three times a week which I have now increased to one sixth grain twice a week. The results have been remarkable. With two months treatment the entire mass has healed (Fig.).

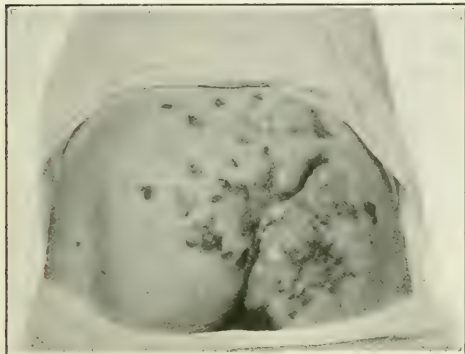


FIG.—Case of syphilitic gummatous surface. Remarkable results obtained by two months subcutaneous and intramuscular treatment with mercurialized serum. Entire ulcerated gummatous surface completely healed and there remain only terrible scars, redness, and slight serous discharge from two small pea sized gummata.

and there now remains only the terrible scars, redness, and slight serous discharge from two small pea sized gummata.

The patient comes to my office for the injections and apparently suffers slight if any inconvenience. He has had no symptoms of anaphylaxis. The hemoglobin has increased from fifty-six to seventy-two per cent., the erythrocytes from 3,900,000 to 4,500,000. The urine is negative.

The man is still under treatment and at a later date I hope to be able to report more fully on his condition.

TELLO J. D'AFERY, M. D.

These strengthen the opinion of the author that the intramuscular or subcutaneous administration of mercurialized serum is to be preferred in the treatment of systemic syphilis except in patients where quick results are imperative, in which case Thompson, in the paper previously referred to, recommends intravenous administration.

Finally, the author takes occasion to acknowledge his indebtedness to Mr. John O'Brien for his valuable assistance in performing laboratory experiments.

#### CONCLUSIONS.

1. Mercurialized serum, whether injected intramuscularly, intravenously, or intraspinally, is equally toxic as corresponding amounts of plain bichloride of mercury.
2. The addition of an excess of serum to bichloride of mercury does not reduce its toxic properties

but merely deprives it of the property of destroying tissue by precipitating and then dissolving the albumin of the tissue, without changing its toxicity or therapeutic efficiency.

3. Intramuscular or subcutaneous injections of mercurialized serum are practically painless and are not followed by sensitiveness, pain, and sloughing, which usually accompany injections of the plain bichloride.

4. Intravenous injections of mercurialized serum are not followed by pain or sensitiveness at the site of injection.

5. Overdoses of mercurialized serum when administered intravenously produce the same untoward effects, such as blood in the stools, vomiting, retching, markedly increased and troubled respiration, etc., as plain bichloride of mercury, and care should be used, therefore, not to produce toxic effects by overdoses or administration at too frequent intervals.

6. Mercurialized serum in proper doses may be safely injected directly into the spinal canal.

7. In systemic syphilis very favorable results can be obtained by the intramuscular or subcutaneous injection of mercurialized serum.

8. Intramuscular or subcutaneous administration of mercurialized serum is to be preferred in the treatment of systemic syphilis, except in patients where quick results are imperative, in which case the serum may be administered intravenously.

## Abstracts and Reviews

### THE SUPPLEMENTARY DIETARY RELATIONSHIPS AMONG OUR NATURAL FOODSTUFFS.\*

By PROF. E. V. McCOLLUM,  
University of Wisconsin,  
Madison.

Professor McCollum began by stating that up to 1911 all efforts to nourish experimental animals upon diets limited to purified food substances had failed of success. Thus a properly balanced diet containing protein in the form of pure casein, plus a carbohydrate, and pure inorganic salts would not maintain life for any considerable time. If to such a diet five per cent. of butter fat was added there was no improvement in its capacity to maintain the animal's life. The further addition to the original diet of a watery or alcoholic extract of any natural food plant also did not suffice to make the diet capable of maintaining life. If, however, both the butter fat and the extract of the natural foodstuff were added in very small quantities the diet then became entirely adequate for the maintenance of life from infancy to senility, and the animals would produce their young normally.

These observations pointed to the existence of certain substances in foods, the absence of which rendered otherwise adequate diets wholly inadequate for the maintenance of life and the continuance of growth. These substances have been called by sev-

\*Summary of a lecture delivered before the Harvey Society at the Academy of Medicine, New York, January 13, 1917.

eral names, the best known of which is *vitamines*. Before this name was given to them they had been recognized and called accessory food substances. The former term implies a more definite knowledge of these substances than we actually possess and it would seem better to employ some term which was less likely to convey such an idea. One of the substances is soluble in fat and the name suggested for it by him was the fat soluble A fraction. The other might be called the water soluble B fraction, since it is soluble in water or alcohol. By using such noncommittal terms one could add other substances of similar nature as they were discovered, using other letters of the alphabet to distinguish them. In his opinion it might provisionally be stated that there were only two such accessory food substances known at present, namely the two fractions just named. This opinion was recognized as being contrary to that held by a number of others, who postulated a whole series of such accessory substances, each having certain closely restricted specific functions. There was considerable evidence, however, in favor of the belief that there were only two such substances yet recognizable, and in connection herewith it might be mentioned that the water soluble fraction B, which was also soluble in alcohol, was not soluble in ether, hot benzine, or hot acetone. It was scarcely conceivable that there should be a whole range of different substances in the various plant foods, each having the property of acting as a supplementary foodstuff, and also having precisely the same response to this series of solvents. It was certainly more in harmony with our chemical knowledge to believe that there was only one such substance which was present in all of the foods.

It had been proved that, with the exclusion of milk and animal tissue, there was no single foodstuff which was sufficient for the nutrition of an animal such as the white rat. The establishment of this fact led to the formulation of several theories to account for it. The first of these was based on the discovery of the differences among the several different proteins in their content of the aminoacids. The failure of a single protein was therefore laid to a deficiency, absolute or relative, in certain of these acids. This theory of an unbalanced aminoacid content was readily disproved by the addition of several different proteins to the diet, such addition utterly failing to render the diet adequate. The second theory postulated an inadequacy in the content of inorganic salts. This was equally readily disproved by the addition of the requisite amounts of such salts without rendering the diet adequate. The addition of only one food factor, therefore, did not convert an inadequate diet into an adequate one.

The next step in the attempted solution of the problem was to add two food factors. Experiments along this line showed that the addition to a wheat diet of protein and fat, protein and salts or of fat and salts also failed to complete the diet and make it sufficient for the maintenance of life, although such additions sometimes slightly increased the efficiency of the diet. If, however, all three—salts, protein, and fat—were added to a diet of wheat all the animals could be maintained in perfect health and grew and reproduced normally. It was evident

from these studies that there were three essential factors contributing to the adequacy of a diet of vegetable origin. These were an adequate content of aminoacids, adequate content of inorganic salts, and the presence of the fat soluble fraction A. All foods of plant origin, practically, contained a sufficient amount of the water soluble fraction B. The fraction A soluble in fats was found to be restricted to fats of animal origin, with the single exception of the millet seed, which contained an amount of this substance which was almost sufficient. No isolated oil of vegetable origin, except this one, contained this fraction in anything like sufficient amount for the maintenance of life.

Experiments with the maize kernel, oats, and other grains gave results similar to those reported for wheat, but the supplementary protein substances were somewhat different. Thus with a wheat diet plus salts and butter fat casein was the protein which supplied the requisite aminoacids. In the case of peas and beans casein also was the necessary supplement. With an oat basis casein failed as a supplement, but gelatin proved adequate. No combination of seeds was sufficient without the addition of extra inorganic salts. The leaf parts of food plants, however, contained an abundance of such salts, and their addition to a diet of seeds rendered the latter nearly sufficient for the maintenance of life and growth. Thus the feeding of alfalfa with one of the following rendered the diet almost adequate: wheat, oats, maize, polished rice, peas, etc. Such a diet not only contained an adequacy of inorganic salts, but also was fairly rich, relatively, in the fat soluble A fraction. A diet of fifty parts of maize, thirty of alfalfa, and twenty of peas was also almost adequate. It was found that the protein of the pea supplemented that of wheat, but not of maize or of oats. The protein of beans supplemented that of wheat and oats, but not that of maize. Further studies showed that wheat, peas, and beans contained an adequate amount of the water soluble fraction B.

Since all the necessary food constituents could be found in the vegetable kingdom it might be thought that a sufficiently mixed diet would maintain life. This was not the case, however, if the animals were permitted to guide their own eating and selection of foods by their appetites.

The question as to how to explain such different conditions as are met with in the deficiency diseases, scurvy, beriberi, pellagra, and rickets, on the basis of the existence of only two accessory food substances might be answered by the statement that of all of these diseases the best established as a deficiency disease is scurvy and that this can be reproduced in guineapigs. In these animals it can be shown to be due to the anatomical structure of the alimentary canal, which becomes empty if a succulent vegetable is not fed. If such a vegetable is fed the disease will not develop. The disease can also be prevented in the absence of such a succulent vegetable by the administration of mineral oil. It would seem that the condition was due either to the absorption of bacterial poisons or to the bacterial invasion of the tissues from a damaged intestine in these animals.

# Dietetics, Alimentation, and Metabolism

## Food and Food Preparation, in Health and Disease

### HIGH CALORIC FEEDING IN TYPHOID FEVER.\*

*Some Practical Experiences.*

BY DUDLEY ROBERTS, M. D.,

New York,

Attending Physician, Brooklyn Hospital.

Our experience in the wards of the Brooklyn Hospital with high caloric feeding in the treatment of typhoid fever during the past three years, has convinced us of three things: First, that the results of this method of treatment are marvelously good; second, that it is practicable in almost every case to administer the high caloric diet; third, that with definite formulas of known value to the ounce measure, it is possible to administer the desired caloric intake and to know, from hour to hour and from day to day, just how much is being ingested even though the nurse or attendant is comparatively inexperienced in such matters.

#### HISTORICAL RESUMÉ.

Until 1870, practical starvation during the course of fever was the regular custom. The routine milk diet was first advised by Flint, and was followed without much question for two decades. On this diet about two quarts of milk at the utmost were given, having a caloric value of about 1,200. Greater liberality was then suggested by Shattuck and others; little attempt was made, however, to introduce a definite regimen of from 3,000 to 4,000 calories per diem as a routine until the subject was studied by Coleman (1) and reported upon in 1909. As a result of this work carried out in collaboration with Schaffer, and many researches since that time, our ideas as to the absorption of food in fever and the metabolism in typhoid have undergone marked changes. In the first communication it was contended that the practice of partial starvation is highly detrimental, and that it is necessary that sufficient food be given to cover the energy expenditure.

In the further study by these authors of protein metabolism in typhoid (2), they showed that by the use of diets of high caloric value especially rich in carbohydrates, it is possible to prevent a febrile loss of body protein nitrogen, and by such dietetic treatment a toxic destruction of body protein and the destruction due to simple pyrexia in this disease, may be entirely prevented or compensated.

In 1912, Coleman (3) reported on five years' experience with a high caloric diet in typhoid fever, expressing his conviction that from 3,000 to 5,000 calories per diem were required; that the diet may offer considerable variety; that meat and its preparations are harmful; that vegetables containing much cellulose or seeds are inadvisable; that the disturbances of digestion that sometimes arise are

due less to the large amount of food than to the method of giving it. The mortality under this plan of treatment was 8.7 per cent., while it was sixteen per cent. during the same period on other services at Bellevue Hospital, treated by different methods.

The experiments of Du Bois (4) demonstrated that when amounts of 300 grams were given daily, only traces of carbohydrates could be found in the stools, and in larger amounts only two or three grams of reducing bodies were recovered; that the nitrogen loss was within normal limits; that on an average there was a loss of 7.2 per cent. of ingested fats, and later with a falling temperature a loss of only about 4.5 per cent.

In 1914, Coleman and Du Bois (5), reporting results with the Benedict universal respiration apparatus, concluded that the metabolism of the liberally fed typhoid patient exceeds that of normal persons by from thirty-six to forty per cent., and that this exceeds the figures obtained in the study of patients on the diet containing less energy than they produce by only two to five per cent.

Coleman (6), in an exhaustive review of the dietetics of typhoid, concluded that the amount of food which a patient required could be determined only by the individual needs, the guides being the weight of the patient and the state of his appetite: if losing weight, more food; if hungry, sufficient food to appease the appetite. In the early stage of severe cases, it is difficult to give more than 3,000 calories per diem, but in the steep curve and in convalescence, patients take readily 4,000 to 6,000 calories per diem. If any article of food causes persistent disturbances of digestion, the quantity given should be diminished or the food omitted. If the patient cannot take all the food he requires, he should be given all he can digest and absorb. Carbohydrates should furnish the greater part of the energy of the diet, although fat in some cases may furnish one third to one half. The daily protein should not be below sixty-two grams nor greatly exceed ninety-four.

In the further study of the metabolism of typhoid fever, Du Bois (7) concluded that the entire absence of abnormal respiratory quotients indicates that in typhoid fever protein and carbohydrates are oxidized to the same or approximately the same end products as in health. He also concluded that there is a toxic destruction of protein in typhoid fever, shown by the negative nitrogen balance of a diet which contains more than enough calories to cover heat production.

In 1915, Torrey reported on a study of the fecal flora of a series of cases under treatment by Coleman with a high caloric diet. On a diet of fifty to 100 grams of protein, seventy-five to 100 grams of fat, and 250 to 300 grams of carbohydrate, the fecal flora tended to become of the fermentative, nonindol producing type. The degree of change depended largely on the type of flora at the beginning. With a distinctly putrefactive flora there

\*Read before the Brooklyn Society of Internal Medicine, June, 1916.



might be little more than the elimination of obligate putrefactive organisms and a moderate development of the acidophilic types, but if more favorable initial conditions were present, the stools came to resemble those of the normal nursing infant, in the dominance of *Bacillus acidophilus* and even the presence of *Bacillus bifidus*. Such a flora was necessarily fermentative and incapable of producing indol. Those with this type of flora tolerated the diet much better than those with a flora of putrefactive tendencies. In a private communication, Torrey and Coleman stated that when meat had been used, there was apt to be a change to the putrefactive indol producing type of flora. Coleman stated that such changes augured the development of colitis and putrefactive diarrheas not seen with the properly administered diet without meat.

#### BROOKLYN HOSPITAL SERIES.

From August, 1913, to June, 1916, seventy-two cases of typhoid fever were admitted to the second medical service under the immediate supervision

two weeks after admission to the hospital, having been seriously sick upon admission and never satisfactorily fed. This was early in our experience, when we were not as familiar with the management of these cases by diet as we have become since.

While from such a small series of cases it is not possible to draw positive conclusions, it must be admitted that the actual mortality was low and the mortality in cases where there was a real test of the treatment was nil.

#### PRACTICAL EXPERIENCES.

From our experience, the high caloric feeding in typhoid fever is valuable, as shown by the improvement in the condition of the patient, the comparative freedom from complications, and the rapid convalescence. Under the old plan of a milk diet and a total food intake of from 1,000 to 1,500 calories, many cases were affected with constipation and diarrhea, with severe tympanites, with a low muttering or active delirium, and a gradual loss of flesh and strength, as the disease progressed. Under the high

TABLE I.  
(FOOD FORMULAS FOR HIGH CALORIC FEEDING.)

FOOD FORMULAS	Amount	Carbohydrate in grams	Fat in grams	Protein in grams	Calories per ounce	Calories per ounce	Ways of Serving
1. Milk	8 oz.	12	9.5	8.4	160	20	Hot or cold, or as junket
2. Milk	6 oz.	9	6.5	6	120		Hot or cold
Cream (40%)	4 oz.	1.8	24	1.5	240	45	Flavored with tea or coffee or cocoa
3. Milk	6 oz.	9	6.5	6	120		As junket
Cream	2 oz.	1.8	2.4	1.5	240	60	Flavored with tea or coffee or cocoa
Lactose	1 oz.	30			120		Flavored with vegetable or meat as soup.
4. Milk	6 oz.	9	6.5	6	120		Flavored with vanilla or chocolate
Cream	2 oz.	1.8	2.4	1.5	240		To be used as iced drink with brandy or whiskey
Lactose	1 oz.	30			120		
Egg	one		5	7	80	70	Cooked as custard or made into ice cream (sweetened)
5. Orange juice	4 oz.	12			48	12	As hot soup flavored as above
6. Orange juice	4 oz.	12			48		Preferably ice cold
Egg	1				80		Serve as iced drink or frozen as water ice
Lactose	1 oz.	30			120	30	
Vichy or water	4 oz.				120		
7. Cereal (cooked)	5 oz.				240		
Cream	2 oz.				120	65	
Lactose	1 oz.				30		
Cane Sugar	¼ oz.				120		
8. Bread or toast	50 gm.	25		5	120		Slice 4"x4"x½" thick=50 gm.
9. Milk toast	50 gm.	25		5	120		Add steaming milk as desired
Bread	2 oz.	1.8	2.4	1.5	240		
Cream	2 oz.				120		
Lactose	1 oz.	30			65		1" cube
Butter	10 gm.		8		75		Sugar to taste
10. Baked apple	1	18			120		
Lactose	1 oz.				120		
Cream	1 oz.	.9	1.2	.7	120		
11. Jelly							Flavored with beef, wine or fruit
Gelatine q. s.					120		
Lactose	1 oz.	30			15	50	
Cane sugar	1 dr.	8					
Water q. s. ad.	5 oz.						
Cream (whipped)	1 oz.	.9	1.2	.7	120		
12. Potato (medium)	3 oz.	32		3.5	90		
Butter (inch)	10		8		65		
13. Crackers	3-10	70%		12-40	120	120	Each kind must be weighed in fractions of oz.

of Dr. William H. Lohman and the writer. All of these cases being included in the series of high caloric feeding, we have a gross mortality of 5.5 per cent., four having ended fatally. In none of these was the high caloric feeding actually carried out. Two of these patients were admitted with delirium tremens and bronchopneumonia, as proved at autopsy. Another death occurred in a patient sent to the hospital with a diagnosis of appendicitis and operated upon for a supposed typhoid perforation. The perforation had not actually occurred, although there was some exudate over the affected bowel. Vomiting persisted after operation until death a few days later. The other patient died

caloric feeding, if it is properly carried out, in spite of what the temperature may be, there is almost invariably an improvement from the time of admission, usually entire freedom from disturbance of the nervous system, a slight fullness of the abdomen, but not general meteorism, and bowel movements that are not abnormal in number or character. It is with difficulty that many of the patients are kept flat in bed or even in bed at all when the temperature is still ranging from 101° to 103° F. There is no exact point when convalescence begins, except the time when the temperature is practically normal morning and evening. Many times it has seemed entirely advisable for the patient to sit up for one

half hour morning and evening and read, even during the second and third week of the disease. *The picture is so striking that we are led to wonder whether the disease that we have known as typhoid fever is not in large measure really starvation and an intoxication resulting from the breaking down of the body protein or some such process.*

We were at first inclined to doubt whether it was possible to feed every typhoid patient on this plan of diet. There was indeed a period when we found it impossible. Further experience has taught us that success depends on the proper instruction of nurses, persistence in plying the patient with food, if necessary every two hours day and night, and a variety in the diet suited to the patient's appetite. The very sick will take nourishment readily from the hands of a properly trained nurse. The delirious patient can be fed by due persistence. The patient lacking appetite will usually take some few things with a relish, and these things must be found. In rare cases where persistent vomiting is encountered early in the disease, we may meet with a serious obstacle. The possible causes of vomiting are many, but I believe that some are due to intoxication which would be avoided by proper feeding in the early stages of the disease.

#### FOOD FORMULAS FOR HIGH CALORIC FEEDING.

The problem of feeding the patients 3,000 to 4,000 calories per diem, depending on size and age, we have solved to our satisfaction by the use of certain food formulas, printed in a convenient form and placed in the hands of the nursing staff. This table (Table I), it will be observed, starts with milk, to which other foods are added. We use little plain milk. It will be observed that formulas 2, 3, and 4 may be served in such a variety of ways that they seem to be entirely different food to the patient. Several times daily it is advisable to use number 4, but as there are 11.5 grams of protein to every eight ounces, it must be used with discretion. We find that many patients, particularly children, in the height of their fever will object to many foods, but will take ice cream as often as desired. When using high caloric ice cream more than once daily, it is advisable to have different flavors, which can be added readily enough at the time of serving. The small details of preparation of food to suit the patient's appetite in various stages of the disease, determine in a large part whether we are successful in administering as much as we wish.

There is more or less variation in the amount of fat different patients can take, and occasionally we find that it is necessary, if the bowels tend to be loose or the abdomen to show too much fullness, or the patient loses his appetite, to diminish the amount of cream and butter for twenty-four to forty-eight hours. We have seen no objection whatever under these conditions to the use of calomel, one quarter grain every half hour for six doses, followed by a saline laxative or a full dose of castor oil.

The question occasionally arises, whether in the face of severe tympanites it is advisable to reduce the diet. At first, this plan was adopted, but as time has gone on we have taken these slight abdominal distentions less seriously, realizing that with such a farinaceous diet there was apt to be more gas

in the intestines. The important thing, however, is that the patients are in such excellent condition that the intestinal tone is good, and we do not see paresis of the bowel or great distention.

The same question has arisen in about five cases that have shown visible blood in the stools. We have, until this blood has disappeared, reduced the diet in a measure, although we have not made any radical change in the character of the food. Under this plan, possibly also as a result of the use of horse serum subcutaneously, none of the hemorrhages have proved alarming, and all have ceased entirely in a few days. If confronted with severe hemorrhage, either on admission to the hospital or when treatment was well established, we should regard it as logical to withhold all food for a time and to give large doses of morphine to the physiological limit.

#### ARRANGEMENT OF FEEDINGS.

Depending on the age and condition of the patient, the physician in charge suggests the amount of feeding and the number of nutrients it is desired that each patient should have. Feedings are on a two hour basis. Starting at 7:00 a. m., the amount and kind of feeding is charted and the actual value expressed in figures from the card. As the day goes on, the amount that has been taken up to any hour is known. When the night nurse goes on duty, she knows how much has been given and whether it will be necessary to feed the patient all through the night. It is rarely necessary to give more than two or three feedings from 7:00 p. m. to 7:00 a. m., but the patient who is very ill and takes only a small amount at a time, is usually restless and the feedings every two hours through the night are not objectionable.

TABLE II.

HOUR.	FORMULAS.	AMOUNT.	CALORIES.	TOTALS.
8 a. m.	Nos. 7 and 3	4 and 3 1/2 oz.	460	
10 a. m.	No. 4	6 oz.	420	880
12 m.	No. 9		545	1425
2 p. m.	No. 11	6 oz.	300	1725
4 p. m.	No. 4	2 1/2 oz.	350	2075
6 p. m.	No. 3	3 1/2 oz.	360	2435
8 p. m.	Nos. 7 and 3	4 and 3 oz.	460	2895
11 a. m.	No. 6	6 oz.	180	3075

The selection of formulas is left to the nurse, who suits as far as possible the desires of the patient. In Table II is seen the dietary of a patient who takes about 3,000 calories, and from this is seen how easily the amount may be raised to 4,000 by the addition of bread or toast with butter, by an increase in the number of ounces taken at a feeding, or by giving more feedings through the night. As a general rule we have found that the strong adult male does well on 4,000 to 4,500 calories, women and children on about 1,000 less. Many children crave more, however, and we have found no objection to their appetites being satisfied. In fact, only then do they begin to improve in flesh and general appearance.

Only through familiarity with this plan of treatment are theoretical objections and skepticism to be overcome. When its use becomes general the old time picture of enteric fever will rarely be seen.

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## A CONSIDERATION OF SOME MATTERS RELATING TO DIET.\*

By CLARENCE BARTLETT, M. D.,  
Philadelphia.

*Proprietary Foods.*—First let me pay my respects to a certain class of proprietary foods. Those that are good can with few exceptions be duplicated for all practical purposes by the majority of housewives and nurses, and are permissible when home manufacture is rendered impossible by conditions. There are others, however, that have attained great commercial success by reason of the endorsement of physicians. On this list we find sweetened alcohol and water, mutton fat and stale eggs, alleged beef extracts, etc. Their widespread use in sick rooms is a sad testimonial to the gullibility of a certain class of the medical profession.

*Dietetic irregularities.*—A regulation of diet presupposes that there is something in the patient's eating habits which requires correction. The error may reside in the nature, quality, or quantity of food, the time spent in eating, regularity in attendance upon meals, and manner of cooking. My patients are requested to bring me for review an itemized list, covering the period of one week, of articles and their quantities and methods of preparation taken at various meals, the hours of eating, and the time occupied. As a result I have gleaned information diametrically opposed to the statements made to me when taking the initial anamnesis of the case. Patients who claimed good appetites confessed in writing to a quantity that was good only for bare subsistence; others, presumably delicate, admitted the consumption of quantities that tax our credulity. Some admitted eating at irregular hours, others bolted their food, some rushed to the table when tired from physical exhaustion or mental excitement, and still others rested not a minute, but hastened back to work, still masticating the last morsels. This system has enabled me at times to effect a speedy cure.

*Mixed diet.*—Whether sick or well, man must get sufficient to maintain his nutrition. In the course of acute diseases, this injunction has no place, because the primal indication is rest of the digestive apparatus. A few days' abstinence fulfills the indication and does no harm. In chronic disease, the problem is more difficult, because while combating an illness, the patient's general condition must be kept at its highest possible standard. We are wise, I believe, if we accept the prevalent doctrine that the best possible mental and physical health is secured by a mixed diet into which all the elements of nutrition enter. The proportion of proteins, carbohydrates, and hydrocarbons of such a diet are likely to vary with the physiological demands of the individual based upon his idiosyncrasies and the character of work which he is called upon to perform. Unfortunately there is no way of determining *a priori* what the relative proportions of these elements of nutrition shall be, and we are forced to rely upon experimentation and results. With sensible people, the appetite takes care of this question.

As with medicines, diet should be ordered with a

logical end in view and upon definite indications. Results of palliative or so called conservative treatment may be even more disastrous in that the long continued irritation may result in malignant disease of the biliary apparatus. We should not, then, resort to palliative treatment by diet any more than by analgesics when prompt radical measures offer a reasonable prospect for a cure.

*Gastric ulcer.*—For gastric ulcer, we have two plans of general medical treatment, each one based upon sound reasoning, and each succeeded by good results. One is the Lenhartz diet, and the other is known as general and visceral rest. I counsel always medical and dietetic treatment as the first choice in the absence of definite indications to the contrary in all cases of gastric ulcer; I might pursue the same course with the first relapse; but a second return of symptoms means that in all loyalty to the patient, the surgeon and not the physician should act. If, as often happens, nutrition is badly undermined by mechanical interference with gastric function, a diet which will force nutrition, administered through the tube if need be, is necessary. This diet must be one of high caloric value. Starting the day with a lavage, followed immediately by the administration by the tube of two ounces of olive oil, and then by a mixture of eight ounces of milk, two eggs, and one ounce of sugar, the total meal represents 960 calories. The egg, milk, and sugar mixture may be administered at three to four hour intervals through the day by the mouth. If it is desired to vary the diet somewhat, the mechanical difficulty must be borne in mind.

*Various dyspepsias.*—A very large proportion of the dyspepsias originate elsewhere than in the gastrointestinal tract, and must be treated according to causal indications. Notable among these are the indigestions due to chronic appendicitis, gallbladder disease, cardiac inadequacy, tuberculosis, syphilis, gout, etc. The difficulty in the early recognition of them in the past originated in our false conception of the clinical results at the time of their conception. It is now antiquated to wait for paroxysms of biliary colic or acute or virulent cholecystitis before establishing the diagnosis. We now recognize that gallbladder patients not uncommonly suffer from what was formerly accepted as a harmless dyspepsia, the chief manifestation of which was flatulence or gas. We administered drugs to check fermentation or to aid in the expulsion of gas; we prescribed a diet that would not ferment. We amused the patient, won his admiration for our astuteness, and Nature was good, and the symptoms disappeared for a time. In the end, the surgeon claimed his own. Fat, fair, forty, and flatulent is not a bad symptomatic quartet for the early diagnosis of gallstone disease.

It follows, then, that the proper dietetic treatment of gallbladder disease is that which builds up the defensive mechanism of the system, thus diminishing the chances of local infection. Of course, any diet designed to get rid of gallstones already existent is a manifest absurdity.

*Starvation dyspepsia.*—Although the fact that a rigid diet is capable of producing dyspepsia has been known for nearly forty years, it is only within a comparatively recent period that it has

\*An abstract of the original communication in the *New England Medical Gazette* for September, 1916.



received general recognition. We may have gone to extremes in the frequency with which we diagnose "starvation dyspepsia"; still the general statement that half of the dyspepsias observed in practice are of this variety, is worthy of considerable respect. The victims of this malady are recruited mainly from that large class of subjects who study health matters closely, and are especially careful in matters relating to food. Feeling some epigastric discomfort, some one article of diet is charged with being the "criminal" and is banished at once. If the symptoms continue, the diet is still further restricted. Eventually the patient is limiting himself to less than one half the quantity of food required by a person of half his physical activities. Fortunate indeed is he if his errors are corrected before the general malnutrition has continued sufficiently long to produce secondary tissue changes. The majority of cases of this kind coming under my observation have made good recoveries; but others, by reason of many years of watchful waiting for symptoms, have expectation of gastric disturbance so thoroughly ground into them, as to require more or less stern supervision. Some of them have been trained for a morbid stomach since childhood's days. Part of this training has been hysterical, and part of it has been pseudoscientific. The result is the same in either case. This subject of feeding youth and adolescence must be considered from a common sense standpoint, and the value of the course pursued must be judged by results. A stomach to attain functional strength must be exercised. Comfortable digestion depends upon the integrity of the gastric muscularis. If this is strong and food does not stagnate in the stomach, the organ may be in fairly bad shape without disturbing its owner. The moral is that the gastric muscle should be trained by working it, just as we train a biceps. This should be accomplished by giving food that makes use of the gastric muscular capacity, but does not abuse it. The practice of pampering the stomachs of youth and adolescence is to my observation irrational. Let the growing boy and girl exercise their stomachs at will with standard foods properly cooked and properly eaten, and nothing but good can come from it.

**Constipation.**—Constipation is one of the great bugbears of the world, and nostrum venders have turned the fears of the many to their financial profit. As a matter of fact, few persons who believe themselves constipated are really so, and require no treatment, dietetic or otherwise, for such a condition. It is easy enough to prove or disprove my statement in any individual case. Nineteen hours are required for food to pass from mouth to anus. Administer to the patient a capsule containing ten grains of carmine, and note the time. Then note when the red stain appears in the stool. To obtain accurate schedules, it may be necessary to repeat the experiment a couple of times. Numerous have been the times in which I have demonstrated in cases of so called obstinate constipation that food travels the entire alimentary tract on normal time or even in much less than nineteen hours. The treatment of such cases is obvious.

Other patients are apparently constipated only because they take food of such high nutritive quality that there is little waste residue. There is not sufficient waste to cause a daily evacuation. Some of the pill takers have been made such by habit. The constant taking of the pill trains the intestines to rely upon unnatural stimuli. Again the treatment is obvious. Concerning foods for these patients, good judgment must be exercised, for badly prescribed foods are as bad as the pill. The general principles governing the diet of constipated subjects is well settled and needs no discussion from me.

**Gout.**—The best method of dieting the gouty is universally acknowledged to be the administration of a minimum of nitrogenous foods, entire abstinence from alcoholic beverages, and a maximum of water drinking. Gout brings to mind the subject of the many types of polyarthritis, which are in no sense metabolic disorders, but are now accepted as dependent upon cryptic infections. Formerly these patients were treated by an exclusive vegetable diet, and were rendered anemic and emaciated thereby.

**Renal disease.**—As to the dietetic management of chronic renal disease, I must confess to considerable misgiving. Theoretically, a vegetable and milk diet should give the best results. Practically, theory is confirmed in only a few cases. For the present, each one must follow out his own lines and determine the results of treatment by regular repetition of the phthalein test rather than by the old fashioned routine urinary analyses. Any treatment that does not maintain or increase the functional capacity of the kidneys is not a good treatment.

As food is given to maintain nutrition, all diets should be of the high caloric class if they are to be successful. The condition of the patient may not permit this. In that case we must start as best we can and go higher as conditions improve. As foodstuffs are limited in number and all standard foods are good, we find that it is mostly our duty to reduce the raw product to a state where it can best be assimilated. In the majority of cases, the important thing is the cooking.

Another excellent general principle is that which relates to resting after meals, and resting at meals. Many a dyspeptic is such only because he rises from the table to resume his activities.

The last general principle is that people should eat enough, but not too much. Everyone believes this, but few follow it out. The old saying that the platter killed more than the sword, held good from the beginning of the world until two years ago, and then it was not the platter's fault that it lost prestige.

**Diet in Chronic Nephritis.**—Articles of diet to be avoided in all nephritic patients include: Alcoholic beverages of all sorts, meat extracts, condiments, and spices of every variety; all fruits and vegetables rich in irritating salts; table salt in excess and all salted meats and fish; carbohydrates and proteins should be allowed in accordance with the condition and needs of the patient.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

EDITOR

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Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transporta-  
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JANUARY 27, 1917

### THE CALL OF THE HOUR.

"God give us men today." The Nation's prayer, voiced by Elihu Root last Monday, is no less that of the medical profession. The "genuine, sincere, devoted men . . . who love their liberty so much that they are willing to give their liberty for others as well as claim it for themselves" must be found in the individual walks of practical life.

God give us, then, these men of "plain, practical, and sensible hard work" in the medical profession. Now is our opportunity, the opportunity to lighten the heaviness of heart, which presses with the burden from the waste of mind and strength and opportunity upon our leaders in thought and activity, or at least puts a violent check upon their former progressive promise.

God awaken us, the physicians of America, to the responsibility which their calamitous preoccupation has flung upon the younger nation. Awaken us to that "noble idealism and sincere capacity for selfdevotion" without which hard, practical endeavor is worthless, and apt to be selfish. Our physicians have been wont to look toward their personal gain, their necessary livelihood, their legitimate ambition, their praiseworthy hunger for knowledge and closer acquaintance with scientific fact. These things, however, are not enough. Not enough even the general care for the patient's wel-

fare, too often casual, desultory, and secondary to personal advantage. With even the most sincere intentions this is bound to be so, unless God grant us to be men.

It is the bigness of men that must be thrown into the breach made by the loss of this war. It is this for which the time calls out. For the physician this means the effacement of personal prejudice, an outreaching of personal limitations toward a new attitude. Not what we can get out, but what we can put in, what we can find there and awaken to life, should be our aim. Leaders from the other side have taught this greater humanity for the patient, this larger dynamism which has failed to find its way in the complex and difficult dealing with environment.

Medicine is no limited scheme, or bundle of associated schemes, for personal aggrandizement, or even for high grade exploitation. It is rather the humble approach to tremendous problems which represent the communal struggle toward efficiency and progress. It finds in the sick individual a condensation and an intensification of the same struggle with a like accentuation of the result of failure in the struggle. Hence the importunate need, in this day, for the awakening of the "noble idealism and sincere capacity for selfdevotion" resting upon the one sure "basis of plain, practical, and sensible hard work" in thought, in research, in willingness and readiness to come forward with an open mind, and with an unstinted application of the best that is in us to the solution of community problems or to the even more exacting problems of the individual life itself immeasurable in capacity for health or disease.

God give us these strong men who will give and give, that in giving they may find and save vital human material.

### THE CASE OF DOCTOR GRAYSON.

President Wilson sent to Congress on January 18th the nomination of Passed Assistant Surgeon Cary T. Grayson, U. S. N., to be medical director with the rank of rear admiral, to fill a vacancy created by the naval appropriation act. Doctor Grayson was born on October 11, 1878, and appointed Assistant Surgeon in the Navy from Virginia on June 28, 1904. He has had a total service of twelve years and seven months, five years and two months of which were at sea. During his second tour of sea duty he was medical officer of the U. S. S. *Mayflower*, the President's yacht. The seven years and five months in which he has been

serving on shore duty have been passed in Washington, and during the greater part of this detail he has been assigned as the attending surgeon to the White House.

Should the Senate confirm his nomination Doctor Grayson will remain in the grade of medical director with the relative rank of rear admiral for nearly twenty-six years before he is retired because of age. This means that during that period one of the three positions with the grade of medical director and the rank of rear admiral, which were authorized for the medical corps by the recently enacted naval personnel bill, will not be open to other surgeons. He will jump 127 officers in the medical corps, and will jump the grades of surgeon and medical inspector entirely, and take precedence over more than 700 officers in the line and staff so far as rank and pay are concerned. Should his nomination be confirmed, Doctor Grayson will succeed the present Surgeon General as the ranking medical officer in the service for a period of fourteen years with the pay and emoluments of a senior rear admiral.

Probably no other nomination for promotion has ever been made either in the army or the navy which has aroused such widespread comment and such general condemnation. It is said that no officer of the navy has ever before been jumped over two whole grades. The promotion will be equal to one of about 400 numbers in the line. Some idea of what this means is shown by the fact that Commodore George Dewey was promoted four numbers for winning the battle of Manila Bay, and when made a full admiral by a special act of Congress later, he was jumped six more numbers. Naval Constructor Hobson received a promotion of ten numbers for sinking the *Merri-mac*, and Rear Admiral Evans was promoted four numbers as a reward for gallantry in action at Port Fisher.

When the personnel bill was enacted by Congress permitting promotion by selection, it was understood as a matter of course that length of service, duty performed in the different grades, and seniority were to be given consideration in making a selection for promotion. An exceptional record of contributions to science, or an overwhelming and selfevident measure of executive ability, might with justice be made the basis of a selection which would overrule the claims of mere seniority. Such qualifications led to the promotion of Wood, of Pershing, of Greeley, and of Peary, but all these men had rendered extraordinary services. Doctor Grayson has been a capable and efficient officer, he has performed well the duties which have been assigned him, but he has

not made any brilliant contributions to the science of medicine, he has not even had an opportunity as attending surgeon at the White House to display unusual executive ability, and, valuable as the health and welfare of the President is, he has not in the care of the health of the President and his family rendered such extraordinary services as warrant such extraordinary promotion. The nomination looks so much like public reward for a private service, that we are grieved and surprised to see the President of the United States placing himself under this suspicion, and we do not believe that the Senate of the United States will confirm the nomination.

Both the Navy and the Army need additional surgeons. If the precedent established by this nomination is allowed to stand it will be even more difficult in the future, than it has been in the past, to induce young medical men to devote their lives to the service. Such an appointment is most disheartening and demoralizing to the service. If this sort of procedure is tolerated in the staff corps it might establish a precedent for similar action in the line. Notwithstanding the fact that the legality of the nomination has been upheld by the Department of Justice, we have grave doubts whether the President has any authority to promote by selection in the staff corps, since the bill of August 29th, creating vacancies in both staff and line of the Navy, specifically states that the promotions in the line should be by selection, and tells how the selection should be carried out, but does not make any mention of promotion by selection in the staff corps. If promotion is to be based upon personal favoritism no one would feel justified hereafter in recommending service in the Army and Navy as a career for young medical men. One of our most distinguished physicians, who has yearly urged the large classes of medical students whom he teaches to enter the Government service, has decided to do so no longer. Other teachers will undoubtedly follow his example if the Grayson appointment is confirmed by the Senate.

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#### ETIOLOGY OF TYPHUS.

No small proportion of the enormous amount of clinical investigation which has been devoted to the control of the great epidemic diseases, has been directed toward finding the cause and method of spread of typhus fever. With the possible incrimination of the body louse in the latter capacity, unusual interest has been manifested in the question of etiology. The identification of mild endemic typhus in the eastern United States (Brill's disease), the endemic typhus of Mexico (tabardillo),



and the epidemic disease of Europe now rest on firm foundations. The political insecurity prevalent in Mexico in recent times, and the promiscuous entry of refugees into the United States as well as the importation of Mexican laborers in large numbers by American railroads have brought about a situation attended by grave danger of typhus invasion of the United States on an epidemic scale. A number of cases have been found in Mexican railroad laborers in the southwest and Pacific coast, and immigration and quarantine restrictions are being enforced with particular care by the United States Public Health Service to prevent further encroachments.

All of these considerations add interest to the search for the cause of typhus fever. As with yellow fever and scarlet fever, many discoveries have been claimed, but they have not waited on adequate substantiation. The recent expedition sent to Mexico by the Mount Sinai Hospital has secured some results, however, which promise well. This expedition consisted of Olitsky, Denzer, and Husk, of whom the last contracted typhus and died, adding one more name to the illustrious role of American men of science who have become martyrs to the cause of preventive medicine (*Journal of Infectious Diseases*, December, 1916). The field work was done in Matehuala, a town of 10,000 inhabitants in central Mexico, during the typhus epidemic of 1915 and 1916. The absence of public statistics made impossible a definite estimate of the extent of the epidemic, but its incidence may be judged from the fact that in Mexico City alone there were some 30,000 cases, constituting ten per cent. of the entire population. The mortality observed in Matehuala was twenty per cent., which is midway in severity between the severe type in southeastern Europe in 1913 and 1914, and the mild endemic form in New York.

Olitsky, Denzer, and Husk were able to confirm the etiological findings of Plotz, Olitsky, and Baehr in their earlier studies of the New York and Balkan types of the disease (*Jour. Infec. Dis.*, 1915, 17, p. 1). They found in the blood a similar organism associated with Mexican tabardillo which had characteristic and identical features (*Bacillus typhixanthematici* Plotz). These bacteria decrease in number with the course of the infection. The blood from which cultures were made was proved by guineapig inoculation to contain typhus virus. With this organism sixteen per cent. of their cases showed agglutinins before the crisis and ninety-five per cent. after the crisis. Agglutinins were not found in numerous controls where previous typhus could be excluded. Various other bacilli showed no agglutination with typhus immune serum. They

demonstrated the pathogenicity of this organism and recovered it from infected animals. The same organism was found in cultures from all infected lice when the period of observation was sufficiently long, i. e., three weeks. In fresh cultures from infected lice, the bacilli tended to be Gram negative, becoming Gram positive after subculture. This indicates that the Gram negative phase decreases as the virulence decreases.

If the work of the men quoted meets with adequate confirmation, it will mark another forward step in the campaign against preventable disease and will add a new trophy to American medical research.

#### TESTING THE SIGHT OF CHAUFFEURS.

In this age of apparent efficiency a man must bring to any position for which he applies special qualifications or he will not be accepted. Then having obtained the job he must make good at it or he steps aside to make room for some one else. Certain employers of labor are coming to realize, too, that before employing a man they should look into his psychological qualifications. For this purpose simple psychological tests may be given; those candidates who recognize most readily a letter or a number which appears for an instant are selected to sort out defective parts which differ from the perfect ones only slightly, and other positions which require special aptitude in one direction are filled by those who have shown themselves qualified.

It has always been generally recognized that in occupations having to do with transportation, where the lives of human beings may depend upon quickness to recognize and to act upon danger signals, keenness of vision is the attribute most desired. Thus railroads put candidates for positions as engineers through rigid tests and reject the color blind and men with certain other specified defects. It seems to us that cities would be justified in giving tests of this kind to those who apply for licenses to drive taxicabs. We are all familiar with the intrepid way in which taxi drivers speed in and out of the crowded thoroughfares, grazing pedestrians and vehicles by an eyelash, playing tag with destruction, and scarcely heeding even the traffic policeman himself. When we stop to reflect on the number of street accidents happening every year, does it ever occur to us that perhaps a certain percentage of them is due to defective vision on the part of the drivers?

Dr. James McHoul, a captain in the medical corps of the British Army and ophthalmologist for a recruiting board, has an interesting communication in a recent issue of the *British Medical Journal*. He

quotes the cases of six drivers of public vehicles who happened lately to come under his observation, all of whom had defective vision. Four of these men had had one or more accidents, at least one of them resulting in death. The usual trouble in these cases was with the choroid. Doctor McHoul suggests that all applicants for licenses to drive public vehicles be subjected to a rigid optical examination and to periodical reexaminations, say at intervals of one year.

This is an idea well worth taking up on this side of the Atlantic. The public is becoming awakened to the dangers of inefficiency, as witness the "safety first" campaigns throughout the country. Physicians can do their part by insisting that men who are intrusted with the lives of human beings should be physically qualified to guard those lives properly.

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### THE HEALTH BULLETIN.

The health officer has ever had a variety of duties. What with controlling foci of infection, inspecting suspected food, and offensive privies, protecting water supplies, draining swamps, and determining the fate of sundry noisy and sleep disturbing fowls of a neighborhood, he has had enough to keep him thinking and acting. Recently, however, he has had thrust upon him the business of editor, and often author, of a weekly or monthly publication in the interests of public and private health. Though presumably unprepared for such a service the health officer has risen to the occasion remarkably well.

The issuance of a bulletin was not a new thing for the health department, for a statement of the number of cases of this and that disease and the number of deaths, the number of diagnostic tests made, and a summary of other work, had often been published. But the new bulletin deals with matters of life and health rather than disease and death—in a word, with prophylaxis. The statistics, which we fear were seldom scanned, occupy the background in this new literary venture.

In its present (though we doubt its final) stage of evolution, the health bulletin is often an amphibious affair, intended for both the profession and the public, and for this and other reasons, appealing less than it might, to either. The material intended for physicians is often of a nature perplexing to the laity. In fact we have seen such material so poorly worded or badly edited that the medical reader himself was sorely puzzled as to its meaning. In other cases members of the health staff, excellent in their special lines of bacteriological or other work, have put things in a way which has

thrown doubt upon their efficacy. Careful editing would have prevented such a misfortune.

On the "popular" side the health bulletin has too often accepted the usual notion that in order to appeal to the public, one must highly color, or in other words, a little, if not considerably, exaggerate the facts. If this is the key to the lay mind, the earlier the key is lost the better. But the layman is not so stupid. You can fool him some of the time but not always, and exaggerations always react upon their source.

When it comes to sensational methods in health education the health bulletin cannot hold a candle to the advertisers of curealls, for they not only have the literary cleverness but they have the financial backing. Their reading matter is not sent "to those who desire it" but is spread broadcast and reaches a hundred homes where the health bulletin reaches one. The competition is most one sided, but truth and dignity will prevail even over lies. The kingdom of health, like that kingdom of heaven of which it is an essential part, is like a grain of mustard seed and will surely grow and increase. Let us avoid doing anything that will delay that growth. The health bulletin is an aid toward furthering the kingdom, but let it be worthy of its cause.

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### TYPHOID IN THE ARMY.

Eight cases of typhoid fever occurred in the United States Army during the calendar year 1915, according to the report of the Surgeon General, which has recently been issued. This record is interesting as showing the efficiency of antityphoid vaccine, the use of which is now compulsory under Army regulations. Half of the cases were in the island possessions and the others were scattered through the States. All of the patients recovered and no serious complications occurred. It is generally recognized that typhoid vaccination does not give absolute protection, a very small percentage of persons being incapable of complete immunization against the disease. Typhoid itself does not always afford freedom from a second attack. The question of the period of immunity conferred by antityphoid vaccine is still an open one. English opinion favors the belief that it begins to decline between the second and third year following the vaccination, while our army surgeons credit a much longer period to the vaccine made by the medical department of the army when administered in three doses at intervals of ten days. The first dose consists of one half c. c. and the succeeding doses of one c. c. each, making a total of two and one half c. c. The present record of no deaths in the army from typhoid stands out in striking contrast with the 2,774 deaths that occurred from this cause during the Spanish-American War—an annual rate of 13.84 per 1,000.

## News Items

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Tuesday, January 30th, Medicolegal Society; Thursday, February 1st, Obstetrical Society, Southeast Branch of the County Medical Society; Friday, February 2d, Kensington Branch of the County Medical Society.

**American Electrotherapeutic Association.**—At a recent meeting of the board of trustees it was decided that the next annual meeting of the association would be held in Atlantic City, N. J., September 11th, 12th, and 13th, under the presidency of Dr. J. Willard Travell, of New York. Dr. Byron S. Price, of New York, is secretary of the association.

**Endowment Fund of Chicago University Medical School.**—Announcement is made that the Billings family, of Chicago, of which Mr. C. G. K. Billings is the head, has given \$1,000,000 to the University of Chicago toward the endowment of the medical school. The money is to be used to build a hospital in connection with the school.

**Personal.**—Colonel William C. Gorgas, surgeon general of the United States Army, and Dr. George W. Crile, of Cleveland, were awarded gold medals by the National Institute of Social Science, at the annual meeting of the organization held in New York recently.

Professor Reid Hunt, of Harvard Medical School, was elected president of the American Society of Pharmacology and Experimental Therapeutics, at the annual meeting held in New York during convocation week.

**Pathological Society of Philadelphia.**—At a recent meeting of this society the following officers were elected to serve for the year 1917: President, Dr. Herbert Fox; vice-president, Dr. A. G. Ellis; secretary and treasurer, Dr. George W. Outerbridge; recorder, Dr. John A. Kolmer; curator, Dr. Robert A. Keilty; business committee, Dr. W. L. M. Coplin, Dr. A. E. Taylor, Dr. R. W. Pearce, Dr. O. H. P. Pepper and Dr. J. H. Austin; membership committee, Dr. R. C. Rosenberger, Dr. S. W. Sappington and Dr. F. E. Keene; publication committee, Dr. A. G. Ellis, Dr. E. B. Krumhaar, Dr. Leon Jonas and Dr. E. H. Goodman.

**Physicians Needed in Palestine.**—An appeal for \$75,000 for the equipment and support for one year of a medical unit to be sent to Palestine has been made by Hadassah, the women's Zionist organization in America. The organization has issued a statement detailing the events which make the unit a pressing need in Palestine, and adds that Christians and Mohammedans, as well as Jews, would receive the attention of the doctors and nurses sent out.

The unit is to consist of ten physicians and five nurses, who will minister to all elements of the population. A fund of \$75,000 must be obtained to cover the cost of the expedition for one year. The Medical Advisory Board co-operating with Hadassah consists of Dr. Harry Friedewald, chairman; Dr. Isaac A. Abt, Dr. Isaac Adler, Dr. Emanuel Libman, Dr. Milton J. Rosenau, and Miss Lillian D. Wald.

**The Jeanes Hospital Fund.**—The Jeanes fund of more than \$3,000,000, bequeathed for the establishment of a hospital for cancer and nervous diseases by Anna T. Jeanes, will be used to establish a new and independent general hospital somewhere on the Main Line, within fifteen miles of Philadelphia. This announcement has been made by the chairman of the committee in charge of the selection of a site. Tentative plans for the institution have already been drawn, and several sites are under consideration by the committee. These sites will be inspected within a few weeks and a choice made. Half a dozen big hospitals and medical colleges in Philadelphia and other cities have been bidding for the fund since the death of Miss Jeanes in 1908. Dr. Winfried H. Smith, superintendent of the Johns Hopkins Hospital, of Baltimore, was selected by the trustees to consider the claims of the various hospitals, and it was finally decided that only by establishing a new and independent hospital could the purposes of the will be carried out.

**Medical Club of Philadelphia.**—Dr. Charles K. Mills was elected president at the annual meeting of the club, held in the Bellevue-Stratford Hotel, Philadelphia, Friday evening, January 10th. Other officers elected were: Dr. G. Oram Ring, first vice-president; Dr. William Martin, second vice-president; Dr. William S. Wray, secretary; Dr. Lewis H. Adler, Jr., treasurer; Dr. Paul J. Sartain, governor for five years; additional inspectors, Dr. Stephen E. Tracy, Dr. Alexander MacAllister, Dr. Charles S. Barnes, and Dr. H. A. P. Neel. Dr. Judson Daland presided. Memorials on the late Dr. E. L. Duer and Dr. William L. Rodman, former presidents of the club, were read by Dr. E. A. Montgomery and Dr. L. Webster Fox.

**Philadelphia County Medical Society.**—At the quarterly business meeting of this society, held on Wednesday evening, January 17th, Dr. Henry D. Jump was elected president, succeeding Dr. John D. McLean. Other officers were elected as follows: First vice-president, Dr. Moses Behrend; associate vice-presidents: North Branch, Dr. Mitchell P. Warmuth; South Branch, Dr. Andrew Callahan; Kensington Branch, Dr. Louis E. Barlow; West Branch, Dr. Samuel McClary, 3d; Northeast Branch, Dr. George E. Levis; Northwest Branch, Dr. Robert N. Downs, Jr.; Southeast Branch, Dr. Aaron Brav; secretary, Dr. William S. Wray; assistant secretary, Dr. Elmer H. Funk; treasurer, Dr. Edward A. Shumway; additional directors, Dr. Paul B. Cassidy, Dr. Benjamin F. Devitt, and Dr. Samuel H. Brown; additional censor, Dr. William E. Hughes.

**Smallpox in New York.**—The first case of smallpox in New York city this winter was reported to the health department during the past week. The patient was a negro who came to New York from Wilmington, N. C., on January 4th. Reports from the United States Public Health Service and from the Connecticut State Board of Health show a disquieting prevalence of smallpox in various parts of the country. Experience has shown that in New York an epidemic of smallpox may be expected about every ten or twelve years. This is well shown by the following statistics, giving the number of cases of smallpox reported in this city since 1874:

THE OLD CITY.		Year.	Cases.	Year.	Cases.
Year.	Cases.	1888.....	311	1902.....	1,516
1874.....	1,462	1889.....	2	1903.....	43
1875.....	3,397	1890.....	5	1904.....	74
1876.....	983	1891.....	21	1905.....	46
1877.....	48	1892.....	378	1906.....	100
1878.....	5	1893.....	464	1907.....	58
1879.....	5	1894.....	770	1908.....	17
1880.....	65	1895.....	41	1909.....	16
1881.....	64	1896.....	5	1910.....	9
1882.....	1,338	1897.....	73	1911.....	15
1883.....	702	1898.....	101	1912.....	22
1884.....	26	1899.....	99	1913.....	20
1885.....	5	1900.....	156	1914.....	24
1886.....	98	1901.....	1,964	1915.....	7
1887.....	109				
1888.....	343				

**Physicians to Discuss Industrial Hygiene.**—The Division of Industrial Hygiene and Engineering of the Department of Labor and Industry, of Pennsylvania, has made arrangements for a conference of physicians, to be held on Friday, February 16th, at the State Capitol, Harrisburg, with Dr. Francis D. Patterson, chief of the division, in the chair. Papers will be read as follows: The Relation of the Physician to the Compensation Law and Its Proposed Amendments, by Dr. William Estes, of South Bethlehem, Pa.; discussion by Dr. Charles A. E. Codman, president of the Medical Society of Pennsylvania. Compensation for Industrial Diseases, by Mr. Frederick L. Hoffman, statistician, Prudential Life Insurance Company; discussion opened by Dr. Alfred Stengel, of Philadelphia. The Dawn of a New Surgical Era—The Carrel-Dakin Treatment of Infected Wounds, by Dr. William O'Neill Sherman, of Pittsburgh; illustrated by lantern slides and motion pictures; discussion opened by Dr. J. S. Lawrence, of Johns Hopkins University, Baltimore, Md. Treatment of Fractures of the Long Bones from the Viewpoint of Function, by Dr. Edward Martin, of Philadelphia; illustrated by lantern slides; discussion opened by Dr. John B. Lowman, of Johnstown, Pa. National Standards for First Aid, by Dr. Joseph C. Bloodgood, of Johns Hopkins University, Baltimore; discussion opened by Major Robert U. Patterson, Medical Corps, United States Army.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### SODIUM BICARBONATE IN GASTROINTESTINAL DISORDERS.

By LOUIS T. DE M. SAJÓUS, B. S., M. D.,

Philadelphia.

(Continued from page 131.)

The efficacy of sodium bicarbonate, given during the period of digestion, in promptly relieving most instances of gastric pain or discomfort experienced after meals, has led to widespread use and even abuse of this drug. The chief indication for it is as a palliative in various states associated with excessive acidity, whether the latter results directly from an hereditary disposition, habitual errors in diet, mental overwork or worry, intoxications by alcohol, tobacco, etc., or indirectly as a reflex phenomenon initiated by organic lesions elsewhere or in the stomach itself. Throughout its field of application, attention is to be paid not only to the secretory condition of the stomach, but also to the disturbances of gastric motility and sensibility which frequently complicate excessive acidity and which may or may not be favorably influenced by the alkali.

In the hyperacidity of functional type, where the cause cannot be adequately eliminated or relief is urgently required at the time, alkalies are of definite value. Sodium bicarbonate, as Kaufmann states, is by far the most effective of these drugs when a quick result is desired. The pain, usually appearing in from an hour and a half to three hours after meals, soon passes off when fifteen to forty grains of the drug are taken, dissolved in a little water. Prevention of the pain at subsequent meals may be secured by ordering the drug systematically taken an hour or two after each meal, but it is as a rule preferable, in order to prevent habituation, not to follow this plan, and allow the patient to use the drug only when actual discomfort appears.

Occasionally, however, the liberation of carbon dioxide by sodium bicarbonate is a disadvantage, and may induce an uncomfortable or actually painful distention of the stomach; which has been affirmed to stimulate secretion, thus causing a more prompt loss of the effect of the drug. The same objection is applicable to sodium carbonate and magnesium carbonate, though the carbon dioxide liberated from these is but one half that set free from the bicarbonate in proportion to the amount of hydrochloric acid neutralized. While in some cases carbon dioxide liberation doubtless plays an important part in bringing relief by stimulating a sluggish gastric musculature, it seems frequently of advantage to reduce the amount of sodium bicarbonate given, and to combine other alkalies or sedatives with it. Thus Kaufmann employs the following:

R Sodii bicarbonatis, ..... ãã 3ss;  
Bismuthi subnitratís, ..... ãã 3ss;  
Magnesií oxidíi, ..... 5iiss.

M. et Sig.: One half to one teaspoonful in water one or two hours after meals.

Huchard used the same combination of drugs, in the ratio of four parts of sodium bicarbonate to two of magnesium oxide and one of bismuth, especially for cases of hyperacidity accompanied by constipation, and in other cases the following:

R Sodii bicarbonatis, ..... 5ñ;  
Sodii phosphatis, ..... 5ñ;  
Crete præparatæ, ..... 5ss

M. et Sig.: One half to one teaspoonful in water one or two hours after meals and, if necessary, at night.

Magnesium oxide and prepared chalk are useful adjuncts to sodium bicarbonate, according to Huchard, to prolong the neutralizing action, but at times fail to relieve if given alone, owing to the restricted amount of carbon dioxide set free and consequent lack of excitation of gastric motility.

Where deficient motility is not the chief cause of the discomfort, sodium citrate may be sometimes advantageously combined with sodium bicarbonate to reduce the amount of gas set free. Neutralization is thus effected without markedly exciting motility, as would be more likely to occur if magnesium oxide or sodium phosphate were used. If a tendency to diarrhea is noted, calcium compounds, such as calcium carbonate (in prepared chalk) and tricalcium phosphate, are especially suitable as auxiliaries of sodium bicarbonate. Where, on the contrary, constipation exists, sodium sulphate or phosphate, or magnesium sulphate, may be added; or, if unnecessary irritation of a sensitive stomach by the quantity of salts taken is apprehended, a vegetable cathartic, such as rhubarb, may be used. Bismuth compounds often constitute a valuable addition to alkalies owing to their property of augmenting the secretion of protective mucus in the stomach. Tyrode, on the ground that nearly all patients with gastrointestinal disturbances, functional or organic, suffer from nervous fatigue and irritability due to restlessness by day or night, often combines potassium bromide with alkalies, adjusting the dose as the symptoms warrant:

R Sodii bicarbonatis, ..... ãã 3iss;  
Magnesií oxidíi ponderosi, ..... ãã 3iss;  
Atropinæ sulphatis, ..... gr. 1-10;  
Potassii bromidi, ..... 5ss

Fiat pulvis. Divide in capsulas amylaceas No. XXX.

Sig.: Take two cachets, each soaked in a tablespoonful of water, followed by a glass of milk, three times daily after meals.

The indications for sodium bicarbonate or other alkalies include, as a matter of fact, nearly all hyperacid states of the stomach, the chief exceptions being instances of acute ulceration with hematemesis or intestinal hemorrhages, some cases of cancer, and possibly the cases of hyperacidity with hypermotility described by Best and Cohnheim. Not only is the relief of immediate pain or discomfort induced by the excess of acid to be thought of, but also the fact that the additional acid secretion brought on by the irritation of free acid in a sensitive stomach is forestalled by the neutralization of this free acid as soon as it occurs. Again, stress is to be laid on delayed evacuation of the stomach as

a cause of gastric pain or discomfort. Aside from any benefit exerted by the alkalis used on the motility of the gastric parietes, the tardy evacuation is not infrequently a result of pyloric spasm, itself produced or maintained by excessive acid secretion, and hence in many instances relieved by alkaline medication. Hence also the advisability, in some cases, of having the patient take alkalis during the whole digestive period in divided amounts.

The advantages and disadvantages of a long continued use of sodium bicarbonate are next deserving of consideration.

(To be concluded.)

**Treatment of Trench Feet.**—A. Scott Gillett (*British Medical Journal*, December 23, 1916) writes that from experience with over a thousand cases of trench feet he finds that hyperhidrosis is a marked symptom which is distressing to the patient, and which interferes with treatment unless adequately treated. As a result of these observations he advises the use of a dressing consisting of one thin layer of gauze, preferably applied in the form of a tent; exposure of the part to the air continuously, and to the sunlight as much as possible. The foot should be powdered three times a day with boric acid, iodoform, a mixture of the two, or with borsal; the latter seemed to be the best. If necessary a daily sponging of the feet with a one to 1,000 solution of formaldehyde may be added to the above treatment. The feet should be elevated and pressure of the bedclothes prevented by the use of a cradle. The internal administration of calcium lactate in doses of two to four grams every four or five days proves a useful adjunct. In cases in which there is great pain the addition of cocaine, menthol, or anæsthesin to the dusting powder is helpful.

**Antiseptic Treatment of Wounds.**—I. Feldman and A. J. Walton (*Lancet*, December 23, 1916) contribute the results of their experiences in the antiseptic treatment of septic military wounds. They point out that there are many methods in vogue, each with its adherents, but none adequately supported by the full reports of whole series of cases treated by it and by other methods as controls. They have employed as an antiseptic a mixture of equal parts by weight of camphor and phenol, which yields a liquid. Adequate drainage is necessary and the routine wide opening of all penetrating wounds and the removal of dead tissues and foreign bodies, are preliminary essentials as with any other method of treatment. One further point of importance is that the skin should be protected from prolonged contact with the antiseptic. After the preliminary surgical preparation of the wound the antiseptic is poured into it so as to come into contact with all surfaces, drainage tubes are inserted as required, and packed about with gauze soaked in the antiseptic, dry gauze is applied to the surface and occasionally the skin about the wound is smeared with petrolatum. The dressing does not have to be changed more often than every forty-eight hours in most cases and the wound remains clean. The antiseptic dries the surfaces to which it is applied and they become covered with a thin white slough. The antiseptic should not be used in combination with other methods which

introduce fluids into the wounds as the drying is an important part of the effect of the antiseptic. The sloughs begin to separate in three to seven days and leave a healthy, dry, granulating surface which heals rapidly. The application of the antiseptic should be stopped as soon as the sloughs begin to separate. In one or two days after the first application of the phenolcamphor mixture all redness and local swelling disappear and the patient's temperature falls to normal. No evidences of phenol poisoning have been observed in a large number of cases treated by this method. The antiseptic has the further advantage of producing anesthesia of the wound after an initial short period of burning. It renders a wound aseptic more rapidly than any other antiseptic which they have used; it is effective in cases not coming under treatment for several days after the infliction of the wounds; and, finally, it does not lead to secondary hemorrhage, or injury of nerves. The results of its use, in comparison with other antiseptic measures, are given in a series of cases of compound, infected fractures. It reduced the death rate in such cases from ten per cent. to zero, the amputation rate from twenty per cent. to nothing, and almost completely abolished sepsis.

**Treatment of Fractures Already Healed in Deformity.**—Lewis Stephen Pilcher (*Annals of Surgery*, January, 1917) writes that it is not infrequent that fractures at the base of the radius are permitted to heal without adequate effectual attempts at adjustment of the primary traumatic deformity having been made. Every grade of the deformities which have been recognized as due to any degree of this injury may remain as the permanent result. In general the functions of the wrist and hand are ultimately so far restored, even in case of marked deformity, that all the ordinary activities and possibilities of usefulness of the member are regained. The greatest and most prolonged disabilities are due to adhesions in the tendon sheaths among periarticular fibrous structures and to muscular degenerations caused by undue and prolonged splint pressure and immobilization and not to the bony malformation. In comparatively recent cases, by that he means cases seen from three to six weeks after injury, there still remains ground for hope that by breaking up the new formed and still soft bonds of union, either by manipulation or by a chisel through an open wound, a better position of the fragments could be obtained and the worst of the deformity removed. When, however, one reflects upon the frequency with which permanent alterations in the texture and contour of the lower fragments have unavoidably resulted from injury sustained, and also how extensive are the contractures of the periarticular tissues and the ruptures of ligaments that cannot be reformed as before the injury, one will not be too sanguine as to the ultimate benefit which he may secure for such a patient by operative interference. In a number of instances Pilcher has exposed a badly united fracture line involving the base of the radius by an incision over the dorsum of the radius reaching from the middle of the carpus below upwards as far as required to secure needed exposure and access to the seat of the fracture for the necessary manipulations. By blunt dissection the lower end of the bone can be rapidly ex-



posed; the periosteoligamentotendinous flaps can be held aside by retractors, and a chisel used as freely as may be necessary to reestablish the fracture in its original plane. The surrounding restricting fibrous bands will have to be divided with sufficient freedom to make possible the easy replacement of the loosened lower fragment in its normal position and prevent any tendency for it to be drawn again into its faulty position. This having been accomplished, the wound is sutured and the part dressed and cared for as if in a recent fracture. The results of such attempts at his hands have been sufficiently good to encourage their repetition in similar cases. He has thought that he has not been sufficiently free in dividing the periarticular fibrous structures in some of them to have secured as perfect a result as might possibly have been attained. He has not had occasion to resect a projecting ulnar head, but it cannot be denied that such a procedure would be indicated in some cases.

**Alternating Use of Antiseptics.**—Charles Richet (*Presse médicale*, November 30, 1916) advised the alternate use of different antiseptics by surgeons in the treatment of infected wounds, to prevent loss of antiseptic power through habituation of the bacteria to the agents applied. Antiseptics may be divided into four groups: 1. Oxidizers—hypochlorites, hypobromites, iodine, chlorine, hydrogen peroxide, ozone, potassium permanganate, etc. 2. Metallic antiseptics—salts of mercury, silver, copper, zinc, iron, etc. 3. Derivatives of the aromatic series—phenols, salicylates, thymol, naphthol, creosote, etc. 4. Miscellaneous—formaldehyde, chloroform, essential oils, chloral hydrate, fluorides, boric acid, etc. Agents from each of these groups should be employed in alternation on four successive days, beginning with the first group again on the fifth day. Under these conditions the germs never become accustomed to the antiseptics and better curative results are obtained.

**Clinical Studies of Theocin as a Diuretic.**—H. A. Christian (*Archives of Internal Medicine*, November, 1916) reports clinical observations upon the effects of theocin in six cases of acute nephritis, five of chronic nephritis, and six of chronic cardiorenal disease. The dose used was 0.1 gram in the first group; 0.3, 0.9, and 1 gram in the second, and 0.3, 0.6, 0.9, 1, and 1.5 gram in the third. In patients with little or no demonstrable edema the drug produced a variable degree of diuresis in nine out of thirteen cases. In four cardiorenal cases with marked edema a much greater diuresis was produced. When a diuresis occurred sodium chloride excretion was almost always increased, but the increase was not wholly parallel to the increase in fluid. Sometimes with rather small increases in urine output sodium chloride excretion was considerably increased. In contrast to sodium chloride, nitrogen excretion was increased less frequently and usually to a less degree. In half the cases nitrogen excretion decreased after theocin. Even with marked diuresis nitrogen excretion might be but little increased, or even decreased. Assuming that the reason for using a diuretic in nephritis is to stimulate the kidney to increased work, theocin may be said to accomplish this as far as water and sodium

chloride output is concerned. But in nephritis moderate edema is in itself rarely doing much harm, and from the essential standpoint of nitrogen elimination, renal function is little improved by theocin, and often made worse. On the other hand, in cases with a large element of cardiac insufficiency, theocin very commonly, especially if given with digitalis, causes an active diuresis. Salt output usually is markedly increased, though nitrogen excretion is little affected. Edema being a troublesome condition in these patients, theocin is therapeutically efficient in them. Marked theocin diuresis is, however, often followed by a drop in the index of urea excretion, suggesting a secondary depression of the renal function. If this is true, intermittent administration of theocin is probably the best procedure to follow in the edematous cardiorenal cases.

**X Rays in Treatment of Thymus and Thyroid Enlargement.**—A. Judson Quimby and Will A. Quimby (*Medical Record*, January 6, 1917) state that in simple goitre the x rays should be applied with great care in small doses and with thorough protection of the surrounding parts by means of a leather filter. Exophthalmic goitre is rayed vigorously for two weeks at four day intervals, with a wait of two weeks followed by another treatment after ten days, thus increasing the space of time between treatments. Most satisfactory results are obtained by doses at the rate of one or two milliamperes in the secondary circuit. Thymus enlargement or overactivity gives remarkable results with x rays, and Quimby's method is to expose both thymus and thyroid at the same time. The x ray tube is placed so that the target is fourteen inches from the skin and directed eight inches to the outer side of the median line over the upper end of the sternum.

**Foreign Protein in Arthritis.**—Joseph L. Miller and Frank B. Lusk (*Journal A. M. A.*, December 30, 1916) record continued favorable results in a further report upon this method of treatment. Of forty-five cases of acute arthritis twenty-nine recovered promptly after one to four injections; pain, swelling and redness all disappearing in from twenty-four hours to five days; four cases of acute gonorrheal arthritis were less favorably affected; eight cases showed marked improvement; six moderate improvement, and two did not improve at all. Nine of the patients had recurrences, seven of which were cured or improved by a second course of treatment. Ten out of twelve cases of subacute arthritis were cured and two moderately improved. Eight of nine cases of acute exacerbation of chronic arthritis were promptly cured. Ten of nineteen patients with old chronic arthritis showed marked improvement from one to five injections; five were moderately helped, and four not benefited at all. In cases with acute endocardial involvement that condition was apparently also controlled by the protein injections. These were of the benign form of endocarditis exclusively. The treatment had the great disadvantage of provoking severe reactions, which were even threatening in a few cases. No fatalities, however, have resulted. The treatment is contraindicated in persons with poor cardiac power or hypertension.



**Production of an Antipoliomyelitic Serum.**—John W. Nuzum (*Journal A. M. A.*, January 6, 1917) asserts that by employing the polymorphous organism which is constantly isolated from the spinal fluid of human cases of poliomyelitis he succeeded in immunizing sheep, lambs, and rabbits. The serum of the immunized sheep produced complete agglutination of the organism in a dilution of one to 5,000 and complete complement fixation in one to 200. The injection of this immune serum, along with doses of the living polymorphous organisms, into the peritoneal cavity of the white mouse gave rise to rapid exudation of polymorphonuclear and a few mononuclear leucocytes. At the end of an hour most of the bacteria were found within the leucocytes, the few extracellular ones being clumped and greatly swollen. The serum proved moderately effective in protecting young rabbits against infection with the organism. It also seemed to exert some degree of protection in monkeys. In one human case of poliomyelitis the serum has already given suggestively favorable results.

**Intravenous Vaccine Injections in the Treatment of Typhoid Fever.**—M. Petzetakis (*Paris médical*, December 9, 1916) reports two cases of typhoid fever in which a heated vaccine prepared by Chantemesse's procedure, and containing one hundred million bacteria to a c. c., was administered intravenously with good results. In the first patient, a man of thirty, the first injection, consisting of 0.25 c.c. of the vaccine diluted with isotonic saline solution, was given on the eighth day of the disease. The temperature at the time was 39.5° C., and the pulse ninety. Fifteen minutes after the injection the patient began to shiver slightly and a half hour later had a marked chill, with headache, followed by a sensation of heat and rise of temperature to 40.4° C. The pulse then rose to 130, and nausea occurred. Six hours later there was copious sweating, subjective feeling of improvement, followed by a fall of temperature to below normal and a beginning rise fourteen hours after the injection. There was no headache at this time and the mind was much clearer. On the thirteenth day an injection of 0.5 c. c. of vaccine was given. The reaction was more marked than after the first injection, but two hours later the patient felt well, emerging rapidly from his typhoid state. Next morning the temperature was 36.7°, the pulse eighty, the general condition surprisingly improved, the leucocytes increased from 4,000 to 10,500, and Ehrlich's reaction and his iodoreaction negative. A distinct polyuria was noted at this time. The temperature never rose again and the patient left the hospital a few days later. In the second case a single injection of 0.33 c. c. was given on the tenth day and was followed by a fall of temperature by lysis, the norm being reached in three days. The other favorable effects seen in the first case were likewise noted. Nocturnal delirium ceased, beginning with the night following the injection, and rapid recovery ensued. No icebag or bath treatment was applied in these cases. Analogous results were obtained by Christomanos and another observer in two cases. The results were clearly more rapid than those that have been attained with subcutaneous injections of antityphoid vaccine in typhoid fever.

**The Employment of Sodium Chloride for the Preservation of Cadavers and Anatomical Specimens.**—I. M. Iosifow (*Roussky Vrach*, October 8, 1916) states that he met the shortage in carbolic acid occasioned by the war by the use of common salt, either in ten to twenty per cent. solution or in substance. Prior to immersion in the brine vats the cadavers were injected with a solution of denatured alcohol, twelve parts; water, three parts; formalin, 1.4 parts, and carbolic acid, 0.6 parts. From four to five litres of this solution were injected into each body. Forty-five bodies were treated in this manner with satisfactory preservation for months.

**On the Application of Coagulose.**—Z. W. Ogloblina (*Roussky Vrach*, September 24, 1916), reports her observations on ten cases of hemorrhage in which coagulose was employed as a hemostatic. The effect of this agent was studied not only clinically, but by determining the coagulability of the blood by Burkner's method. The hemorrhages were due in five cases to diseases of the liver with jaundice; in one, to disease of the lungs; in one, to pancreatitis with hematemesis; in one, to postoperative condition of the wound; and in one to traumatism. In the case of hemoptysis due to pulmonary gangrene the injection of coagulose had no effect, nor was there any effect noticed in the other cases, except those due to diseases of the liver. In these cases the coagulability of the blood, which was very low before the injection of coagulose, was markedly increased, in some cases more than twice. She concludes that coagulose is a valuable agent in preventing postoperative hemorrhage in conditions of the liver accompanied by jaundice.

**A Prosthetic Apparatus for the Correction of Nasal Deformities.**—A. Herpin (*Bulletins et mémoires de la Société de médecine de Paris*, October 27, 1916) notes that in wounds of the integument of the nose vicious types of healing sometimes take place which completely deform this organ. Thus, an anteroposterior flattening may be produced. His apparatus was designed to correct this condition. It consists of two lateral blades of vulcanized rubber, to rest on the lateral aspects of the nose, and two smaller blades, to rest within the nostrils and afford counterpressure. The two blades of each side are connected by springs of platinized gold wire, the two springs being, moreover, joined at their centres, somewhat above the tip of the nose, by a small metallic disc. By suitable curving of the wires, the device is made to hold in place and exert pressure from without inward on the sides of the nose. With moderate pressure, insufficient to harm the tissues, appreciable results are obtained in a short time. Local skin elevations are flattened down, and the tissues forced back toward the midline, imparting greater laxity to the skin and favoring subsequent corrective operations, if such are to be undertaken. Where the ale nasi have also been deformed in the process of healing and show a tendency to atresia, the same apparatus is employed, but with a modified intranasal portion. The latter is split on each side into two median and lateral halves, united by a spring wire, which tends to broaden the nostrils and restore their shape to normal.

**Direct Neurotization of Paralyzed Muscles.**—Arthur Steindler (*American Journal of Orthopedic Surgery*, December, 1916) believes, from his experimental studies on dogs and cats, that direct neurotization is possible, confirming the work of Heineke and Erlacher; that muscle tissue regenerates, beginning at site of implantation, and that hyper-neurotization is hardly possible. He also reports the invariable finding of some normal muscle and nerve fibres in apparently totally paralyzed muscles.

**Perineural Infiltrations and Epidural Injections in Sciatica.**—Charles Rosenheck and Harry Finkelstein (*Journal A. M. A.*, December 30, 1916) state that in the treatment of fifty cases by one or the other of these methods they were able to cure or benefit only twenty per cent. as against from sixty to sixty-five per cent. of good results reported by others. They suggest as possible explanations the existence of differences in the types of cases, or that some of the reported cures were not of true sciatica but of other forms of gluteal pain.

**The Action of Digitalis in Pneumonia.**—Cohn and Jamieson (*Journal of Experimental Medicine*, January, 1917) report their observations on 105 cases of pneumonia. Digitalis was given to forty-nine patients; the other fifty-six received no digitalis and served as controls. The drug was given by mouth in the form of tablets of digipuratum, the daily dose usually being 0.4 gm. Electrocardiograms were made of all the patients. They believe that digitalis produces the same effects in pneumonia that it does in the absence of fever, that the intoxication due to the disease does not influence the action of the drug. They conclude that it produces a beneficial, and possibly a life saving effect in cases of auricular irregularity.

**Needling Painful Spots.**—James Cantlie (*China Medical Journal*, November, 1916) tells us that from time immemorial the Chinese have used needling of the body for the relief of pain, swellings, stiffness, and many ailments. He is inclined to think that it relieves tension in the inflamed part, and he has been so impressed by the results obtained that he has adopted the procedure for certain classes of cases, among which he enumerates the following: So called rheumatic pains in the gluteal region and about the hip joint, which are not relieved in any other way; pains passing down the back of the thigh, frequently associated with neuralgic pains over or in the sciatic nerve, and forming a part of a general tenderness in hip joint and thigh; swelling and pain around the shoulder joint when a rheumatic type has set in following an injury to the shoulder; lumbago, either traumatic or rheumatic, of long standing after other remedies have failed; stiffness and swelling resulting from a sprained ankle; when, after a fracture of the leg or other bones, the tissues become so bound together that the muscles are hampered in their action, and massage fails to cause improvement; over the sacrum and the adjacent area of the pelvis of women who complain of pains ascribable to pelvic trouble. He has found this treatment needed most frequently in the region of the hip, in the cases of indefinite pains ordinarily called sciatica.

**Operation of Choice in Enucleation of the Eyeball.**—G. Sterling Ryerson (*Canada Lancet*, December, 1916) states that in his opinion the best and safest method of removal of the eyeball is modified enucleation with the implantation of a gold sphere in the capsule of Tenon. Silver is objectionable, as it causes blackening of the conjunctiva, while glass has been found to become crystalline and friable in time from the fluids of the orbit.

**Scoliosis: Etiology and Treatment.**—Frank E. Peckham (*American Journal of Orthopedic Surgery*, December, 1916) asserts that too little attention is given to the etiological factor in this condition. The early treatment of an underlying cause is emphasized. As a mechanical treatment he reports some success in one case in which he used a monthly jacket which is applied with the spine in a flexed position, face downward, extension on the head and lower extremities and with some effort to untwist the rotation.

**Hot Air Treatment of Inoperable Peripheral Gangrene.**—W. Gilman Thompson (*Medical Record*, December 23, 1916) strongly recommends the use of dry hot air to relieve pain, alleviate stench, and mummify the tissues. Air heated to about 150° F. may be directed through a small stove pipe from a Bunsen burner to the affected part. Where there is no gas to be had then an electric toaster can be made to furnish the heat while an electric fan directs the current of air toward the gangrenous tissue. It is better to have the extremity uncovered during the hot air treatment.

**The Treatment of Malignant Disease by Means of Deep Röntgen Therapy and Electrothermic Coagulation.**—George E. Pfahler (*Surgery, Gynecology, and Obstetrics*, January, 1917) concludes with regard to the above methods of treatment as follows: 1. Malignant disease should be, as far as possible, completely removed surgically, or it should be destroyed by electrothermic coagulation. 2. Each operation for malignant disease should be followed by postoperative Röntgen treatment. The extent and character of the postoperative treatment will depend on the location of the disease. 3. When there is an absolute necessity for delay in operation from some other cause, the patient should be treated by means of the Röntgen rays, and the treatment should be especially directed toward the glandular area. This will reduce the malignancy, and, he believes, help to prevent metastasis. 4. Inoperable cases should always be given the benefit of the rays. Some of them will be removed and others made operable, and all will be made more comfortable, and, we believe, life prolonged. 5. Local recurrences yield to Röntgen therapy fairly well, and some of these patients, he believes, can be made permanently well. 6. Metastatic carcinoma, even when it affects the bones, has been shown to heal in at least four cases. 7. A skillful combination of the best methods known in the treatment of malignant disease will accomplish more than any single method. 8. Thorough intelligent application of the methods known today for the treatment and removal of precancerous lesions and for the prevention of malignant disease will do more in the fight against malignant disease than all combined methods after the disease has developed.



# Miscellany from Home and Foreign Journals

**Metastatic Gas Gangrene.**—Kenneth Taylor (*Lancet*, December 23, 1916) reports two cases of metastatic gas gangrene as throwing some light on the factors which lead to metastasis in this fatal condition. In the first case the original infection involved one arm, which was promptly amputated with fairly complete removal of all infected tissues in the neighborhood. The second was a wound of the right buttock. In the first case the patient was kept in a sitting posture and in the second the patient was forced to lie on his left buttock. Metastatic gas gangrene developed in the right gluteal region and leg in the first case and in the left buttock in the second. In both cases autopsy confirmed the findings and proved the absence of all direct passage of the infection from the original to the secondary site. In one of the cases culture from the heart's blood proved positive for *Bacillus aerogenes capsulatus*, though blood culture had been sterile up to three days before death. In the second case even the heart's blood was sterile. These two cases suggest that the constant pressure of the body upon a given area is capable of lowering its resistance to such an extent that there can be a localization there of the virulent organisms which probably circulate in the bloodstream for some time during the course of the illness.

**Small Cranial Injuries and Their Complications.**—André Martin (*Paris médical*, December 9, 1916) calls attention to the severe complications which may follow apparently insignificant injuries of the head by small shell fragments. Many of his cases had small wounds apparently involving only the scalp; where several days had elapsed since the injury, the tissues were more or less infiltrated with blood and the pericranium injured, while after a few weeks the skin was often healed, with a small sinus, however, persisting. Upon examining the skull there was found either a small fissure, generally curved or angular and sometimes masked by an organizing hematoma; several fissures diverging irregularly; a few bone fragments, either adherent, with blood, serum, or even pus frequently filtering through the intervening interstices, or partly detached and movable; or finally, a cup shaped depression hardly exceeding the size of a finger tip, sometimes limited to the external table but usually involving also the internal. The subjacent lesions revealed by operation comprised extradural fungous formations, bathed in pus, or an extradural hematoma or abscess. The central lesions found among eleven cases comprised two instances of cerebral hematoma, two of cerebral abscess and one of cerebellar abscess. Clinically, the cases fell into three groups, the first showing at first no sign of injury other than the small scalp wound, often without the least headache, but manifesting unexpectedly after two or three weeks slight fever, with appearance of a droplet of pus through the wound; in spite of the relative absence of symptoms, grave lesions may be found at operation in these cases. In the second group the patient presented himself with

such symptoms as headache, nausea, slight slowing of respiration, a variable and misleading temperature, a pulse rate of about sixty, and in particular, a continuous prostration and mental torpor. The focal symptoms were in most instances practically absent, though the cerebellar case presented a complete, typical picture. The symptoms were insufficient to show before operation whether an extradural or cerebral hematoma or abscess existed. In the third group the wounds were apparently healed when the complications developed. On the whole, Martin's experiences showed that in cases of small head injuries which manifest mild or severe bone or brain disturbances after apparently healing, even several weeks after the wound, no time should be lost with half way measures, but the bone and dura at once explored. In fact, it would seem advisable to inspect the skull, if necessary enlarging the scalp opening with the knife, immediately after even the mildest scalp wounds.

**Syphilis of the Stomach.**—George B. Eusterman (*American Journal of Medical Sciences*, January, 1917) maintains that though syphilis of the stomach is rare, it is not as infrequent as is generally supposed. The aid of the Wassermann-Noguchi reaction and of the Röntgen rays are necessary to establish the presence and specificity of the lesion, yet denial of the disease, lack of evidence of a primary lesion, or absence of a positive Wassermann, does not exclude the possibility of gastric syphilis. The diagnosis is based on the history of infection, a consistent positive Wassermann, indisputable evidence of a gastric lesion, and—excluding cases that show irreparable extensive damage—a permanent cure by antisyphilitic measures. Often it is made accidentally. The symptomatology is suggestive of benign gastric ulcer; the gastric chemistry and Röntgen findings rather suggest carcinoma. In most instances the condition is characterized by an initial intermittent course, followed soon by continuous symptoms and associated with epigastric pain of variable degree, felt shortly after taking food and not relieved by food or alkalis. From the outset there is a tendency to emesis, a variable degree of flatulence, good appetite, infrequency of hemorrhage and palpable tumor, diffuse abdominal resistance, a progressive course, and marked loss of weight without cachexia. Anacidity or achylia is characteristic of the majority of cases. Extensive gastric involvement is frequently present at the time when gastric disturbance first becomes manifest. A gummatous ulcer, usually multiple, and a diffuse syphilitic infiltration with variable degrees of contraction, thickening, deformity, and perigastric adhesions, chiefly involving the pyloric segment, is the usual pathological condition. Demonstration of the *Spirochaeta pallida* in resected tissue would be final proof. Results from antisyphilitic treatment are encouraging in all but very advanced cases. Sometimes surgical intervention is indicated. Early diagnosis and intensive treatment invariably result in symptomatic cure and structural improvement.



**Bacterial Etiology of Rhus Poisoning.**—Lowell C. Frost (*Medical Record*, December 23, 1916) presents the following points in favor of the bacterial origin of ivy poisoning: the incubation period averaging four and a half days, complete natural immunity in certain individuals which may be lost through lowering of the physical resistance, and the appearance of the exanthema in an area untouched by the plant directly. Cultures made by Frost from the leaves of the plant showed only one constant type of bacteria and this was a short, thick bacillus, aerobic, spore producing, giving an abundant growth on potato at room temperature. Inoculation by inoculation of pure culture, after forty-eight hours produced only a slight redness of the skin without itching or burning.

**Fulminant Cerebrospinal Fever.**—P. W. MacLagan and W. E. Cooke (*British Medical Journal*, December 23, 1916) state that they have seen over a dozen cases of this form of the disease, all ending fatally. There are two types of this form of cerebrospinal fever. In the one there may be an intense meningococcal bacteriemia without any meningeal involvement, or with very slight involvement. In the other there is also an abrupt onset with almost immediate unconsciousness and beginning signs of meningeal involvement, giving place to complete muscular flaccidity. In both types the fatal progress is very rapid, with signs of total failure of the blood pressure and the heart. The two chief characteristics of this form of cerebrospinal fever are the occurrence of a hemorrhagic rash varying from petechial spots to hemorrhages of several square inches, and the presence post mortem of hemorrhagic destruction of the suprarenal glands. The latter probably accounts for the rapid fall of blood pressure and cardiac failure as well as for the muscular flaccidity. It is suggested that the organism may possess an affinity for the chromaffin structures of the adrenal glands and probably also for the cortical layer which is similar to the myelin of the central nervous system.

**Vasomotor Reflexes of the Skin.**—P. W. Nikolsky (*Roussky Vrach*, September 10, 1916) points out the importance of studying the vasomotor reflexes of the skin in connection with skin diseases. He distinguishes the red from the white dermatographism, the latter being due to active vasoconstriction. The vasomotor reflexes may be different in the same person on different parts of the body, the vasodilators being more active on the trunk than the extremities; or red dermatographism may be observed on the chest and back, and white dermatographism on the extremities. This is explained by the difference in sensitiveness acquired by the peripheral nerves of the protected skin of the trunk and the exposed skin of the extremities. When white dermatographism is observed on the extremities, various manifestations of asphyxia may be noticed, this being due to the spasm of the peripheral vessels. Abnormal vasomotor reflexes are due not only to pathological states of the skin but such systemic causes as would effect the peripheral vasoconstrictors and vasodilators, as in autointoxication, the various disturbances of the blood and in conditions

properly designated by the French as *dermatoneurose toxivasomotrice*. It is only by directing attention to these vasomotor manifestations that improvement of the skin lesions is achieved by therapeutic measures. Thus, in the presence of red dermatographism, the author administers digitalis, ergotin, hydrastin, stypticin together with bromides of quinine soda, etc., while such vasodilators as salicylate of soda, aspirin, phenacetin, etc., are employed in white dermatographism.

**Clinical Studies of Acidosis.**—J. H. Austin and Leon Jonas (*American Journal of Medical Sciences*, January, 1917) tell us that in the new methods for studying acidosis directly from the blood we have a means of investigation which is a distinct advance upon our previous methods. As criteria of the supply of "buffer substance" in the blood, the carbon dioxide capacity of the plasma, the hydrogen ion concentration of the serum, and the alveolar air give results that are in general parallel, but the first is the most sensitive and gives much more satisfactory duplicates than does the alveolar air determination. It affords a simple and quick method of determining the presence and degree of acidosis. Reference must be made to the original for a full description of the method.

**The Etiology of Acute Articular Rheumatism.**—Fr. Rolly (*Medizinische Klinik*, November 5, 1916) points out that the similarity between certain of the more important symptoms of anaphylaxis and of rheumatism has led to the suggestion that the latter disease is merely a manifestation of an anaphylactic condition due to the entrance into the circulation of bacterial proteins or protein products from focal bacterial lesions. Such a view cannot be accepted as offering a complete explanation of the rheumatic symptoms, since certain of the most characteristic of these symptoms are almost never encountered in cases of known anaphylaxis. Among these the most important is the occurrence of the local phenomena of joint swelling, redness, and pain. The suggestion of the anaphylactic mechanism of rheumatism is based upon isolated resemblances in symptoms rather than upon a true close similarity of the manifestations of the two conditions. On the other hand, the theory that rheumatism is a bacterial entity entails many factors of doubt which can be brought up against its acceptance. Thus, there is no evidence that the organisms which have been isolated from the surfaces of the inflamed tonsils in acute rheumatism are the true pathogenic organisms, for the same organisms can be isolated from tonsils of normal persons and have similar degrees of virulence for the lower animals. Further, there is no uniformity among different workers as to the specific characters of the organisms isolated. Finally, it may be pointed out that positive cultures from the blood, the affected joints, and other body fluids in cases of acute rheumatism are quite uncommon, and that a very large proportion of cases of acute rheumatism develop in the absence of any demonstrable inflammation of the tonsils, or other pharyngeal structures. In the state of our present knowledge it is impossible to say that we yet know the true etiology of the clinical disease which we call acute rheumatic fever.

**Aural Typhoid Carriers.**—A. B. Bennett (*Journal A. M. A.*, January 9, 1917) reports two cases of this rare condition. In one there was a chronic suppuration of the middle ear with purulent discharge dating from a severe attack of typhoid fever eighteen years before. From the pus, living typhoid organisms were cultivated on two occasions. The other case occurred in a child, fifteen years old, who had never had an attack of typhoid fever. The ear trouble began with a frank attack of purulent otitis media, which left a chronic discharging ear, from the discharge of which typhoid organisms were isolated. Local treatment combined with the administration of typhoid vaccine materially benefited the first case, which was lost sight of before cured; and cured the second. In neither case was there evidence that any other person had been infected as a result of contact, but the possibilities of such an occurrence should be borne in mind in such cases.

**Burns from Missiles.**—Georg Magnus (*Medizinische Klinik*, November 5, 1916) says that much of the tissue destruction caused by certain forms of missiles is not to be explained on the basis of mechanical traumatism, but is demonstrably due to the effects of burning produced by the great heat of the missiles. The lesions, if carefully studied in all their forms and grades of severity, show evidences of actual burns of all degrees of intensity, and the tissue destruction caused is both too extensive and too prompt, in the appearance of its manifestations to be accounted for on the basis of contusion. The missiles which are most likely to retain sufficient heat to cause burns are fragments of grenades and high explosive shells, bombs and shrapnel. It is in the cases of injury from just these missiles that the instances of extensive tissue destruction are encountered. Occasionally, also, actual burning of the clothing overlying the areas of such wounds, or where fragments of such missiles have struck glancing blows, is encountered.

**Primary Infectious Jaundice with General Symptoms Predominating.**—M. Garnier (*Paris médical*, December 9, 1916) points out that while in many cases of infectious jaundice the symptoms due to the cholemia and the constitutional symptoms due to the infection are equally marked, in another group, catarrhal jaundice, the infectious symptoms are relatively much less pronounced, and in a third group, which he has specially studied, these symptoms distinctly predominate. In a series of five hundred cases of primary infectious jaundice recently under observation, six were of the latter type. The onset was marked by chills, fever, backache, and at times myalgia, soon followed by gastrointestinal disturbances, nausea, and vomiting, and sometimes diarrhea. The temperature usually ranged between 28 and 39° C., sometimes attaining 40° temporarily; it often dropped at the time of appearance of jaundice. Discoloration of the skin, including that of the face, was only slight, the conjunctivæ being alone distinctly yellow. The urine showed the usual mahogany color. Elimination of urobilin in these cases was intense from the start. In this form of infectious jaundice, the system evidently utilizes with success all its resources

for getting rid of the pigment. The elimination in the urine, and likewise the skin discoloration, was brief in these cases, terminating twice on the eighth day, and once each on the sixth, seventh, ninth and eleventh days from the beginning of the jaundice. All trace of conjunctival discoloration passed off simultaneously, soon after, or even before bile pigment disappeared from the urine, whereas in other forms of jaundice an interval of seven to twenty-four days elapsed. At no time in these cases did the feces lose their dark brown color. The temperature usually reached normal three or four days after the appearance of jaundice, but in two cases remained febrile until the jaundice disappeared. In one case a relapse took place. Attacks of angiocholitis in cholelithiasis might be confused with these cases, but in the former the onset is sudden and distinctly painful and jaundice appears with the first sign of malaise, the preicteric period being absent. That the form of infectious jaundice described by Garnier is actually of hematogenous origin was shown by hemolysis test. In one case the A paratyphoid organism was found in the blood.

**Vesical Calculi Following Wounds of the Bladder.**—F. Legueu (*Bulletin de l'Académie de médecine*, December 5, 1916) states that he observed calculus formation after a long or short interval in ten out of thirty-two cases of bladder wound. In a few of these, in fact, recurrent calculus formation occurred. Infection has been held to account for this complication of bladder injury, but he found that the duration and virulence of the infection was no greater in the cases that manifested calculi than in the remainder. A striking coincidence of calculus formation with fracture of the pelvis was, however, noticed. All the cases with calculi had a pelvic fracture, and no calculus developed in any of the twenty-two cases without fracture. This relationship is ascribed by Legueu to the doubly compound fracture produced in military bladder wounds. The fracture communicates both with the exterior and the bladder. Urine passes out to the fracture site, while pieces of bone pass into the bladder, where he sometimes found them firmly embedded in the bladder wall or included in the centre of a calculus. Even when there are no more bone splinters, simple osseous particles continue to pass through the sinuses, and to these are ascribed the frequent secondary stones. Long after healing of the external wound, a deep lesion of the bladder was noted by cystoscopy or at operation, the attenuated bladder mucosa pouching out widely to line the depression in the bone resulting from the fracture, with a minute sinus at its base connecting the focus of osteomyelitis with the bladder. Through this channel bone dust falls to the fundus of the bladder, remains there while the patient is abed in dorsal decubitus and constitutes a nucleus for stone formation. These stones are soft, friable, white, and may contain a small sequestrum. Operation to separate and close off the bladder from the bone, failed, the wound in the repaired bladder being reopened. Lithotripsy was then adopted as the proper procedure. Bone splinters in the calculi were withdrawn instrumentally through the urethra after crushing of the stones. For recurrent stones repeated lithotripsy is indicated.

# Proceedings of National and Local Societies

## AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

*Twenty-ninth Annual Meeting, Held at Indianapolis, Indiana, September 25, 26, and 27, 1916.*

The President. DR. HUGO O. PANTZER, of Indianapolis, in the Chair.

(Continued from page 143.)

**Considerations in the Care of Patients before and after Operation.**—Dr. H. WELLINGTON YATES, of Detroit, stated that every surgeon should be a humanitarian. Surgery was a thing of art as well as science, a thing needing a fine æsthetic sense rather than mere boldness. It was constructive, not destructive; it was to save life, not to take it, and likewise a surgeon was not he who had merely boldness, but one who had judgment; not alone he who knew how and when to operate, but also he who knew when to refrain and when to conserve.

We surgeons had paid too little attention to the internal secretions. Patients did not come for operations *per se*; they came to be cured of a malady of which they usually knew nothing, and placed themselves in our hands, because they had been referred to us by some other physician, who had failed to cure them. We should be exceedingly careful in the selection of cases for operation. As a rule, they were not given thorough examination—general physical examination. Every patient should have it.

**Preoperative Care.**—In general, we had been giving all our patients more preoperative care than formerly, and less hurried operation. For two or three days, we fed them well on easily digested, nutritious foods; on the last day we gave six ounces of water each hour while they were awake; this filled the bloodvessels, and increased kidney, liver, and skin excretions and secretions. Nervousness and loss of sleep was exhausting and should be met by such remedies as the usual sedatives or opium.

**Operative Care.**—As regards abdominal surgery, we had learned that the viscera and their coverings spoke in no uncertain manner, and to some extent we had learned their language, and therefore, after an operation, some of them vented their feelings by expression of pain; some by way of abdominal distention; some by way of vomiting; some by thirst; some by pallid skin and sunken eyes; but the meaning of it all was, that we had given offence. We had been taught by this language that we must do the least handling possible to accomplish results, that we should avoid forcible retractions, and that when we sought to pick up bleeding points, we must pick them up separately, instead of interfering with and thus offending all the adjacent tissues; that warm, moist gauze used gently is less offensive than dry gauze used roughly.

**Postoperative Care.**—The handling of patients should vary in accordance with their psychology and the nature and severity of the operation. In all serious operations, he used the Murphy drip with bicarbonate of soda and glucose, as soon as the patient returned to her bed. The soda would over-

come tendency to acidosis, the glucose furnished an easily absorbable carbohydrate, and thus supplied energy. In those who through accident lost much blood or who sweated profusely, the giving of two pints or more of this solution, relieved the distress of extreme thirst, and overcame tendency to shock.

In closing he wished to submit these suggestions: 1. Our patients were entitled to more preoperative and postoperative care than they had been receiving. 2. Patients suffered from shock by long periods of anesthesia, by exposure, and rough handling of tissues. 3. Surgery was a thing of art and gentleness as well as of knowledge and skill.

**Fibromyomata uteri and Cardiovascular Disease.**—Dr. BEN R. McCLELLAN, of Xenia, Ohio, stated that since attention had been directed to this interesting question, he had had the opportunity to carefully study twenty-six cases of fibromyoma uteri, nine of which had well marked cardiovascular complications. In each case the diagnosis of the latter condition was confirmed by a competent internist. Of the nine, only two gave any history of other adequate cause than the presence of the fibroid uterus; these two gave distinct histories of a previous acute pelvic infection. Two of the nine patients died, one within a few hours following a difficult removal of a very large multiple fibroid of many years' growth, which had undergone cystic degeneration, and was complicated by very extensive adhesions to the surrounding viscera. Death was undoubtedly due to shock, which in turn was caused by extreme traumatism in the presence of heart and bloodvessels already handicapped by changes due to the presence of the chronic uterine disease. The other patient, who had very pronounced cardiac and renal complications, was carefully prepared for the operation, which was not difficult, although the tumor was of extreme size. The patient progressed favorably up to the eleventh day, but died without warning, while sleeping after a dinner which she had greatly enjoyed. No doubt the cause of death was brown atrophy of the heart. Unfortunately in neither of these cases could an autopsy be secured, but physical examination and the clinical history were enough to establish thoroughly the fact of serious cardiovascular changes. The remaining seven cases all recovered with symptomatic relief from cardiac trouble, and only three, on careful examination, showed some hypertrophy.

That the relationship between the two diseases exists there can scarcely be any doubt, but the etiology of the cardiovascular changes remained as yet a theoretical question, as is evident from the following brief summary of suggested causes:

- 1, Anemia due to hemorrhage the result of fibromyomata uteri.
- 2, A common cause of the two conditions, namely, a fibrosis in the muscularis of the bloodvessels.
- 3, A hyaline degeneration of the bloodvessels due to enlargement of the ovaries.
- 4, Pressure of tumor on large abdominal vessels.
- 5, Increased resistance to circulation caused by the extended area of circulation produced by the tumor as



well as by the resistance through a tissue so unyielding as fibroid tumor. 6, Interference with the freedom of heart and lung action. 7, Interference with the alimentary function whereby nutrition being impaired, toxic matter was absorbed from the bowels. 8, Pressure on the kidneys, ureters, or renal vessels. 9, Irritation of the cerebrospinal or sympathetic nervous apparatus, especially the large abdominal ganglionic masses belonging to the latter system. 10, A common cause due to changes in the vasomotor system. 11, Abnormalities of metabolism due to hyperfunction of the ovaries. 12, A chemical basis, as, for instance, a toxemia from muscle extracts released from the tumor.

Doctor McClellan said that he strongly favored this last theory because of, first, the similarity in cardiac disturbance in goitre and fibromyoma uteri; second, the experiments of Patta and Decio showed a direct influence of the muscle extract upon the heart; and, third, because of the testimony of many anesthetists in support of the fact that the heart was more disturbed in myomectomies, and this always in proportion to the amount of traumatism to the neoplasms.

**Operative Judgment as a Factor in Surgical Mortality and Morbidity.**—Dr. ROLAND E. SKEEL, of Cleveland, Ohio, stated that in the matter of the particular operation which he performed he would cite two or three widely separated types of cases as examples.

In exophthalmic goitre or Basedow's disease there might be an honest difference of opinion as to whether this was a medical or surgical condition, but there could be no honest difference of opinion as to the outcome of properly applied surgical treatment. Even this treatment rarely gave a complete cure in the sense that all the symptoms were relieved permanently and at once, but it did convert the patient from an invalid or semi-invalid into one whose condition was such that selfsupport was possible and the health nearly as good as the average person's. This result, however, could not be obtained by slavishly following one method of procedure, whether that be pole ligation, tying of one or more vessels, or partial thyroidectomy. The last had a prohibitive mortality if used in each and every case, the first two were not efficient in the chronic, slowly developing type of cases, especially in women, while they not only had a very low mortality, but a high permanent recovery rate in acute cases in the male in whom the pelvic functions did not constantly disturb the patient's nervous equilibrium. By a proper selection of cases for the various procedures, by a judicious selection of the anesthetic for the individual case, and above all by speed in operating, absolute prevention of postoperative bleeding, gentle manipulation of the gland, and sealing of the relatively large raw area by painting the wound surface with tannic acid solution combined with drainage, practically every case could be saved.

In the treatment of intestinal obstruction the slavish obedience to some precept learned while a student or swallowed in its entirety because pronounced by a master at a surgical clinic was likely to result in as serious a disaster as delayed diagnosis. To eviscerate every patient through a huge

incision meant that the operator had utterly overlooked the possibility of death from shock due to exposure of the peritoneum and much handling of the gut; to attempt operation through a wholly inadequate incision meant that an enterostomy only would be done. Reopening the primary incision in postoperative obstruction was all that was needed, as a rule, since the obstruction would be found in or about the operative site, and under any circumstances an incision large enough to admit the hand for exploration should be sufficient unless the obstruction was at a point far remote from the exploratory opening.

It was his belief that it showed good surgical judgment to use a rubber dam prophylactic drain in the vicinity of sutured large intestine, especially if there had been injury during the enucleation of inflamed structures and the gut wall was infiltrated. That a cofferdam led through the vagina was all important if such enucleation left behind a large oozing area, and that an occasional instance of salpingo-oophorectomy, even for presumptive chronic disease being rendered unnecessary by such drainage when raw areas were left after the removal of adherent pelvic organs whose primary infection was not due to gonorrheal salpingitis, was likewise his belief.

**Prolapse of the Uterus in Nulliparous Women.**—Dr. PALMER FINDLEY, of Omaha, Neb., said that in several of the reported cases the procidentia occurred about the time of puberty and in these cases it was recorded that the girls were poorly nourished; some with tuberculosis of the lungs associated with persistent coughing, others who were compelled to do hard labor.

A suggestion of the rarity of the lesion in nulliparous women was found in the excellent contribution of Kepler, who collected seventy cases in the literature up to 1911. To this number he added one of his own and eighty from personal correspondence, making in all 151 cases of procidentia uteri in nulliparous women. He classified these cases as follows: 1. Cases due to congenital defects which occurred in the newborn or at the time of puberty. 2. Cases not due to congenital defects, but occurring later in life. In his judgment there was an element of infantilism in most, if not all, of the cases of procidentia in nulliparous women. The fact that these women were sterile was highly suggestive. In support of the theory of infantilism as an underlying factor in the development of procidentia, he had two cases on record. The relation of mental defects to prolapsus uteri was forcibly illustrated by the observations of Kepler, who collected eighty cases of procidentia in nulliparous women, and of this number thirty-eight were mentally defective. In this group were dementia præcox, imbecility, idiocy, chronic mania, hysterical insanity, cretinism, and acute nervousness. It had long been recognized that defective mental and physical development went hand in hand and the causal relation of mental defects to prolapsus uteri might be readily conceived.

**Radium, a Palliative.**—Dr. DOUGLAS C. MORIARTY, of Saratoga Springs, N. Y., stated that radium possessed a power to correct the disagreeable odor which accompanied the breaking down of cancerous

tissue. This was a very great boon to the patient as well as to the members of the household. Further, radium controlled hemorrhage. In six cases in which he used radium pain was relieved, the odor was markedly controlled, hemorrhage ceased, and there was a change in or a disappearance of the local pathological tissues. Two patients died in coma two months after the treatment; four were alive and hopeful. In one case, Case 5, the uterine hemorrhage was not of cancerous origin, but the condition was a terminal one. He was sure the patient would have died had it not been for radium. He was aware that these six cases were not sufficient from which to draw definite conclusions, but nearly every worker with radium made the same statement concerning its value in the relief of pain, hemorrhage, and odor, but without emphasizing the relation of its use in this particular field.

In using radium in these cases he believed it was possible to produce a toxemia which might prove fatal, and he was sure he had seen the end hastened in this way. He would suggest two precautions when applying radium locally: first, a patient with a low leucocyte count should not be given prolonged applications of radium; and, second, when radium was used it should be accompanied by the liberal use of alkalis. He emphasized his belief that no case of this type was so desperate, and no post-operative condition so hopeless, that radium might not be used with an expectation of the alleviation of the distressing symptoms.

**A Modified Gilliam Operation and Its Ultimate Results.**—Dr. ALBERT GOLDSPOHN, of Chicago, Ill., said that those who denied the pathological nature of retroversionoflexion, affirmed it by their acts when they corrected it in operations for its complications.

The injuries with retroversion were mostly brought about through embarrassment of the venous circulation by torsion of the broad ligaments and by traction in descent of the uterus. Admitting this as a probable factor in the pathology, an effective and lasting as well as harmless cure was best obtained through an overcorrection, by suspending the uterus at a higher plane than it naturally or normally occupied, by a substantial implantation of round ligament loops, reinforced by their peritoneal covering, into the recti muscles and their aponeurosis, best performed after the Gilliam technique, in addition to correction of the version.

To secure the desirable degree of anteversion; and also to avoid intestinal complications, the implantation should not be more than three to four cm. from the edge of the symphysis pubis, and it should bring the distal unused segment of the ligament and its uterine origin in contact with the abdominal wall. The speaker said that practical experience had taught him that this modification of the Gilliam operation was both efficient and harmless.

**The Pathology of the Vulvovaginal Ducts and Glands, with Lantern Slide Illustrations.**—Dr. JAMES E. DAVIS, of Detroit, Mich., gave the history of the literature of the vulvovaginal glands, with a short outline of the physiology and gross and microscopical anatomy. The special pathology, as reviewed in the literature, was in many points incom-

plete. The abundance of material for exhaustive study of these parts had been limited by clinical inattention to the details of the external genitalia examinations. A better definition of the gross pathology and frequent correlation with microscopic changes in the ducts and glands was desired. The vulvovaginitis of schoolgirls, when of gonococcal origin, might exhibit remarkable chronicity. The unhealed lesions during puberty and adult life exhibited marked infectious potentialities with a much wider range of pathological changes than was commonly observed in cysts and abscesses. Primary malignancy, while not at all frequent, was significant and was attended with usually fatal results when not recognized early.

**The Standardization of Definite Procedures during Gynecological Operations.**—Dr. E. A. WEISS, of Pittsburgh, Pa., stated that his own deductions were as follows: 1. Many mistakes that were made during gynecological operations were preventable. 2. While the operator was legally responsible for every action in the operating room, the average surgeon did not take adequate measures to safeguard the patient and himself. 3. By adopting a definite routine or standardized method both for himself and his assistants, better teamwork was accomplished, and consequently mortality and morbidity were lessened.

**The Surgical Treatment of Uterine Cancer.**—Dr. J. H. JACOBSON, of Toledo, Ohio, summarized as follows: The prophylaxis and especially the early diagnosis of the disease presented the greatest problem in dealing with uterine cancer. The radical abdominal operations thus far had given the highest percentage of cures in operable cases. Until radium, x ray, or Percy's method shall have proved their superiority to operation, their use should be limited to the inoperable cases. There was abundant clinical evidence at hand to prove the value of radiotherapy; it therefore seemed logical to follow every palliative or radical operation with radiotherapy.

**Practical Consideration of Surgery of the Stomach.**—Dr. GEORGE W. CRILE, of Cleveland, Ohio, said that despite the mechanical perfection of operative technic, the first contact with the poor risk patient with gastric cancer was still menacing because of the narrow margin of safety due to starvation. In these cases the reserve alkalinity of the body had been reduced; nutrition was impaired; and the reserve stores of water and potential energy had been diminished. The purpose of his paper was to describe a plan of surgical treatment by which these dangerous factors might be obviated or diminished. As a result of these procedures in his clinic the mortality rate of operations upon the stomach, including explorations in cases of inoperable cancer, resections and gastroenterostomies, had been reduced approximately by two thirds.

**The Mechanics of the Stomach after Gastroenterostomy.**—Dr. J. H. JACOBSON and Dr. JOHN T. MURPHY, of Toledo, Ohio, drew the following conclusions: 1. That all patients examined in this series were uniformly well. 2. That gastroenterostomy openings properly made and placed do not become obliterated. 3. That the gastroenterostomy openings functionate equally well in the presence of

either an open or closed pylorus. 4. That it is not necessary to occlude the pylorus artificially in gastroenterostomy. 5. That the gastroenterostomy opening to secure the maximum amount of drainage must be of ample size and placed as near the pylorus as possible, preferably in the antrum pylori. Such openings must not be made on the fundus of the stomach nor on the lesser curvature. 6. That gastroenterostomy is essentially a drainage operation. 7. That serious distention in the jejunum does not occur after gastroenterostomy; the food is seen to pass rapidly through the many loops of the small intestine before it finally stops. Even in those patients who are entirely relieved of their former symptoms food can be forced backward into the stomach from the jejunum, and although this can be done easily, such regurgitations do not seem to make any difference.

**Value of Pain, Jaundice, and Tumor Mass in the Differential Diagnosis of Diseases of the Right Upper Quadrant of Abdomen.**—Dr. J. D. S. DAVIS, of Birmingham, Ala., stated that the usual symptoms of peptic ulcer were pain, vomiting, and hemorrhage; the most important of which was pain. Pain was the earliest definite symptom. It was usually aggravated by large amounts of food and often relieved by small amounts. Pain might come on during ingestion of food, but more frequently came on a few hours after meals and at night. Gastric ulcers were often characterized by periods of long remission, intermittency taking place for long periods of time, during which the patient often believed himself well. The x ray examination would often be helpful in determining the presence of peptic ulcer. Much valuable information might be secured by the roöntgenologist, many of whom claimed to diagnose seventy-five per cent. of ulcers. In appendicitis the pain in a large number of cases occurred at the epigastrium and then was diffused over the abdomen and generally localized at or near McBurney's point. If the appendix was long enough to extend into the region of the gallbladder and ducts its inflammation might excite symptoms of cholecystitis or cholelithiasis and the pain might be at the rib border. If located behind the cecum pain might be referred to the loin or to the right rib margin.

Jaundice was a valuable diagnostic sign. It appeared in appendicitis and renal diseases only as a result of sepsis. Obstructive edema due to a duodenal ulcer near the ampulla of Vater sometimes resulted in a closure of the common bile duct and might cause pancreatitis and jaundice. Cholelithiasis and cholelithiasis were accompanied with slight or marked jaundice which might be of an intermittent or transient type. It might be so slight that an examination of the conjunctiva or a chemical examination of the urine was necessary to detect it. An appendicular tumor might be located anywhere in the abdomen. It was sometimes six or more inches long and might become attached to any other abdominal organ. When inflamed it might become fixed by adhesions to surrounding tissue. Floating kidney tumors were usually marked by smooth, sharp outlines and mobility. They were usually free from pain and tenderness unless obstruction resulted from ureteral pressure. A hydronephritis or

pyonephritis kidney was usually stationary or fixed well back into the loin and did not move with the diaphragm. The hydronephritic kidney usually presented no urinary findings, while the pyonephritic kidney was usually accompanied by septic symptoms—the urine showing blood, pus, albumin, and casts.

Pain was the most prominent symptom in all conditions of the right upper quadrant, and was of great value in a differential diagnosis, if the peculiarities and characteristics of pain common to each condition were kept in mind. Regardless of every aid to diagnosis, it was often difficult to differentiate and, instead of waiting months or years for the trouble to clear up, an exploratory diagnosis under nitrous oxide, gas oxygen, or novocaine should be made.

**Excessive Drainage Complicating Surgery upon the Common Bile Duct.**—Dr. J. E. SADLIER, of Poughkeepsie, N. Y., said that in analyzing the histories of the two cases, he noted certain points of similarity. They both were long standing cases of common duct infection and incomplete obstruction: the latter condition was a result of the ducts being filled with gallstones to such a degree that they must have constituted an impediment to the normal outflow of bile. He had noticed in each case marked dilatation of the common duct. In one case there was an alcoholic history, and in the other an involvement of the pancreas. Hence, these two conditions were eliminated as complete causative factors. They could not be disregarded as conditions of partial influence in provoking the excessive drainage. He was unable to state the positive cause for this peculiar and serious complication, but he was disposed to believe that it was due to a condition somewhat analogous to that seen in the surgery of the hypertrophied prostate gland. Here as a result of incomplete emptying of the urinary bladder, back pressure upon the ureters and kidneys occurred, which, when suddenly relieved through operative intervention, occasioned an excess outflow of urine of low specific gravity, which was a well known source of danger in a person debilitated by long continuation of the preexisting disease. Was it not quite probable that in partial obstruction to the outflow of the bile, by reason of the common duct obstruction from stone, a dilatation of the smaller biliary radicles in the liver occurred? Increased back pressure, when suddenly relieved by operative removal of the obstruction, produced a condition of venous engorgement of the liver with resulting outflow of fluid, which was more in the nature of a transudation than an actual biliary secretion, and this, coupled with a back flow of pancreatic fluid through the dilated duct, would account for the excessive drainage. Yet he would not presume to determine definitely the causative factor, for the object of his paper was not to analyze the condition, but to suggest that in operative work upon the common bile duct the possibility of excessive drainage must be considered and preparations made to combat it before the patient became dehydrated to the danger point.

**Diverticulitis of the Descending and Pelvic Colon.**—Dr. JOHN W. KEEFE, of Providence, R. I., after reporting two cases in detail, emphasized the following points in connection with them: the



symptoms found resembled those of appendicitis, but with the local manifestations on the left side. He pointed out the value of röntgenological examination, and also laid stress on the importance of differentiating diverticulitis of the colon from carcinoma and tuberculous or luetic growths. He advised that too much should not be attempted at the primary operation. The two stage operation was often preferable. Temporary colostomy might be desirable. Conservative surgery was of the greatest value in this disease.

**Inguinal Hernia Attached to the Cord, Undescended Testicle, Uterus, Tubes, and Broad Ligament.**—Dr. EDMUND D. CLARK, of Indianapolis, Ind., reported a case which was a very good example of hermaphroditism in a man; and illustrated what was exceedingly rare in the hernial sac of a male. The external conformation of the patient was that of a normal male. The hernial sac contained a uterus, broad ligament, and Fallopian tubes. Although married to an apparently normal woman for six years, no pregnancies had resulted.

**Absence of Muscular Tone an Important Factor in the Etiology of Postoperative Paralytic Ileus.**—Dr. R. R. HUGGINS, of Pittsburgh, Pa., stated that distention and stasis, varying in degree, followed most laparotomies. The condition was usually that of a temporary paralysis, a reflex action through the plexuses of Auerbach and Meissner, the result of manipulation and trauma. There were cases where infection could be excluded, and patients died of paralytic ileus. The comparative frequency of the condition in vaginal hysterectomy was significant. Careful preoperative, operative, and postoperative treatment was important in lessening postoperative paresis; but we were occasionally confronted with an aggravated form of this condition and death ensued. He believed that in certain instances where death occurred from so called paralytic ileus, it was primarily due to lack of muscular strength in the walls of the stomach and intestines. This depended largely upon the general muscular tone in the individual previous to operation, the amount of exhaustion incident to the operative procedure, and the effects of the anesthetic.

Keith had called attention to the presence of nodal tissue, neuromuscular in character, in the bowels, which was similar to that in the heart. This was located at various points in the intestinal tract and acted as a local pacemaker. A block might occur, as in the heart, at any point where one rhythmical zone passed into another. Magnus demonstrated that the stripes beat more actively when removed from a normally fed animal than from one that was not digesting. The intestinal tract had an intrinsic tone, which was regulated by extrinsic nerves. Tonic contraction and rhythmical peristalsis disappeared when there was general bodily weakness, and when the depleted central nervous system failed to deliver the necessary tonic impulses. Post-operative distention varied in direct proportion to the strength and tone of the general muscular system. Patients with poor general muscular tone required more careful preparation, and greater efforts to minimize exhaustion from anesthetic and operative effects.

(To be concluded.)

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

**Indigestion, Constipation, and Liver Disorder.** By G. SHERMAN BIGG, F. R. C. S., Edinburgh; M. R. C. S., England, etc. New York: Paul B. Hoeber, 1913. Pp. 168. (Price, \$1.50.)

This little book seems to appeal to the layman rather than to the doctor. It begins in a very elementary manner, quite as one would appeal to the lay mind, to present the subject of digestion from the physiological standpoint. The author half apologizes for this with a statement that "it is true that every one with a medical training is familiar with the facts, but it is not quite so certain that in these days of scientific attainments, when the mind is apt to run on germs and other up to date causes of disease, that simple knowledge is not allowed to fall into oblivion." In referring to the pancreas he does so almost always by speaking of it as the sweetbread. The book is a curious admixture of pseudoscience which, if intended for doctors' perusal, is far from satisfying, and if, as seems more likely, designed for the layman, it is certainly not an unmixed blessing in the teaching of self medication. Frequent reference is made to various proprietary preparations and to the tablets put up by a number of houses, even including the list number of the tablet as it appears in the firm's catalogue announcement. In no book with which we are familiar, purporting to be a reference work for the doctor, have we seen so many references to the tablet and ready made type of pharmacy as in this book. We could not conscientiously commend it to the doctor, for in no single direction have we been able to discover wherein it would aid him, and even more loath would we be to foist it upon the laity, who should be guarded against the drug habit rather than led into it.

**Dysenteries. Their Differentiation and Treatment.** By LEONARD ROGERS, M.D., F.R.C.P., B.S., F.R.C.S., C.I.E., I.M.S., Physician to the Isolation Ward (Cholera and Dysentery) of the Medical College Hospital and Professor of Pathology, Medical College of Calcutta. London: HENRY FROWDE (Oxford University Press) and Hodder & Stoughton, 1913. (American Branch, New York.) Pp. xi-336. (Price, \$3.75.)

This work will probably remain for some time a standard presentation of the dysenteries, both bacillary and amebic. It includes a chapter on the so called Hill diarrhea and the diarrhea alba or sprue. The author presents in chronological order the history of the dysenteries, and unlike many of the German writers, he shows his familiarity with the American literature, and gives due credit, notably to Osler, Dock, Councilman, Lafleur and Harris; also to the American group working in the Philippines, notably Flexner, Strong, Musgrave, and Craig. He also gives a résumé from the historical standpoint of the most important drugs used in the treatment of dysentery. He likewise manifests his familiarity with the literature upon the subject of dysenteries as met with during the American Civil War, notably Woodward's work. He leads up to the subject of ipecacuanha, and through that to emetine, with which Rogers' name is so largely associated. He states that ipecacuanha, or Brazilian root, was first brought to Europe in 1658 by Piso, and administered as an infusion or decoction. It appears to have been used in India as early as 1660. When sold to Louis IX as a secret remedy, it was looked upon as a specific for dysentery, but later fell into obscurity. Early in the tenth century it was resuscitated in India by Annesley and Twinning, and from that time until the introduction of emetine, it gradually came to supplant other remedies in the treatment of the amebic form of dysentery. Therapeutic confusion was finally clarified by the distinct recognition of the two types of dysentery, bacillary and amebic. The work of Rogers and Vedder has demonstrated that ipecacuanha and emetine are specific against amebic disease, at least as much so as quinine is against malaria. Emetine was isolated by Pelletier in 1817, and in 1820

Bardsley of Manchester called attention to its value in dysentery and other diseases. In 1912 Rogers began the use of emetine hypodermically. The work includes an excellent description of the pathogenic and nonpathogenic amebæ, and the methods of studying them, both in the fresh preparation and by fixing and staining. Then follows an excellent chapter on the pathological anatomy of amebic dysentery, illustrated by several colored plates. By contrast, the pathologic anatomy of bacillary dysentery is similarly illustrated. The work is one which commends itself, particularly to those interested in tropical diseases, and not less to those who are called upon to treat the dysenteries as they present themselves in children during the warmer months, and in both children and old people especially in institutions. It can also be well recommended to physicians attached to hospitals, who are liable at any time to meet with a case of true amebic dysentery.

*The Influence of Joy.* By GEORGE VAN NESS DEARBORN, Instructor in Psychology and in Education, Sargent Normal School, Cambridge; Psychologist to the Forsyth Dental Infirmary for Children, Boston, etc. Boston: Little, Brown & Co., 1916. Mind and Health Series, Edited by H. Addington Bruce, A. M. Pp. xviii+223. (Price, \$1.)

It is well known that emotions exert a very considerable amount of influence, for better or worse upon the human system. Strong emotions, as hate and jealousy, and especially rage, have a deleterious effect on the digestive system, while joy has a stimulating, tonic effect. In the little work before us the author explains in detail how and why joy tends to give health. The work is suggestive and well worth reading.

*Early Pulmonary Tuberculosis. Diagnosis, Prognosis and Treatment.* By JOHN B. HAWES 2nd, M.D., Assistant Visiting Physician, Director of Tuberculin Department, Massachusetts General Hospital, etc. With Preface by Richard C. Cabot, M.D., Assistant Professor of Medicine, Harvard University. New York: William Wood & Co., 1913. Pp. 114. (Price, \$1.50.)

The extensive experience of the author of this little work merits respectful attention. As Richard Cabot says in his preface to the book, "There are plenty of large authoritative books about tuberculosis. There are plenty of small books which are not authoritative. Dr. Hawes has written a book which is small and yet authoritative. Therein lies its unique merit." In this we can concur. In addition to this we firmly believe with the author "that there is a very definite place for a short, cheap book, which presents the essential points in the diagnosis, treatment, and prognosis of early pulmonary tuberculosis." In view of the importance of the recognition of early tuberculosis and the intimate relationship of the practising physician to the earliest manifestations of the disease this little book supplies to the busy doctor in a concise and trustworthy manner, sufficient data to enable him to avoid the usual pitfalls experienced in the management of early cases. We refer especially to those individuals who perhaps for months or years are considered to have a run down system, chronic bronchitis, gastritis, or some digestive disturbance, even gastric ulcer, and not infrequently neurasthenia being diagnosed. Some incisive statements deserve repetition. For instance, "a negative sputum should be looked upon as the rule rather than the exception. If the sputum is found positive in the great majority of instances some one is to blame." Ignorance or carelessness has resulted in failure to make an early diagnosis. A diagnosis is possible long before bacilli appear in the sputum. On this topic the author says, "Absence of proof is not proof of absence." It is needless to state that he advocates a careful history and a routine systematic physical examination, as he states it is not only a pair of lungs that are being examined, but the patient *in toto*, as to fever, loss of weight, strength, and energy. Tuberculin as a diagnostic measure he questions, except the von Pirquet cutaneous test in children under five years. He summarizes his remarks as follows: "No form of tuberculin test will ever equal or approach in value the evidence gained by careful history of the patient and a detailed painstaking physical examination." So too, with the x ray in early diagnosis. The difficulty in this connection is to differentiate an old

nonactive process from an acute active one. In several appendices the author gives illustrative cases, the Ziehl-Neelsen method of staining, an x ray study well illustrated, and general directions for the open air treatment. The excellent quality of the work, though brief, and the importance of the subject seem to justify the extended reference.

## Meetings of Local Medical Societies

MONDAY, January 29th.—Poughkeepsie Academy of Medicine.

TUESDAY, January 30th.—Medical Society of the County of Chautauqua.

THURSDAY, February 1st.—New York Academy of Medicine (Stated meeting); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society; Gloversville and Johnstown Medical Association.

FRIDAY, February 2nd.—New York Academy of Medicine; New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn; Practitioners' Society of New York; Corning Medical Association; Society for Serology and Hematology. New York (annual); Alumni Association of Roosevelt Hospital.

SATURDAY, February 3rd.—Benjamin Rush Medical Society, New York.

## Births, Marriages, and Deaths

### Died.

ALLISON.—In Peoria, Ill., on Friday, January 12th, Dr. William Russell Allison, aged fifty-four years.

ANDERSON.—In New Britain, Conn., on Wednesday, January 10th, Dr. Arvid Anderson, aged fifty-two years.

BARNETT.—In Jerseyville, Ill., on Friday, January 12th, Dr. Allen A. Barnett, aged eighty-six years.

BOYCE.—In Pittsburgh, Pa., on Friday, January 12th, Dr. David Chancellor Boyce, aged forty-eight years.

BROWN.—In Orland, Me., on Sunday, January 7th, Dr. Charles Wesley Brown, aged sixty-seven years.

BURNEY.—In Los Angeles, Cal., on Sunday, January 7th, Dr. Thomas Morrison Burney, aged twenty-seven years.

CANADAY.—In Hagerstown, Ind., on Saturday, January 6th, Dr. Nathan F. Canaday, aged seventy-one years.

COOKE.—In Colorado Springs, Col., on Sunday, January 14th, Dr. John M. Cooke, aged sixty-three years.

CORWIN.—In Bayonne, N. J., on Tuesday, January 16th, Dr. Frederick M. Corwin, aged sixty-two years.

CRAWFORD.—In Coraopolis, Pa., on Thursday, January 11th, Dr. John J. Crawford, aged fifty-six years.

ELLINWOOD.—In San Francisco, Cal., on Thursday, January 4th, Dr. Charles Norman Ellinwood, aged eighty-two years.

HALE.—In Providence, R. I., on Saturday, January 13th, Dr. George Carleton Hale, aged seventy-four years.

HERKIMER.—In Brooklyn, N. Y., on Tuesday, January 10th, Dr. Robert Henry Herkimer, aged forty-seven years.

LANAUX.—In New Orleans, La., on Friday, January 12th, Dr. Michel Thomas Lanaux, aged thirty-three years.

LOYD.—In Williamstown, Mass., on Sunday, January 7th, Dr. Seth Louis Lloyd.

PEDRICK.—In Rowley, Pa., on Thursday, January 11th, Dr. Stephen Augustus Pedrick, aged forty-five years.

STAFFORD.—In Indianapolis, Ind., on Saturday, January 13th, Dr. Charles A. Stafford, aged fifty-two years.

STEELE.—In St. Louis, on Sunday, January 7th, Dr. Aaron J. Steele, aged eighty-three years.

STOCKTON.—In Columbus, Ohio, on Tuesday, January 9th, Dr. George Stockton, aged sixty-three years.

TAYLOR.—In Pomona, N. Y., on Monday, January 8th, Dr. William S. Taylor.

YOUNG.—In Camden, Me., on Monday, December 25th, Dr. William Hilt Young, aged forty-six years.

# New York Medical Journal

INCORPORATING THE

## Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 5.

NEW YORK, SATURDAY, FEBRUARY 3, 1917.

WHOLE No. 1992.

## Original Communications

### DIAGNOSIS AND TREATMENT OF GASTRIC AND DUODENAL ULCER.\*

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Ever since Cruveilhier described peptic ulcer as a disease entity, ulcers of the stomach and duodenum have held the attention of the profession. The interest in this disease has not diminished; there are a great many points which have not been discovered. The etiology, although far advanced, is not yet perfectly clear; the diagnosis certainly is not yet complete, and the treatment will stand improvement. It is not possible to cover the whole subject in this article, but a few important points will be considered as they have come to the author from practice.

Letulle in France was the first one to ascribe the origin of ulcer of the stomach and duodenum to bacterial infection. Rosenow has made many experiments in the etiology and he ascribes the origin of ulcer to a fecal infection. Some years ago Turck, of Chicago, gave animals feces containing the coli bacteria and ulcers developed in the stomach in some of them. Clinically we often meet conditions in which there is, for instance, a diseased appendix or a diseased gallbladder and at the same time an ulcer of the stomach or of the duodenum. This seems to favor the theory of focal infection; but, notwithstanding this clinical experience, it is improbable that this is the only etiological factor in the development of ulcer of the stomach and duodenum for the following reasons: 1. We sometimes find ulcers of the stomach and duodenum where there are no bacteria present and where no focus of infection can be discovered anywhere. 2. We find that we can experimentally produce peptic ulcers by underfeeding the organism and then injuring a part of the mucosa of the stomach or duodenum. The experiments of Ewald and others are familiar to all.

Peptic ulcer is found only in those regions in which the acid secretion of the stomach exists as an acid; you will find it all over the stomach, cardia, lower part of esophagus, pylorus, and upper part of duodenum. In the intestine, where the juices are made neutral or alkaline, the typical peptic ulcer is not found, demonstrating that the acid secretion of

the stomach is an important element in the development of these ulcers.

It is probable that many factors are involved in the production of ulcers, not one alone. Whether the bacteria alone cause them even occasionally is difficult to say. This has probably not yet been proved—at least, in man.

The diagnosis of gastric and duodenal ulcer has been made easier recently because more phenomena have been noted which help to discover the presence of these ulcers. Years ago the ulcers were unrecognized until after the patient had a hemorrhage. When a patient had dyspeptic symptoms and a sudden hemorrhage, then the diagnosis of gastric ulcer was made. Four per cent. of people who die, it has been found at autopsy, have ulcers in the stomach or duodenum. If clinically we make the diagnosis on hemorrhage and dyspepsia we get less than one per cent.

It was a great advance when Boas found that it is not always necessary to wait for hemorrhage, but that blood can sometimes be discovered in the gastric contents or in the feces by chemical tests. This, in conjunction with other symptoms, helps in diagnosing ulcer along the digestive tract. But this alone is again not enough because if we wait for occult bleedings to become apparent, the ulcer must be of some size because the blood will be mixed with the food along the digestive tract, part of it will be reabsorbed, and only a small part left to betray the condition. The ulcer will thus be recognized only when it is active. Boas states that the finding of occult blood occasionally, without active hemorrhage, is a valuable diagnostic sign.

I found some years ago that if the duodenal bucket was given to a patient and made to go beyond the stomach, leaving the thread in for a number of hours, it would come back with the imprint of the ulcerated area, if the ulcer was situated along the cardia, lesser curvature, pylorus, and duodenum—the most frequent sites of ulcer. In chronic peptic ulcer the mucous membrane at the site of the affection is usually not healthy but eroded and brittle, exuding material not exactly blood. If the test is positive there will be bile at the end of the thread, the part which has been in the duodenum, and a brownish stain above the bile discoloration. At operation I find that in a great many cases the position of the ulcer according to the thread is correct. The x ray will also help to discover the

\*An address delivered before the Northwestern Medical Society, of Philadelphia, Pa., on December 8, 1916.



ulcer. The absence of signs with the x ray does not, according to my experience, permit the conclusion that there is no ulcer. There may be an ulcer present—not a big one—but an ulcer which will show up with the thread, and give other symptoms, but will not be revealed by the x ray. Another point is that x ray findings apparently showing a deformity of the cap, the pylorus, and duodenum may not be real evidence of an ulcer. One of my recent experiences will demonstrate what is meant. The case was that of a physician in New York who had dilatation of the stomach and pain two to three hours after meals. The clinical diagnosis naturally would be duodenal ulcer. The x ray showed a constant deformity of the cap and part of the duodenum, and a diagnosis of duodenal ulcer was made. I made another examination. The thread showed bile at the end, but no blood stain. There was slight hyperchlorhydria. With the pyloric dilator no obstruction was found, and I concluded then that there was no duodenal ulcer, no obstruction, and no stricture. I left for my vacation, and when I heard from him again he had been operated upon, his symptoms having become so acute. He was operated on in the Mayo Clinic and nothing was found wrong with the pylorus or duodenum, but a diseased appendix, which was removed. I heard the story from an intimate friend of the doctor himself, and it proves that even positive x ray findings of an ulcer may fail. The thread test is not infallible, and mistakes may be made with any method. There is no rule without an exception, and it is well to compare experiences and draw deductions. I think the thread test will help greatly to establish a diagnosis of ulcer of the stomach or of the duodenum.

I will now speak of the situation of the ulcer. Years ago it was believed hardly possible to make a positive diagnosis of duodenal ulcer; that the condition could only be suspected. Now, clinicians have observed that pains appearing not immediately after meals, but later—two or three hours and still later—are probably a sign of an ulcer situated in the pylorus or duodenum, but they were not sure about it. A few years ago Moynihan made the statement that the diagnosis of duodenal ulcer could be made very easily simply by the history and the symptoms of the patient. These symptoms comprise pains a considerable time after meals—three or four hours; periodic appearance of the pains with intermissions of the attacks from a few months to a year or more. Such a picture, Moynihan says, is typical of duodenal ulcer. It was believed that diagnosis could thus be easily made upon the statements of the patient.

From my experience I cannot fully substantiate Moynihan's statements. The symptom group of pains late after meals and the periodic appearance of pain with intermissions of hyperacidity may first be found without any organic disease in the stomach or duodenum. Later it is found associated with an ulcer in the pylorus, duodenum, or even in the stomach. We have such picture complexes not only in association with ulcer of the duodenum, but also with ulcer on the lesser curvature. In two patients operated upon with that symptom complex we found the ulcer not in the duodenum but at the lesser cur-

vature, sometimes not near the pylorus but in the middle of the lesser curvature.

Again, the symptom complex can be found without an ulcer. This is a little more difficult to prove because these patients are not often operated upon—I am not in favor of immediate operation for ulcer. The doctor previously mentioned, who had the typical picture, had no ulcer, but a diseased appendix. If a diseased appendix can produce these symptoms, any other reflex condition might bring on exactly the same affliction.

It is important to know that while hyperchlorhydria, pains late after meals, and pains relieved by eating, are due to too much acidity, patients with too much acid are predisposed to the development of ulcer. This is not new, but was known as far back as twenty-five years ago, when Bouveret showed that ulcers were frequently found in association with this symptom complex, especially if it had lasted for a long time. It is not the ulcer which produces the symptoms, but rather the hyperchlorhydria associated with it. If the functional disturbance exists for a long time an ulcer usually develops. The longer the patient has been suffering the more apt are we to find an ulcer. With the newer methods of investigation we can determine more easily in which group of patients ulcer will be found.

A few words regarding the differentiation between benign and malignant disease will be in order because symptoms of both can be found in association with malignant disease of the stomach, and it is good to have differential points.

The malignant diseases usually show a short course, and a steady progress. A tumor is often found by palpation or by x ray. Absence of hydrochloric acid is usual, and lactic acid is often present. Small hemorrhages are frequent. In the benign affections we ordinarily encounter a long history of intermittent suffering covering many years, with periods of euphoria lasting a year or six months and gradually becoming shorter. There is no palpable tumor and the hemorrhages are as a rule extensive and recur at greater intervals. Hyperchlorhydria is present and lactic acid absent.

Clinicians assert that the pains characteristic of ulcer begin pretty soon after meals and are rather aggravated by eating. Many surgeons maintain that clinicians are wrong and that ulcer of the stomach is accompanied by pains two or three hours after meals and relieved by eating. Both are right. In ulcer in the active stage the pains often occur after eating, and are greater after solid food than liquid. Pains due to the acid, however, require two or three hours to develop. Late pains do not exclude ulcer. The pains, however, are not due to the ulcer, but to the abnormal type of secretion.

The differentiation between ulcer of the stomach and ulcer of the duodenum is not of much importance. The treatment for both would be about the same for a time. X rays and the thread test will help to locate the lesion. The ulcer may be situated where it cannot be located by the thread. If it comes in contact with the thread we can tell pretty well where it is.

Duodenal ulcer has been found in cases formerly

diagnosed as pyloric stenosis. The reason surgeons believe that duodenal ulcer is so common is that many peptic ulcers are found in this variety of troubles. The Mayos say that more than half of the peptic ulcers are duodenal. This is due to the fact that surgeons deal more or less with those conditions in which there is some stagnation of food, pyloric obstruction, spasm of the pylorus, or stricture. For this reason they believe in the frequency of duodenal ulcer. If all ulcers were opened, ulcer of the stomach would be discovered more frequently than ulcer of the duodenum, in the ratio probably of four to one. In the group of patients seeking surgical advice and operated on, it is undoubtedly true that duodenal ulcer plays a great part.

In the consideration of treatment I shall indicate which cases should be treated medically and which surgically. There is as yet no unanimity of opinion among physicians about the treatment of peptic ulcer. Many clinicians and surgeons believe that an ulcer should be operated on as soon as it is found. Many physicians, on the other hand, are of the opinion that an ulcer as such does not require surgical treatment, but should be treated medically. I hold the latter view.

Peptic ulcer, as a general rule, should be treated medically. An ulcer, in itself, is not an indication for operation; in a great many ulcers—four fifths or more—the patients improve sufficiently with medical treatment to attend to their daily work. An operation is always accompanied by some danger, and it is most inadvisable to undergo one unless absolutely necessary. First let us follow the easier plan and see if we cannot help these patients medically.

Not every patient with peptic ulcer shows the same degree of suffering. In consequence the treatment can be arranged accordingly; treatment may be adapted to the mild cases and to those cases showing severe symptoms. It is not necessary to arrange it that way, but it may be done so with advantage. The patient with mild symptoms may say he cannot stay in bed for, say, two weeks, that his business will suffer. He will ask if you cannot advise some other line of treatment. If you say no, he will go away and do nothing. A good plan is to prescribe ambulatory treatment for mild cases, giving them large doses of bismuth with magnesia, restricting meat, but allowing plenty of butter, milk, eggs, and a small amount of chicken. Let them eat frequently and rest as much as possible, lying down for half an hour before meals. For pain give them an opiate, or, still better, atropine. There is no harm in such treatment. If the patient feels better and loses his pain, he can go about his affairs and get rid of his ulcer. He may improve to such a state that he is not suffering and may continue so for a long time. If he needs further treatment the above procedure can be repeated. There is nothing wrong in advocating such palliative treatment, because we must help the patient. In employing the ambulatory treatment it is well not to put the patient on too rigid a diet. He must have sufficient food to keep up his strength. When the symptoms are of a severer type, the best plan is to put the patient to bed.

Cruveilhier was the first to suggest milk as a diet in gastric ulcer, and the same diet has been adopted in practice by von Leube and Ziemssen and others. If the patient is in bed you can keep him on a liquid diet. The point is mainly to give the organ rest. As soon as the patient begins to improve, he should be given more food. He should be given bismuth, and hot applications should be made to the stomach. Then, as he improves further, the diet should be increased by the addition of eggs, cereals, and meat. The milk diet has been overdone. Many physicians think that a patient with ulcer of the stomach must live a year or more on a milk diet. I do not agree with them. For a short time a strict liquid diet may be employed, even if it be insufficient; but for a long period one kind of diet always causes some deficiency and the patient usually suffers.

A few words about the Lenhartz diet: Lenhartz was of the opinion that in ulcer of the stomach much liquid should not be given, because it distends the stomach. He thought it essential to give a concentrated diet comprising meat and eggs. According to my experience it is well to give milk before eggs, but not to extend the rest diet for too long a time.

In dealing with active hemorrhage complete rest is of importance. The stomach should be quite inactive until the bleeding stops. Here rectal feeding is in place. Very often we find that rectal enemas irritate the bowel and also the stomach, causing vomiting. Only two weeks ago I had a woman patient in whom any injection into the bowel caused hemorrhage from the stomach. There was a large hemorrhage following some manipulation of the rectum. I found her pulseless and I thought she would die. In such an acute condition it is not so much the matter of food, but of water in the system which should have our attention. Water infusion is sometimes good. Here we must also resort to remedies that have the effect of checking the hemorrhage. Serum is used a great deal; emetine has some effect; adrenalin is also used. Sometimes these remedies must be combined. Opium and belladonna are of importance in checking peristalsis.

I have recently used the duodenal tube in cases of chronic ulcer and acute hemorrhage. The tube does no harm and affords a means of feeding the patient, at the same time keeping the affected area at rest. In a patient with severe hemorrhages, especially a patient in whom rectal irrigation cannot be performed, this is a great boon. In the patient just mentioned I introduced the tube at about noon and then aspirated and got black material. You must aspirate gently. I kept the patient on ice water. The next morning I found that the tube was in the duodenum. I aspirated and got pure bile from the duodenum. I then began with the feeding and the patient, who had had no food for about six days, could now be given milk and raw eggs. She has had no pain during a period of two weeks' duodenal feeding, and is now up and is getting well. Duodenal alimentation can be practised not only in the presence of severe hemorrhages, but also in a chronic case when other remedies fail. The rest treatment plays the most important part in the re-



cuperation of the patient. We know of nothing better than to take the food away from the affected area. No matter what the diet may be, any food must ordinarily go through the ulcerated area. If we introduce the tube and let the food go into the duodenum, skipping the diseased area, healing is promoted. It is the most rational method we have at our command in the healing process of an ulcer.

There are three physicians, Dr. N. de Rosas, Doctor Ruiloba, and Dr. Cabrero Sanavedra who have succeeded in curing a perforated gastric ulcer by the method of duodenal alimentation. All three live in Havana, Cuba, and Doctor de Rosas has written to me about their patient, a case of gastric ulcer with hemorrhage and perforation. In this case a laparotomy had been done for a subphrenic abscess and it was noticed that when the patient drank milk it came out through the laparotomy wound. Doctor de Rosas applied duodenal alimentation and in feeding the patient through the tube no milk escaped. In three weeks of duodenal alimentation the wound healed and the patient recovered. The case was so desperate that the patient would have died. I have never seen a case of perforation treated in that way, but have usually seen them operated. I think that this method of treatment is of greater importance in duodenal ulcer than in gastric ulcer.

Regarding the surgical treatment the following indications can be given: First, if you make the diagnosis of perforated ulcer of the stomach, duodenum, or other location of the digestive tract, the patient should be operated upon, and the quicker the better; second, in obstruction of the pylorus of a high degree the best results are by surgery; in the third place, acute hemorrhage requires no surgery at the time of the bleeding. In recurrent hemorrhages we can do a prophylactic operation in the interval to prevent renewal of hemorrhage. In frequent small hemorrhages surgery is indicated very often, but not always. Whenever we are in doubt whether or not there is malignant development I usually advise operation in order to give the patient a chance of recovery in case the condition is malignant. These are, on the whole, the most typical indications for gastric surgery.

There is also another possible situation in which operation is feasible, and that is when we do all we can and cannot get rid of the pains which the patient suffers. We try one plan of treatment and another, and still the patient persists in showing unabated symptoms. Here again surgery can be resorted to. I cannot say that operation will free the patient of symptoms. I can advise trying it, although the results are not always successful.

20 EAST SIXTY-THIRD STREET.

**Serum Therapy in Meningitis.**—A. Montefusco (*Riforma medica*, November 20, 1916) states that he is convinced from personal observations of cases and from a study of the statistics of such writers as Wolff, Netter, and Schenke that antimeningitis serum is not only far from being a specific remedy but not even superior to other remedial measures in cerebrospinal meningitis.

## ULTRAVIOLET RAYS IN SKIN DISEASES.\*

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An attempt will be made in this article to submit a candid and unbiased estimation of the value of ultraviolet rays in dermatological practice. This is based entirely upon personal experience with the light, extending over a period of two and a half years in private practice—a period far too short to justify any but the most casual deductions and conclusions regarding the position which ultraviolet rays maintain in the therapeutics of skin diseases. I deliberately refrain from directing your attention to the publications of other writers, of which there are many, so that the element of prejudice for or against the ultraviolet rays, may be entirely lacking in my inferences regarding their worth.

The value accredited to the ultraviolet light in the treatment of skin diseases has no doubt been exaggerated by some of those who have published papers on the subject. By others, especially by those who have not had a sufficient personal experience with the latest improved types of apparatus to qualify as judges, there has been a tendency to belittle the power to do good residing in this form of cutaneous therapy. The safest position to take with regard to this question seems to me to be an intermediate one; that is, experience has taught me that the benefits to be derived from the rays do not justify the too sanguinary claims of some, any more than this form of treatment deserves the depreciation of others. The light is not and probably never will be an indispensable modality in dermatological practice; but in selected cases it represents a valuable adjuvant to other methods of routine treatment.

Compared with Röntgen therapy and radium therapy, the ultraviolet light is of far less value to the dermatologist than either of these remedial agents. We all know that such diseases as epithelioma, sarcoma, keloid, mycosis fungoides, lupus vulgaris, ringworm of the scalp and chin, affections of the nails, vascular nævi, etc., respond more readily and with better results to x ray and radium therapy than to any other forms of treatment known to modern science. It is a remarkable fact that the dermatoses, which were generally looked upon as being incurable before the advent of radiotherapy, are today closely linked in our minds with x ray and radium treatment, and justly so. The same cannot be said, however, of the ultraviolet rays, with possibly one or two exceptions, which I will mention later more in detail.

There are certain skin diseases which lend themselves, in one way or another, more readily and conveniently to ultraviolet light treatment than to other remedies. Frequently the use of these rays obviates the employment of disagreeable external remedies entirely—an important factor to be taken into account among patients who refuse to avail themselves of the benefits derived from lotions, salves,

\*Read before the Clinical Society of Plainfield, N. J., November 21, 1916, and the Clinical Society, Dermatological Department of Vanderbilt Clinic, November 23, 1916.



dressings, et cetera. Obstinate cases of facial acne, for example, respond more readily to ultraviolet rays, than to any other form of therapy, excepting x rays. But everybody will admit that, given a choice of the various methods of treating a persistent acne of the face, the x ray will always have to be a method of last resort; and that no one is justified in administering x rays to cases of this kind unless he is a skilled radiotherapist. In the use of ultraviolet rays we are not thus handicapped; for nothing but the most careless and inexcusable negligence on the physician's part can cause any permanent damage to the cutaneous surface exposed to the light. This practical nonexistence of lasting ill effects from an overdose of the light to an area of diseased skin, must be regarded as an important factor in considering the relative value of actinotherapy to the dermatologist engaged in active practice.

In connection herewith attention should be directed to what I consider to be an item of utmost importance in the successful employment of these rays. When I first began to use the Kromayer light, I naturally refrained from administering severe reactions, for fear that I might be doing more harm than good. As I grew more familiar with the proper handling of the apparatus, the suitable time and frequency of exposures, and the correct distances between the skin and the source of light—in short, the correct technic—I soon found that my poor and indifferent results bore a direct proportion to my timidity in administering the treatments. I learned that comparatively severe reactions are required to affect beneficially most of the dermatoses which I subjected to the light. As you know, nothing but personal experience can teach one how to use the various physical agents to the best advantage in treating the many different forms of skin affections. For example, I treated a case of the papular form of parapsoriasis with the ultraviolet light about two years ago, all other remedies, including x rays, having failed to alter the lesions in a favorable manner. The patient, a man of fifty-eight years, was averse to subjecting his skin to a strong reaction and I lacked the courage to administer one. He soon left me in ill disguised disgust. Not long ago, Doctor McCaskey brought a man to my office for consultation, who exhibited a similar type of papular parapsoriasis, the lesions being scattered all over the body, excepting the face. The diagnosis was readily verified by microscopic examination of one of the papules. Upon learning that the man had been through the whole gamut of internal and external treatments at the hands of some of the most prominent dermatologists in the city without in the slightest way altering the eruption, it was decided to try intensive irradiation with the ultraviolet light. This treatment was efficiently carried out by Doctor McCaskey, who employed the so called Alpine Sun Lamp, an apparatus devised by Nagelschmidt, with which extensive areas of the skin may be exposed at one sitting. After each irradiation, a severe dermatitis was set up, with the result that the lesions were entirely removed, leaving no traces behind. Up to the present time, there has been one slight relapse of the eruption on the inner surfaces

of the thighs and arms, so that further treatment is required.

Here we have an example of a notoriously intractable dermatosis, heretofore said to be incurable by all means at our disposal, apparently well on the way toward recovery by intensive ultraviolet light treatment. Three patients exhibiting the patchy and discoid variety of parapsoriasis efflorescences also were subjected to the treatment; but here again I committed the error of not giving them sufficient doses, so that the results were disappointing, although I anticipate far better effects from the intensive treatments which the future holds in store for these patients.

The case of extensive angioma serpinosum which I reported in 1913 in the *Journal of Cutaneous Diseases*, responded in a remarkable way to intensive irradiation. A single exposure of an affected area of considerable extent, as, for example, the outer portion of the thigh, resulted in the complete and permanent disappearance of the many telangiectatic lines, raised red papules, pigmented spots, and circinate vascular dilatations which formed a part of the dermatosis, so that the skin gradually assumed a normal appearance. To bring about this happy result, a dermatitis of considerable severity was found necessary; but the patient being a tractable young woman, anxious to present a decent appearance before her future husband, readily subjected herself to the inconvenience attending an inflamed patch of skin, over a period of ten to fourteen days after each treatment.

In a case of chloasma of the forehead and cheeks, in a middle aged woman whom I treated about six months ago, giving her a single exposure to the entire affected area, with satisfactory results, the pigmentation has failed to reappear and the skin is normal today. The reaction in this case was moderate and caused no inconvenience. The light treatment seems to me to be far less unpleasant than the application of peeling salves, lotions, and of carbon dioxide snow, in affections of this kind. In two patients suffering from vitiligo, I was unable to see the slightest improvement after repeated exposures to the depigmented areas of skin. In one case of pruritus without visible cutaneous changes, the result of treatment was unsatisfactory. The patient had no discoverable visceral lesions or metabolic disturbances.

I have under my care at the present time a young woman afflicted with acanthosis nigricans. Several years ago she swallowed a solution of mercuric chloride with suicidal intent. Decapsulation of both kidneys probably saved her life. Acanthosis nigricans most often occurs in conjunction with malignant disease of the abdominal viscera, but in the juvenile form, of which this case is an instance, the dermatosis may appear as the result of some form of irritation of the abdominal sympathetic. At any rate, shortly after the operation, an intensely red and itchy eruption appeared and soon spread all over the body, persisting despite expert treatment. Gradually the redness faded and gave place to a darkly pigmented and roughened skin, most markedly affecting the neck, axillæ, and groin, and accompanied by a hyperkeratosis of the palms and

soles. The axillæ and groin presented extensive brown and almost black, soft papillary growths, throwing the skin into deep folds. On the neck and chest the natural lines of the skin were greatly exaggerated, so that the integument resembles somewhat the bark of a tree. Persistent treatment with keratolytic agents, baths, etc., proving unavailing, I resorted to actinotherapy. The darkly pigmented, hyperkeratotic skin required large doses of ultraviolet light to bring about a satisfactory reaction. The results have thus far been gratifying, for the skin of the face, neck, and chest has improved to the extent that the patient can expose her face and neck, without attracting the attention of those with whom she comes in contact.

In rosacea, seborrhœa oleosa, and acne of the face and back, the ultraviolet light presents a large field of usefulness. The effects of the light being essentially keratolytic and stimulating in character, its therapeutic value lies chiefly in the rapidity with which the desired keratolytic and stimulating phenomena are called forth by its use in the above mentioned dermatoses. Excepting the very mild cases, I have not succeeded in curing these affections with the light alone, but have found it necessary to employ the usual remedial agents, both external and internal, to bring about permanent relief. But I have frequently demonstrated the fact that, with the aid of the light, a severe acne and rosacea can be cured in half the time usually required when other and more antiquated methods are employed. I therefore believe that in actinotherapy we possess the most useful adjuvant in the management of these diseases. The difficulty lies in overcoming the reluctance of patients to submit to a remedy which provokes a severe dermatitis of the face, for three or four days after each exposure. Once this reluctance is overcome, progress is rapid.

Three cases of acne varioliformis of the forehead and face responded readily to the treatment, for the time being; but relapses occurred with the same promptness as under ordinary therapy. In furunculosis, more especially of the axillæ and back of the neck, the results are uniformly good. I know of no other remedy which is capable of relieving the pain and tension of an indurated boil as rapidly as does the ultraviolet light. Nor do I know of any remedy which is more efficacious in hastening the resolution and absorption of this type of lesion. Furuncles which have not yet reached the stage of softening may be readily aborted with a single treatment. I have often seen complete relief from pain and discomfort take place two or three hours after an irradiation of a boil on the back of the neck.

I treated three patients affected with lichen chronicus simplex of the neck and flexures of the elbows and knees. Each of the patches required two exposures at intervals of one week. In two of these cases, prompt healing took place within a month. In the third, there was a relapse which demanded the use of a chrysarobin ointment before a permanent cure was established. In a case of infectious eczematoid dermatitis affecting one foot, exposure to the rays provoked a marked aggravation of the disease.

Chronic, sluggish ulcers of the leg, associated with varicose veins, derive considerable benefit from the

rays, healing being more prompt than under ordinary forms of treatment, although the results are not as satisfactory as those obtained from small doses of x rays.

Subacute and chronic sycosis vulgaris responds to the treatment in a conspicuously favorable manner, the results comparing very well with those obtained by radiotherapy. Preliminary epilation with the tweezers hastens the cure by expediting drainage of the hair follicles. Cases of this type, so recalcitrant to other forms of therapy, constitute very favorable subjects to demonstrate the efficacy of the ultraviolet light when used to the exclusion of all other remedies, such as salves, vaccines, etc.

From the standpoint of cosmetic dermatology, I have always found it a difficult matter to cure keratosis pilaris, as it appears on the backs of the upper arms in women, especially stout women with flabby muscles. In most cases of this kind, there is an associated chronic congestion of the skin in the same region. Three exposures at fortnightly intervals have sufficed to restore the skin to its normal appearance in these patients.

In the various clinical forms of eczema, the results, on the whole, are somewhat variable and inconstant. Only those cases of eczema were subjected to the rays which did not respond, within a reasonable time, to the orthodox methods of treatment. Of this class, the chronic papular and papulovesicular varieties predominated. Although the light accomplished what the usual external remedies combined with appropriate internal medication and dietetic régime failed to do, namely, a complete restitution to the normal condition in the irradiated areas—the end results in this type of eczema were, in the main, unsatisfactory. Relapses were frequent and I am unable to convince myself that the natural course of the attacks was shortened by the treatment. I refer more especially to eczema of the hands and forearms. But in other cases of chronic eczema and lichenification, in which the lesions are circumscribed, raised, and indurated, appearing most frequently on the thighs and legs, the results were decidedly good, the patches resolving more promptly than they do under the usual remedies.

Two cases of psoriasis were subjected to the rays, my reason for so doing being the refusal by these patients to use chrysarobin ointment properly. In one of these the lesions were of many years' standing, situated on the arms and legs, ranging from a dime to a silver dollar in size, indurated, and heavily covered with scales. Each patch required three or four prolonged exposures, resulting in severe reactions. The lesions disappeared entirely, but left corresponding areas of pigmentation. There has been no relapse in the past four or five months. In the other patient, the treatment proved futile. There would be a temporary improvement, but soon after the reaction subsided, the lesions would return with unabated vigor. Broadly speaking, I should say that more good can be accomplished in psoriasis with chrysarobin ointment, if properly employed, than with actinotherapy, although I fully realize that the value of the light cannot be estimated from its effects on two patients.

Of four cases of lupus erythematosus which were treated with the Kromayer light, employing the blue



filter and dehematizing the parts by means of pressure, I succeeded in curing one patient. In this case the lesions were circular in outline, sharply defined, and situated on the cheeks, so that pressure against the quartz glass was uniform and constant. Each patch required five exposures of a half hour's duration. In the other three patients, the lesions were situated in the crevices behind the ears, in the shell of the ears, and on the alæ of the nose—areas which do not readily lend themselves to the satisfactory utilization of the pressure technic. In these cases I used carbon dioxide snow with far better results, although none of them can yet be regarded as cured. Recently I noted a marked improvement in a patch of lupus erythematosus, treated by the ordinary distance method, using neither pressure nor filter.

In three cases of alopecia areata I failed to accomplish a cure, despite the most painstaking technic. In two of the patients I succeeded in provoking a growth of lanugo hair, but I am under the impression that the same or better results could have been attained by the use of the older remedies. The other patient has not derived any benefits from the rays, after three months of treatment, a period which is too short to justify passing judgment on the value of the light in this obstinate affection of the scalp and bearded region.

In the treatment of premature loss of hair, the ultraviolet light has proved to be a remedy of undoubted potency in my hands. I may say that, comparing an experience of the preceding ten years, to that of the past two years, in the management of premature alopecia in both sexes, I have become impressed by the fact that the rays exert a powerful remedial influence on cases of this kind. In patients in whom the loss of hair is associated with seborrheic eczema of the scalp, our efforts should first be directed toward the relief of that condition, the scales naturally offering an impediment to the action of the light upon the scalp. In cases presenting an apparently normal scalp, no preliminary treatment is necessary. Women seem to derive quicker and more lasting benefits from the light than do men. The immediate and remote results of the treatment naturally vary a great deal, depending upon the nature of the trouble, the duration of its existence, the age of the patient, the presence or absence of dry or oily seborrhea, and numerous other factors which play a part in the etiology of premature and senile loss of hair. In the average case, three irradiations of the scalp, at fortnightly intervals, suffice to arrest the further loss of hair, in both sexes. I have been assured by several patients that the hair stopped falling after the first exposure; whether or not a psychic element comes into play here, I am not prepared to say as yet. The majority of patients have received a course of six successive exposures, with instructions to return for observation once a month, in the meantime using a mildly stimulating scalp lotion. Brief as my experience has been in the treatment of this class of cases I can confidently state that the ultraviolet rays exert a more invigorating and salutary action in premature alopecia than any other remedy at our disposal.

With regard to the actual regeneration of hair—

the restoration of hair in a bald scalp—too little time has elapsed and too few patients have undergone the treatment to offer my impressions on the value of the light in these cases. I refer, of course, to young patients with premature baldness. However, I cannot resist mentioning the case of a bald-headed man whom I treated for a most refractory psoriasis of the frontal portion of the scalp with ultraviolet rays, the usual remedies proving futile. The patches of psoriasis remained where they were, despite repeated exposures. But, as though to console him in his disappointment, a fair crop of hair has sprung from a hitherto barren soil, at least partly concealing the unsightly patches of psoriasis which constituted a source of much annoyance and embarrassment to him.

In conclusion, it should be emphasized that the diseases mentioned in this paper were not selected for the purpose of demonstrating the value of the ultraviolet rays in their treatment, but rather to illustrate the applicability and usefulness of the rays in ordinary, everyday dermatological practice. In the hands of some of my confreres, I have had the opportunity of seeing patients treated by actinotherapy, with very satisfactory results, for naevus vascularis, lupus erythematosus, lichen planus hypertrophicus, eczema, psoriasis, and various other dermatoses.

24 WEST FIFTY-NINTH STREET.

## THE RÖNTGEN RAY IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.\*

By JUDSON DALAND, M. D.,  
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Professor of Clinical Medicine, Graduate School of Medicine,  
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The recent advances in the Röntgen diagnosis of diseases of the thoracic cavity encourage the belief that ultimately results may be expected comparable to those already secured in the diagnosis of diseases of the abdominal cavity. The Röntgen ray has already shown that tuberculosis usually involves the roots of the lungs and spreads along the inner border toward the apex; or may begin in the periphery of the lungs and progress centrically. The study of anterior and posterior stereoscopic plates marks a most important advance in the diagnosis of pulmonary tuberculosis; multiple or successive plates, those made at various angles of the body, and those made during arrested inspiration and expiration, occasionally give information not otherwise obtainable. Continued study of the exact condition of the walls of the bronchi, particularly as to thickening, gives promise of good results. Usually the Röntgen ray reveals more tuberculosis than is indicated by the physical signs, in this respect resembling the results of a post mortem as compared with a physical examination.

In certain cases of acute pulmonary tuberculosis characterized by the presence of small, widely scattered areas of infiltration or consolidation, or when these lesions are deeply situated in the central portion of the lung, the ray reveals their presence when physical signs are doubtful or absent. Small effu-

\*Read at the midwinter meeting of Röntgenologists, Atlantic City, January 21-22, 1916.



sions in the pleural cavity, between the lobes or under the diaphragm, are often overlooked or diagnosed with difficulty, whereas they are readily detected by the x ray. The mushy, indefinite outlines of fresh tuberculous infiltration, contrasted with the sharp, definite shadows of an old tuberculosis, indicate a new field for observation of diagnostic value.

Dry pleurisy accompanying tuberculosis often produces fibrous material of varying thickness, binding the lung to the chest wall or diaphragm, or the lobes to each other, a condition which may be recognized by the plate and which may escape detection by physical signs. The röntgenogram is important as a permanent record, permitting a minute study of the size and topographical distribution of tuberculous processes. Accurate knowledge of the progress or recession of tuberculosis, or of complications, may be acquired by comparing plates made at varying intervals. Small single or communicating cavities, more or less centrally situated in the upper lobe or elsewhere, may be accurately diagnosed by the x ray when their presence or location may otherwise be in doubt. Moreover, the question as to whether the cavity drains properly or not may sometimes be answered. Bronchiectasis, circumscribed or diffused, may also be diagnosed. Although enlarged glands in and about the roots of the lungs are usually tuberculous, they may be produced by many other causes.

In order to progress in the interpretation of plates indicating pulmonary tuberculosis, it is necessary to increase the refinements of technic, to originate new methods, and to correlate the information possessed by the clinician and pathologist. The fluoroscope may give new information or valuable aid to the interpretation of the röntgenogram.

The signs obtained by physical examination possess added value when considered in conjunction with the history, the presence or absence of fever, loss or gain of weight, cough, expectoration, hemoptysis, the presence or absence of tubercle bacilli, etc. In like manner the best interpretation of a plate from a case of pulmonary tuberculosis is obtained when the röntgenologist joins his observations with those of the physician.

The pathologist usually secures material for study from a patient after he has died of tuberculosis; whereas the röntgenologist, like the physician, observes the course of the disease from the beginning to the end. The pathology that concerns the röntgenologist is what may be called living pathology, which is seldom seen by the pathologist. Pathological knowledge has been increased by the study of fresh tissue obtained at operation; and a like advance may be expected when the pathology of the living is studied in relation to the results of Röntgen examination. Pathology must be restudied before complete interpretation of x ray findings is possible. The pathologist must give special consideration, not only to histology and bacteriology, but must also determine the exact size, shape, location, and consistency of pulmonary lesions, as the shadows on x ray plates are due to differential densities.

Giffin and Sheldon have shown that almost every case of pulmonary tuberculosis with tubercle bacilli in the sputum, can be diagnosed independently by the röntgenologist; that in many cases where the

sputum contained no tubercle bacilli, and the Röntgen diagnosis was positive, the subsequent history corroborated the Röntgen diagnosis.

The present status of the Röntgen diagnosis of pulmonary tuberculosis is most encouraging, and in the future will become more and more exact. Whenever phthisis is suspected or where the physical signs and clinical evidence are doubtful, a Röntgen examination is absolutely necessary.

Although pulmonary phthisis is often easily diagnosed by clinical methods, nevertheless, the Röntgen ray so frequently reveals new or unexpected conditions, that in the future no case will be considered as having been thoroughly and completely examined until a Röntgen examination has been made.

#### REFERENCE.

H. Z. GIFFIN and W. D. SHELDON: Clinical and Röntgenological Findings in Pulmonary Tuberculosis, *Journal A. M. A.*, 1915, LXIV, p. 1878.

### BLINDNESS RELIEVED BY A NEW METHOD OF TREATMENT.

#### *Report of a Case.*

BY WILLIAM H. BATES, M. D.,  
New York.

A woman, fifty-four years of age, was first seen by me on May 9, 1915. Her son, who guided her into the office, stated that his mother had been "going blind" for a long time; that she could not see to find her way about the house; that she was unable to see the faces of people around her, and that she could not attend social gatherings with comfort. When out of doors she required the services of an attendant because of her inability to see passing people, obstructions on the sidewalk, or the curbstones or vehicles at street crossings.

The patient's husband, a banker, and a man of intelligence and accurate observation, gave me the history of her progressive loss of sight. During the past twenty-five years he had consulted numerous oculists in various parts of the United States, each of whom had pronounced her condition incurable.

I am indebted to G. de Wayne Hallet, M. D., of New York, for the following record of the patient's condition when she was under his care:

July 7, 1910. The patient gave a history of failing vision for twenty years, first in the right eye and later in the left. The patient stated that the vision is slightly worse in the left eye than it was two years ago. She said: "Everything is in a mist."

Right vision, fingers counted at two feet. Left vision, 15/200.

This is a case of old neuroretinitis in each eye, a few bloodvessels left, but for the most part only white lines extend off into the retina in place of old vessels. She has also choroiditis disseminata in both eyes.

R Syr. acidi hydriodici, 3i once each day.

July 22, 1910. To read she has used a strong hand magnifying glass besides her spectacles. When tested she read Jaeger No. 2 with +10.00 D. S. with the left eye only and she likes it. This glass was prescribed for the left eye.

September 21, 1911. Left vision, 10/200. Ordered for near vision, +12.00 D. S.

Cocaine was used in each eye to dilate the pupil in order to examine the fundus. Can see no change since the last examination.

Treatment: Continue the use of the hydriodic acid.

Following this period of observation by Doctor Hallet, the patient consulted other physicians as stated, always being given an unfavorable prognosis.

The patient was treated by me for the following conditions: incipient cataract; vitreous, cloudy with floating bodies; neuritis, with partial atrophy of the optic nerves; retinitis, with obliteration of many bloodvessels; choroiditis disseminata; glaucoma of the left eye; connective tissue in the anterior chamber of the left eye, obscuring the iris and pupil; functional myopia; functional divergent and vertical squint.

The vision of the left eye, on May 9, 1915, was 5/200, field contracted. This was reduced to the perception of light, two days later, by an attack of acute glaucoma. Miotics, eserine, pilocarpine eye drops failed to relieve the tension and pain after three days; since then they have not been used.

With the assistance of Dr. C. Barnert, an iridectomy was performed. The pain and tension were relieved for a time, but the vision was not improved. Hemorrhages into the anterior chamber occurred on different days during the following week. A mass of connective tissue replaced the blood clots in the anterior chamber, and was large enough to obscure the iris and pupil. Dionin, ten per cent. solution, was instilled six times daily, and the powder once daily in the left eye only. The solution of dionin is still being used in the left eye only.

Later the patient had a number of mild recurrent attacks of glaucoma in the left eye, with pain and increased tension. After three months the tension remained normal. The tension of the right eye subsequently was increased at intervals, always subsiding at once after central fixation was obtained.

My experience with this case, and with others of various degrees of severity, has convinced me that the value of central fixation in the treatment of acute, chronic, and absolute glaucoma should be emphasized. Central fixation, as utilized by me, has relieved the symptom of glaucoma after operative and other treatment had failed. The value of the

method employed in this case has been demonstrated in many other cases, and in various conditions other than glaucoma, of organic as well as of functional character.

The treatment described by me (1) with certain

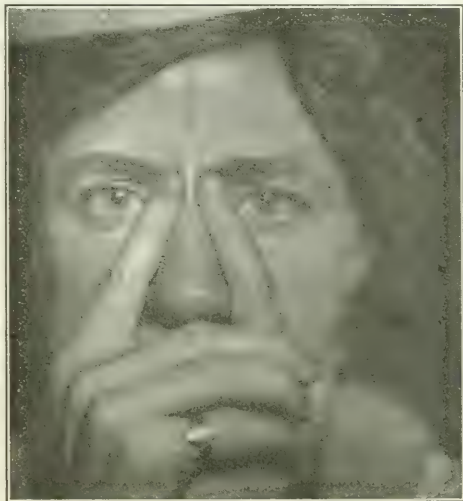


FIG. 2.—Nose pressure, with the eyes open, the patient regarding the Snellen test card.

modifications, was employed in the case here cited, and was found beneficial, as will be seen. Memory and the imagination were useful. A small black spot or period on the Snellen card was imagined. When the sight was poor, at the beginning of the treatment, the period imagined was imperfect. The problem for this patient was to imagine the period as perfectly black and stationary at all distances; then to be conscious of seeing a part or all of a letter without losing the period. The memory or imagination of a black period, at all times and in all places, secured for this patient unusual benefit.

It was explained to her that by "central fixation" is meant a passive, receptive, or relaxed condition of the eyes and brain. When the mind is sufficiently at rest the eye sees best the point fixed—in other words, the eye sees best what it is looking at. With the passive, receptive, relaxed condition of the eyes and mind, or with the absence of strain or effort, as manifested by central fixation, the sight was always improved. The myopic refraction produced by an effort to see distant objects and the hypermetropic refraction produced by an effort to see near, were absent when the eyes became relaxed and central fixation was manifest. Color blindness, contracted field, pain and fatigue, and photophobia were also materially benefited or cured. The objective symptoms of increased intraocular tension, squint, strain of the muscles of the face, twitching of the eyelids and eyeballs, all disappeared instantaneously when the patient was conscious of central fixation. The organic lesions were seen to improve. With the bloodvessels the changes were slow; but with the

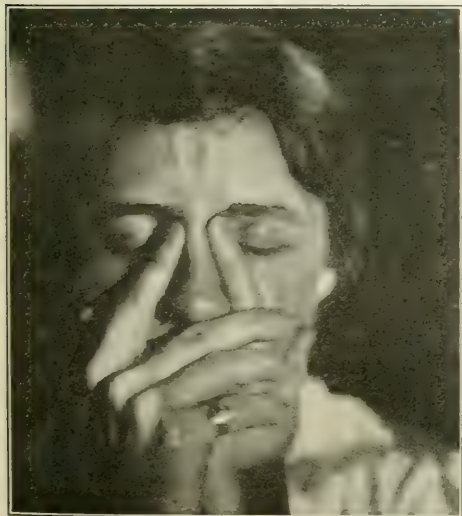


FIG. 1.—Nose pressure, with the eyes closed, the patient imagining or remembering the black period.

cloudiness of the lens, central fixation was followed immediately by an increased transparency readily demonstrated by the ophthalmoscope.

In six days the sight of the right eye had improved to more than one tenth of the normal. Later,



FIG. 3. "Palming" the most successful method of obtaining central fixation. The patient is seeing black, with the aid of the imagination or memory of a black object.

the patient became able to travel on the subway alone, to shop in the neighborhood of her home, to read and write letters, and to read books, magazines, and newspapers. She became able to see the color of the eyes of her husband, children, and friends, which she had never been able to do before in her life. Her sight at night also improved, so that she saw the lights across the Hudson River, stationary and moving, more than a mile away. She won first prize at auction bridge twice, enjoyed theatres and moving picture shows, went to parties, receptions, dinners, and other social functions, and had a good time.

January 17, 1916. Patient went out of doors alone or without an attendant, and took a walk on Riverside Drive.

February 23, 1916. She is beginning to distinguish colors. Without an attendant she walked alone from her home at 142d Street and Broadway to the subway station at 145th Street, thence went by train to the Grand Central Station, walked over to the uptown side, and returned home on the train.

March 3, 1916. Went to the theatre and enjoyed the play.

March 6, 1916. Plays cards. Tells the time with the aid of her small watch without glasses.

April 1, 1916. She won first prize at an auction bridge card party. With the eyes closed she believes that she can now imagine as well with the left eye as with the right, indicating an improved condition of the left retina.

April 6, 1916. Won second prize at auction bridge, 140 players.

April 18, 1916. Read a column of the *New York Times*, news section.

She sees the Hudson River boats, and houses and trees across the river. Lights on the boats were seen at night, but not the lights on the opposite shore.

April 28, 1916. The patient is beginning to read diamond type, Jaeger No. 1, at six inches, using two of her fingers as a pointer.

May 6, 1916. The new moon and the stars were seen for the first time.

May 15, 1916. The lights across the Hudson River, more than a mile distant, were seen when the room occupied by the patient was dark or the lights turned off. (Later, June 21, she was able to see the distant lights with the room occupied and well lighted.)

May 20, 1916. Patient was able consciously, at will, to produce the illusion of seeing one object as two or more—monocular polyopia, by a strain, eccentric fixation.

June 21, 1916. Did some sewing with a split needle. R., 14/30, without the consciousness of the black period. She runs short distances on the street without difficulty.

July 1, 1916. The patient writes letters without glasses better than with them, because she finds her sight confused with glasses. The imagination or the memory of a perfectly black period relieves or prevents the pain which is usually produced by the instillation of the dionin powder into the left eye.

August 1, 1916. With the right eye a line of diamond type was read in five minutes, without glasses and without the aid of a pointer.

August 8, 1916. The left eye distinguished one letter of diamond type for the first time, without glasses, at six inches.

August 15, 1916. Diamond type, one line read in forty seconds.

August 31, 1916. With the right eye one line of diamond type was read in six seconds, without the aid of a pointer. With the left eye after some minutes one letter was seen with the aid of a pointer. For the first time the color of her own eyes was seen with the aid of a mirror.

The progress noted may be summarized as follows:

May 9, 1915. R., p. 1; L., 5/200.

May 11, 1915. R., p. 1; L., p. 1, glaucoma.

May 17, 1915. R., 14/200; L., p. 1.

June 6, 1915. R., 14/50—; L., p. 1.

October 15, 1915. R., 14/50—; L., 14/200.

November 21, 1915. R., 14/15+; L., 14/200.

May 12, 1916. R., 14/10+; L., 14/200.

June 17, 1916. R., 14/10+; L., 14/50.

July 14, 1916. R., 14/10+; L., 14/10—.

August 31, 1916. R., 14/10+ or 20/10—; L., 14/10—.

The vision of the right eye was improved from p. 1. to 14/200 in 8 days; 14/200 to 14/50— in 20 days; 14/50— to 14/15+ in 168 days, or 5½ months; 14/15+ to 14/10+ in 185 days, or 6 months.

The vision of the left eye was improved from p. 1. to 14/200 in 157 days, or 5 months; 14/200 to 14/50 in 246 days, or 8 months; 14/50 to 14/10— in 27 days.

In a letter received some months after she left New York, the patient wrote: "I do not think I have gone back any. I see very well indeed. Recently I saw in the garden, about one hundred feet away, a yellow butterfly alight on a red flower. My letters are written without glasses. The right eye really seems improved, but the left eye has not changed. I still use the dionin eye drops in the left eye only."

This case has been of special interest because it has demonstrated that central fixation, previously utilized in the treatment of functional disease of the eye, is also of distinct value in the treatment of certain organic diseases of this organ. Many such cases, which, treated solely along the lines of the customary ophthalmologic practice, would be consigned to the category of the practically hopeless, may be markedly benefited, and restored to active and useful life.

40 EAST FORTY-FIRST STREET.

REFERENCE.

1. BATES. *NEW YORK MEDICAL JOURNAL*, May 8, 1915.



## STONES IN THE URINARY TRACT.\*

By EDGAR G. BALLENGER, M. D., F. A. C. S.,

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AND OMAR F. ELDER, M. D.,

Atlanta, Ga.

The extent of the subject has made it necessary to be very brief and to omit many things of importance. The majority of stones originate in the kidneys as a deposit of crystals around masses of mucus, microorganisms, parasites, pus, blood clots, foreign bodies, etc. Their formation appears to be favored by overeating, insufficient exercise, and certain hereditary or constitutional factors and certain localities. The exact character of the cementing substance that collects and holds the crystalline elements together to form the calculus is not definitely known. This doubtless varies with different stones according to the acidity or alkalinity of the urine. Stones composed of uric acid, urates, calcium oxalate, cystin, and xanthin develop in acid urine, while those consisting of calcium carbonate and acid phosphates of calcium arise in alkaline urine. Stones of ammonium or magnesium phosphates are precipitated from stagnant urine with local infection and inflammation. These last mentioned stones are the large ones and are called secondary because they result from the pathological processes producing stagnant decomposing urine.

Stones may occur in one or both kidneys, in the ureters, bladder, prostate, deep urethra, anterior urethra, and fossa navicularis. The character of the disturbance caused by the calculus varies with its location, size, and duration.

Stone or stones in the kidney may or may not be attended with painful symptoms. Injury to the kidney always results regardless of whether or not pain is caused. This damage is always greater when there is back pressure from a stone in the ureter or pelvis of the kidney. Infection may develop on account of the mechanical irritation produced by the stone and may produce pyelitis, pyelonephritis, and pyonephrosis or perinephritis.

Pain in the loin was present in ninety-two per cent. of the cases of stone in the kidney recorded by Guiteras. Heavy percussion will often elicit pain when the usual exertions of the patient do not. Hematuria is a frequent symptom of renal calculus. It is usually moderate in amount, well mixed with urine, and if clots are present they are usually long and wormlike. At times the urine may be free from blood or may show it only microscopically. Violent exercise often brings on more severe hemorrhage.

Pus in the urine is a frequent symptom of stone in the kidney. The differential diagnosis of renal calculus should eliminate tumors, inflammatory lesions of the kidney, Dietl's crises, nephralgia, appendicitis, and gallstones.

The diagnosis of stone in the kidney is made by the presence of pain, tenderness on heavy percussion, recurrent hematuria, persisting pyuria, and x ray examinations. When a stone is found too large to pass through the ureter, it should be excised. The patient should be carefully prepared for the opera-



FIG. 1.—X ray of stone in the kidney.

tion, having consumed a large quantity of water for a few days before the operation and sufficient alkalies should have been given to render the urine alkaline in order to prevent postoperative anuria, as the kidneys are always damaged by long existing stones.

Stones in the ureter vary in size as well as in number, though they are usually single and small. The clinical picture caused by ureteral calculi varies from the slight colicky pain caused by the passage of small stones, to the excruciating suffering caused by



FIG. 2.—Stone from kidney pelvis.

\*Read before the Genitourinary and Dermatologic Society, Atlanta, October 13, 1916.

larger ones which obstruct the ureter. On the other hand, even large ureteral stones may cause no pain and permit the passage of urine, or more or less obstruction may occur with a consequent anuria. Latent calculi may be found in the routine work of the determination of the source of pus or blood, or in searching for the cause of more or less indefinite renal symptoms; or the first manifestation may be anuria. The typical colic caused by the passage of



FIG. 3. X ray of stone in the bladder

a stone through the ureter is so well known that it will not be discussed. The pain usually extends downward toward the genitals and is followed by macroscopic or microscopic hematuria. The stone may be recovered from the filtered urine. The important question for us to consider is the method of procedure to make a correct diagnosis of those that do not pass. Braasch and Moore think the greatest source of error in the diagnosis of stone in the ureter by the x ray, results from incorrect interpretation of the shadows rather than from failure to show them. The usual data in regard to form, size, and density of the shadow cannot always be relied upon. Extraureteral shadows caused by phleboliths, glands, etc., were the cause of most of the errors in their series of two hundred and ninety-four cases of stone in the ureter. They call attention to the possibility of the shadow of the pelvic bones overlying the shadow of the stone. This error may be obviated by adjusting the angle of the ray so as to exclude the shadow of the pelvic bones. They found that small stones may cause more obstruction of the ureter than large stones. Of the two hundred and thirty patients operated on, the stones were found in one hundred and fifty-nine to be in the lower third of the ureter.

Stones in the kidney and ureter are frequently found in patients between twenty and forty years of age, and more than twice as often in men as in women. In a series of one hundred and fifty cases reported by Hugh Cabot, five patients with stone in the ureter and seven with stone in the kidney showed persistently normal urine; albumin was present in varying amounts in one hundred and eleven; blood, either microscopic or macroscopic, in one hundred and three, and pus was present in one hundred and nine. Röntgenograms were taken in one hundred and twenty-seven cases; of these eight were persistently negative. Cabot thinks that, as a rule, ten to fifteen per cent. of the cases will not show stones, even in the hands of competent men. In this series there were one hundred and forty operations with

five deaths. He believes pyelotomy to be the operation of election. One of the striking features of Cabot's study was the considerable number of patients who had been subjected to previous operations without relief of the symptoms, which afterward proved to be due to stone in the ureter or kidney. Colicky pain occurred only in about two thirds of the whole number reported by Cabot.

A wax tipped catheter may be inserted according to the method of Kirkendall, which practically removes the danger of scratching the wax tip in passing it through the cystoscope, and which briefly is as follows: A loosely fitting soft rubber tube, with the distal end cut off at an angle of ninety degrees to facilitate its passage through the fenestra into the bladder cavity, is passed through the sheath of an ordinary catheterizing cystoscope. The wax tipped catheter is then passed through this rubber tube well into the bladder. The tube is then withdrawn and the catheter left in place. The catheterizing barrel is now threaded on the outer end of the ureteral catheter and introduced into the cystoscope, and the wax tip carried on up the ureter as desired. The catheterizing barrel is then removed and the rubber tube reinserted to protect the wax tip in its withdrawal. Control tips may be passed into the bladder, if desired, to determine if they are scratched when not inserted into the ureter.

Hinman has modified this procedure so as to locate accurately the position of the stone, by equipping the catheter with from four to six small wax bulbs about two inches apart along the portion of the catheter which is inserted into the ureter. The use of a catheter impenetrable to the x ray may con-

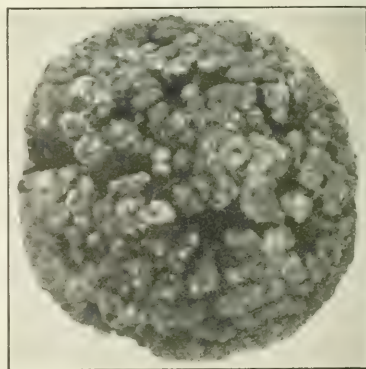


FIG. 4. Stone from bladder.

firm or disprove the character of a suspicious extra-ureteral shadow.

The early removal of stones impacted in the ureter is generally admitted to be the thing desired. The subject for discussion is the method of removing it. As about half will pass voluntarily, the expectant plan, with morphine and atropine, should always be followed for a reasonable though not an arbitrary time. If this fails, a tapering ureteral catheter should be inserted into the ureter, a two per cent. solution of cocaine injected, and after five

minutes sterile liquid petrolatum should be injected. Not infrequently this will permit the passage of a stone which is not actually too large to pass down the ureter. Any cystoscopic or ureteral examination is likely to cause a stone to pass from the ureter.

The danger of a radical surgical operation to excise an ureteral stone is so great that such a procedure should not be employed until all reasonable cystoscopic methods have been carefully tried.

Stones near the ureteral orifice may be caused to pass by dilatation, or incision with ureteral scissors. A further and perhaps easier method when a stone is lodged at the ureteral meatus, is to insert a small silver electrode between the stone and the anterior wall and then apply the D'Arsonval current. This may disintegrate the stone; if not, the slough on the wall where applied may secure the desired enlarge-

pected diagnosis may be confirmed by cystoscopic and x ray examinations. The intensity of the shadow of the stone may be brought out by the injection of air into the bladder for the x ray picture.

If no better means are at hand, a diagnosis may be made, not infrequently, with a stone searcher if the calculus is not within a sacculation.

The best method of removing small stones from the bladder, and the one with the lowest mortality rate, is to crush the stone with a lithotrite and to wash out the fragments. With the aid of the lithotrite cystoscope, this is a comparatively simple procedure when it is indicated. For the large stones or those encysted, a suprapubic cystotomy should be done and the stone removed.

Calculi of the prostate are not rare, but as the stones are small as a rule, they do not assume the importance of calculi in other parts of the genito-urinary tract. Usually they demand attention only when they cause retention of prostatic secretion. The commonest type of prostatic calculi are merely enlarged amylaceous bodies. It is only when they occur in large numbers or are transformed, or become incrustated with organic salts that they produce pathological lesions.

Calculi in the prostate are likely to lead to chronic inflammation of this gland, if indeed prostatitis does not already exist. The symptoms of calculi are usually like those of chronic prostatitis if the stones are small. The large ones may lead to abscess formation, with severe pain and frequent and difficult urination, chills, and fever. Stones lying near the prostatic urethra are characterized by disturbances of urination, terminal hematuria, pain in the perineum or radiating toward the glans penis. The overlying urethra may become necrosed and the stone protrude into the urethra.

The diagnosis is usually made by endoscopy, x ray, sounding, and palpation. A characteristic crepitus is sometimes elicited by palpating the prostate.

Small stones may pass after prostatic massage. The x ray picture (Fig. 5) shown herewith is of a patient from whom we secured forty-seven stones by a series of massages.

Large stones should be removed from the prostate by perineal or suprapubic operation.

Stones in the urethra usually originate in the kidney, bladder, or prostate and lodge in the urethra because of its narrowness. If near the meatus they may be removed after meatotomy. Alligator forceps or a small urethral curette facilitates this operation. Stones lodged in the deep urethra usually necessitate an external perineal urethrotomy.

805-809 HEALEY BUILDING.



FIG. 5.—X ray of stones in the prostate gland. Forty-seven stones were recovered after a series of prostatic massages.

ment of the opening. Of course, it should be remembered that this cauterization must be limited, for an extensive slough might cause a perforation of the entire bladder wall.

Flexible ureteral forceps may at times permit the extraction of a stone low in the ureter.

After all measures fail and not until then should the stone be excised, for in case the stone passes a great saving of time, danger, and suffering has been accomplished. In case of failure the more radical measure may be employed just as if the more conservative means had not been attempted.

The etiology and the pathology of stone in the bladder need not be discussed. The diagnosis may be suspected from the more or less distressing pain, especially at the end of urination, frequency of urination, and presence of persisting cystitis. The sus-

**The Point of View in Ventilation.**—The ventilation of halls for the comfort of all is ever a difficult problem. At exactly the same moment in a recent lecture, says the *Bulletin of the Brooklyn Institute* for November 18th, a lady and a gentleman approached the head usher, the lady to protest against the overheated atmosphere, and the gentleman at the cold condition of the hall. The perplexed usher suggested arbitration. The incident is not a rare one, as any usher will testify.



## SYPHILIS OF THE GENITOURINARY ORGANS.

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To the average physician, the phrase "syphilis of the genitourinary organs" brings to mind the picture of a chancre on the external surface of the penis, of the scrotum, or of the labia. To those more familiar with the subject, syphilis of the testicle and chancre of the meatus are also suggested. Syphilitic involvement of the epididymis, the kidney, and the bladder are found, though not often; gumma of the corpora cavernosa is occasionally seen and syphilis of the vas, the prostate, and seminal vesicles and gumma of the urethra must be thought of, though they are rare.

### THE CHANCRE.

The first lesion of syphilis, the chancre, begins after an incubation period of no less than ten days, as a small dry papule, a purple necrotic nodule, a ruptured herpetic vesicle, or as a small erosion. However it begins, it develops into an erosion with sloping sides and smooth red shining floor. It has a profuse secretion, is surrounded by a purplish area, and is situated on and surrounded by a mass of induration of cartilagenous consistence.

### SYPHILIS OF THE KIDNEY.

Syphilis of the kidney is congenital or acquired and occurs in the secondary and tertiary stages. Congenital syphilis affects the kidney by causing a lack, or delay in its development, the fetal type of kidney being found, or the cortex not being well developed, or it causes a diffuse nephritis. In acquired syphilis we rarely find the kidney involved in the second stage, but it is not uncommon in the third stage.

The lesion most often found is a chronic interstitial process, less often a chronic parenchymatous nephritis. Gumma is rare and occurs only in the late tertiary stage. Amyloid nephritis is often found with syphilis.

The symptoms of chronic interstitial and of chronic parenchymatous nephritis do not vary with the cause. Gummata are found in a kidney which shows other signs of nephritis, as single or multiple pea to chestnut size nodules which displace the kidney tissue. The condition may be unilateral or bilateral. The affected kidney is felt to be large, hard, and irregular.

When we find nephritis in a syphilitic, unless the lesion is gummatous, it is difficult to decide if the cause of the nephritis is syphilis or something else. We know that albuminuria is common in secondary syphilis and that a large proportion of patients showing hemoglobinuria are luetic. On the other hand, most patients who are infected with syphilis have led such a life that we may expect them to have nephritis. It is also a fact that mercury ad-

ministered in large doses to people who have neither syphilis nor nephritis will give rise to albuminuria and casts in the urine.

Patients have been seen with nephritis in the early secondary stage of syphilis, in whom the kidneys were known to have been well a very short time before, who had not received mercury, and in whom no other cause for the nephritis could be found; these patients recovered promptly under energetic mercurial treatment. In chronic interstitial nephritis known to be of syphilitic origin, we should not expect to see resolution under antisyphilitic treatment. On the contrary, mercury should be administered with caution, since it is a severe irritant to the renal tissue. More active luetic processes of the kidney and gumma respond better to such treatment.

### SYPHILIS OF THE BLADDER.

Syphilis of the bladder is not often seen. In the secondary stage it appears as an acute or chronic cystitis, with frequent painful urination and pyuria.

In the tertiary stage, we find gummata which appear as papillomatous masses or as nodules covered with ulcerated mucous membrane and ulcers with thick infiltrated edges and grayish bases.

Frequent urination with some pain is present as a result of the ulcers or the congestion about the gummatous masses, and some pyuria is found from the pus secreted by the ulcers. Hematuria is marked with papillomatous growths, but slight when only ulcers are present. The diagnosis is made by excluding other causes, by the history of syphilis, by cystoscopic examination, and by the presence of other specific lesions. The condition readily responds to antisyphilitic treatment.

Syphilis of the vasa deferentia, the seminal vesicles, and the prostate is very rare indeed or is very rarely recognized. Gumma of the corpora cavernosa are not so rare and may appear as ovoid cartilagenous masses, usually in the proximal part of the organ. They are distinguished from fibroid infiltration or nonspecific cavernitis only by responding, though with difficulty, to antisyphilitic treatment.

Syphilis of the ovaries, vagina, and uterus is rare clinically. Tumors of the uterus which have rapidly disappeared under antisyphilitic treatment are seen. The vagina may show tertiary infiltrations, usually extending to the vulva or the rectum. The vulva is a very common seat for chancre for secondary and for tertiary lesions.

### SYPHILITIC EPIDIDYMITIS.

Syphilitic epididymitis is uncommon compared to gonorrheal or tuberculous epididymitis. It occurs in secondary syphilis as a subacute or chronic inflammation which begins in the globus major or head of the epididymis and spreads downward, but rarely extends to the globus minor. The enlargement is hard, painless, with a sharp edge, and feels like a helmet fitted over the testicle. The condition is usually unilateral.

Gumma of the epididymis is still more uncommon and appears as a rounded indolent nodule.

Diagnosis must be made from tuberculous and from gonorrheal epididymitis. Tuberculous epididymitis also begins in the globus major, but is usually nodulated and is accompanied by tuberculosis

of the spermatic cord, the prostate, and the seminal vesicles. Gonococcal epididymitis begins in the globus minor as an acute inflammation. Some tenderness persists after the condition becomes chronic. A history of gonorrhea is given and a chronic posterior urethritis is found on examination.

#### SYPHILITIC ORCHITIS.

Syphilitic orchitis is not at all uncommon. It usually occurs after the second year of the disease, but in rare instances is seen as early as four or five months after the appearance of the initial lesion. The pathological change is either a diffuse sclerosis or a gummatous formation. In the sclerotic form the fibrous stroma of the testicle is greatly thickened. The tunica albuginea and the tunica vaginalis are thickened. Some fluid is found in the tunica vaginalis and adhesions occur between its walls. Occasionally the whole cavity is obliterated.

Gummata are single or multiple, and vary in size from a pea to a chestnut. Both sclerosis and gummata are often found together, though one condition predominates.

Syphilitic orchitis is always a chronic condition. Only in exceptional instances does it begin as a sub-acute inflammation. The complaint of the patient is, the dragging weight of the enlarged testicle.

Physical examination shows the skin to be normal; the testicle is enlarged, but not to more than twice its normal diameter. The testicle is hard like wood, smooth, and oval. It may be somewhat ridged and present one or more nodes. It is insensitive and has lost its characteristic testicular sensation. It is difficult to feel the epididymis which runs vertically behind the testicle.

In infrequent instances when a gumma breaks down, a deep craterlike ulcer with a grayish base is formed or a cauliflower growth of granulation tissue and testicular tissue appears—hernia testis.

The origin of this fungating growth is usually deep, although sometimes superficial. The deep growth arises from a gumma in the body of the testicle and breaks through the tunica albuginea and the scrotal tissue. The superficial growth begins in the tunica albuginea or in the scrotal tissue and is much oftener seen with tuberculosis than with syphilis.

The course of syphilitic orchitis is chronic; it may last for years. It finally undergoes resolution, atrophy, or ulceration. Atrophy is generally only partial, some testicular tissue remaining even when both testicles are extensively involved. Sexual potency is therefore retained.

Differential diagnosis must be made from tuberculosis of the testicle and from tumor. Syphilitic orchitis is usually found in a young adult who gives a history of syphilis, and often presents other evidences of the disease. The body of the testis is always affected before the epididymis, the tumor is smooth, and fistulization and fungoid growth are uncommon. The Wassermann reaction is positive and the condition responds to antisyphilitic treatment.

Tuberculous orchitis is also found in young adults but is always secondary to tuberculosis of the epididymis. It is chronic, but less so than syphilitic orchitis. The hard surface of the testis is irregularly nodular and often tender. Fistulas and fungoid growths are common.

Malignant tumor of the testicle comes at any age without special history. The growth begins in the body of the testis and enlarges rapidly, occasionally to great size. Its tenderness is slight, but it often gives lancinating pains. The tumor is usually very hard, but often presents a soft or fluctuating area of necrosis or a hematoma. Fungoid growth and ulceration with bloody or foul discharge are common in the later stages. The cord and the inguinal, iliac, and lumbar glands are enlarged.

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591 WILLOUGHBY AVENUE, BROOKLYN.

## THE ORTHOPEDIC TREATMENT OF INFANTILE PARALYSIS.

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The management of a case of infantile paralysis becomes an orthopedic problem as soon as paralysis sets in. The disease may conveniently be divided into three stages. The first or acute stage extends from the onset until the disappearance of sensitiveness. This lasts from one week to three months. The second stage or stage of convalescence is that during which there is spontaneous recovery from all or some of the paralysis. This period was formerly supposed to last only about six months. From recent observations, however, we have learned that spontaneous recovery may occur for many months after the paralysis, and a conservative estimate of its duration is about two years. The third, chronic, or stationary stage, begins with the end of the preceding stage, or the time when we believe that no further spontaneous recovery may be expected.

#### GENERAL CONSIDERATIONS.

Let us remember that infantile paralysis is primarily a disease of the spinal cord. The sequelæ paralyse of the muscles, are the result of more or less destructive inflammation of the white and gray matter. When a muscle or group of muscles is paralyzed, the region so affected loses part of its support. As a result of the force of gravity or the unopposed action of the antagonistic muscles, or both, the neighboring joint is held in malposition. This malposition if not corrected produces contraction of the tissues on one side, usually the side of the active muscles, and stretching of the tissues on the opposite side.

The contractures, which involve at first only the soft tissues, i. e., the muscles, subcutaneous tissue, and ligaments, are in the early stages only moderately resistant, and may be readily overcome manually. As time goes on, these contractures become increasingly more difficult to correct, often demanding tenotomies, fasciotomies, etc. Moreover, if the malposition persists and the limb is used in the faulty attitude, accommodative changes take place in the bones, producing serious deformities. As an illustration let us take the case of a foot in which the peronei are paralyzed. The foot is held in adduction or varus position by the unopposed action

of the muscles on the inner side of the foot. During the first few months the foot can be readily stretched by hand and the adduction overcome. If, however, the condition is allowed to exist for many months or years, and the patient allowed to walk on the foot in the adducted position, not only do the muscles and connective tissue on the inner side of the foot become permanently shortened, but the bones of the foot also change in shape and structure, and the patient acquires a paralytic club foot.

On the side where the tissues are stretched, the most serious element is stretching of the paralyzed muscles. This brings up the important question of incomplete paralysis of muscles. By a system of delicate spring balance muscle tests, Lovett has proved, and it has been clinically verified by many others, that ninety per cent. of apparently paralyzed muscles are only partially paralyzed. The explanation lies in the fact that individual muscles and groups of muscles are supplied by nerve centres from more than one segment of the cord. In infantile paralysis, there is not, except in very rare instances, a uniform involvement of the entire cord, but an irregular distribution of the inflammatory process. As a result, only parts of a given section of the cord are affected and, therefore, only part of the nerve supply of a given muscle or group of muscles is disturbed. Let us assume that a certain muscle is supplied with nerves from three adjacent cord segments and two of these have become involved in an inflammatory process. There still remains the third segment to supply the muscle with nerve impulses. Naturally these impulses are fewer and perhaps weaker than those to which the muscle has been accustomed. A partially paralyzed muscle, therefore, has difficulty in maintaining its tonus on account of loss of part of its nerve supply. If the muscle is held in a relaxed condition by proper position of the limb, the diminished nerve supply may be sufficient to cause contractions and thus maintain the muscle tonus and help the muscle to ultimate spontaneous recovery. If, however, the muscle is stretched, the diminished nerve supply is not sufficient to stimulate contractions, and the muscle becomes still more weakened or completely paralyzed.

From these considerations it is evident that in treating a case of infantile paralysis we must have two objects in view: 1. To prevent malposition and therefore contractures and deformities. 2. To help the paralyzed muscles to recover.

#### PREVENTION OF MALPOSITION.

We have just seen that malposition of a limb leads to contractures and deformities. Contractures and deformities are the principal conditions from which the infantile paralysis patient suffers. If these were avoided, the majority of the numerous operations now used to relieve the patient of his disability, would be unnecessary. Evidently then successful treatment depends upon the thoroughness with which the limbs and trunk are maintained in good position. Contractures and deformities are to be expected in infantile paralysis, but we must take the necessary precautions to prevent their occurrence. These precautions consist of constant observation, and the use of apparatus when necessary.

The latter is indicated especially when the patient begins to use the affected limb. Apparatus may be made of a variety of materials in the form of wire splints, steel or iron braces, starch or plaster bandages, etc. One is as good as another, provided that it holds the limb efficiently and in good position. Every man should use that type of apparatus with which he is most familiar. I might parenthetically say a few words about the use of plaster of Paris bandages. Many men have been under the impression that plaster bandages cause atrophy. In infantile paralysis, when a limb encased in plaster atrophies, it is because of disuse of the muscles. The atrophy due to disuse of the paralyzed muscles is part of the ill effects of the disease and is unavoidable. The atrophy due to the disuse of the active muscles is not great and will rapidly disappear when the limb is again functioning. The important point is that a plaster bandage does not itself cause atrophy. When applied, it has, like other splints, a definite purpose to serve. The advantages of a plaster bandage over other splints, such as steel braces, are several. It is comparatively cheap, easy of application, and very efficient. It does not impede locomotion any more than a brace, and when properly applied is very comfortable.

Inasmuch as many general practitioners are now applying plaster bandages to support paralyzed limbs, it might not be out of place to mention a few details about their application. A plaster bandage should be made of good crinoline and quick setting plaster. The limb must be protected by seamless shirting or sheet cotton and flannel bandages. The plaster bandages should then be rolled on smoothly and rubbed so that the different layers form an even thickness. The limb must be held in the required position during the entire application and until the plaster gets hard. One thing more, a thin plaster is just as efficient as a thick one and very much easier to carry.

#### IMPROVEMENT OF THE PARALYZED MUSCLES.

The following are a number of ways in which we can aid a paralyzed muscle to improve:

1. *Relaxation.*—As I have already stated, ninety per cent. of apparently paralyzed muscles are actually only weakened or partially paralyzed, and when relaxed, tend to recover. Therefore an affected limb must be held by apparatus or position in such an attitude that the paralyzed muscles will be relaxed and not stretched. When all the muscles about a joint are paralyzed, the limb must be held in a neutral position; for instance, at the ankle the foot should be at a right angle to the leg. When only one muscle is paralyzed, the limb must be held in an overcorrected position toward the affected side; for instance, if the tibiales antici are paralyzed and the peronei active, the foot should be placed in marked adduction.

2. *Massage.*—This produces a mechanical stimulation of the muscles, and helps to maintain muscle tonus. In addition, it improves the circulation of the blood and lymph, and therefore, the general condition of the limb. Massage should be employed like any other therapeutic measure in graduated doses and according to the tolerance of the patient. There is nothing mysterious or perplexing about



massage. Kneading or stroking motions of moderate degree are all that are necessary. Massage should not be painful, and therefore we should be guided by the patient's feelings. Often in the early stages even the gentlest massage is annoying, and it should not be persisted in until the tenderness has all disappeared. Ordinarily fifteen minute séances, two or three times a day, are sufficient.

3. *Muscle training.*—This consists in attempting to force a nerve impulse from the brain to the paralyzed muscle. The anatomical basis for this work consists in the innumerable paths of connection of the different segments of the cord with one another and with the brain. Clinically, muscles inactive for a long time have been seen, after patient work, to resume function. It is beyond the scope of this paper to describe in detail the method of muscle training. In brief, it consists in encouraging the patient to move the affected limb in the direction in which there is paralysis. The method deserves trial in every case.

4. *Electricity.*—In the past a great deal of time has been spent, and in the writer's opinion has frequently been wasted, in the use of electricity in the treatment of infantile paralysis. We know that paralysis of the muscles depends upon the destruction of the nerve centres in the spinal cord. Consequently it seems unreasonable to expect that electricity applied to the peripheral parts of the nerves or to the muscles in a paralysis of several months' standing should be productive of specific improvement in the condition of the nerve centres upon which the function of the nerves and of the muscles depends. So far as the acute stage is concerned, I quote from Lovett's book on the *Treatment of Infantile Paralysis*, page 33: "There is absolutely no evidence to show that the use of electricity at this (the acute) stage is of any benefit or has any local effect either upon the organism or the affected cord." Clinically I have seen a large number of patients who have had electricity of one kind or another applied for many months, but I have not seen one in whom there was any improvement that could be attributed directly to electricity. There may be some slight benefit after the use of the faradic current to stimulate muscle contractions, and thus, like massage, to help keep up the muscle tone. But no form of electricity has thus far proved of specific effect in infantile paralysis. There is also this great danger, that in the use of electricity much time may be lost when other more important and really effective treatment might be applied. When, as sometimes happens, electricity is insisted upon, we may permit its use because it probably does no harm, but we must be sure to combine with it other therapeutic measures.

#### PREVENTION OF DEFORMITY.

Let me review the application of the principles of prevention of deformity in the different parts of the body.

*The upper extremity.*—The most common condition here is a paralysis of the deltoid alone or in combination with paralysis of the external rotators of the arm. Thus we find that the arm hangs limp at the side either in a neutral position, or in marked inward rotation when the external rotators are in-

involved. If the limb in this condition is left untreated, we get, as a result of the deltoid paralysis, marked atrophy and stretching of the deltoid, stretching and relaxation of the capsule of the shoulder joint, and subluxation of the head of the humerus. The effect of paralysis of the external rotators is contraction and shortening of the inward rotators, so that ultimately the arm becomes fixed in inward rotation, seriously resisting manipulative correction. Realizing the nature of this type of deformity, it is simple to devise means to prevent it. The arm must be kept elevated to at least a right angle with the trunk. When the external rotators are paralyzed, the arm must at the same time be held in outward rotation. In the acute stage, when the patient is confined to bed, we may accomplish this by keeping the arm above the head by means of an ordinary flannel bandage secured to the head of the bed. When the patient gets up and about, we must use some form of light rectangular brace that will maintain the arm elevated in the desired position. The simplest apparatus for this purpose is a brace made of tin or similar metal consisting of a chest piece and an arm piece joined at a right angle. The chest piece is held to the body by a canvas lacing. When outward rotation is desired, an additional perpendicular section may be joined to the distal part of the arm piece. Less frequently than the deltoid paralysis, we meet paralysis of the pectorales or of all the muscles of the shoulder, and still less frequently paralysis of the muscles of the forearm and hand. The principle we must work on is the following: When all the muscles about a joint are paralyzed, the limb must be kept in a neutral position; when only some are affected, the limb must be held toward the affected side.

*The trunk.*—Weakness of the back muscles predisposes to deviation of the spine to one or the other side with resulting scoliosis. I know of no deformity that is so resistant to every therapeutic measure. Once established, a paralytic scoliosis tends to increase in severity and often progresses very rapidly. Such a deformity occurring in the cervicodorsal region or elsewhere, when of the severe type, is, in my experience, beyond the possibility even of improvement. It behooves us then to watch with the utmost care every patient who has paralysis or even weakness of the back. It is better to protect a paralytic back too long than not long enough. During the acute stage the bed should be adjusted by placing boards between the spring and mattress so that the patient lies on a flat, unyielding surface. While frequent changes are advisable, the patient should not be allowed to assume awkward positions for any length of time. If the child is very young it is advisable to place it in full extension or even hyperextension of the spine upon a rectangular stretcher frame, where it is held down by means of a canvas apron. Upon the slightest evidence of asymmetry of the back, a child under three years of age should be placed on a stretcher frame, and a child over three years of age should have a light plaster of Paris jacket or some form of spinal brace, such as a Taylor or Knight spinal brace. These appliances must be kept on for an indefinite period of time. The progressive character of paralytic scoliosis and its resistance to treatment demand that the back of

every poliomyelitis patient be thoroughly examined so that the condition may be recognized early and treatment promptly instituted.

*The lower extremity.*—The most common condition in the lower limbs is a drop foot, the result of paralysis of the dorsiflexors of the foot. Such a foot should be held at right angles to the leg by means of a plaster bandage or light ankle brace. If the tibiales anticus and posticus are paralyzed, thus allowing the foot to be held in eversion, the apparatus should be arranged to support the foot in adduction. If the peronei are paralyzed, and the foot is in consequence persistently adducted, it should be supported in abduction. If the calf muscle is paralyzed so that the foot is in extreme dorsiflexion, it must be held in equinus. Quite frequently we see limbs in which there is complete or almost complete paralysis below the knee. These are the so called dangle feet. In such cases the foot should be retained at a right angle to the leg. From the variety of paralyses that may occur about the ankle, it is easy to see that unless we have an elaborately equipped brace shop at our command, a plaster bandage forms the most convenient support, as we can easily and with very slight assistance place and retain the foot in any required position.

*The knee.*—Of paralyses about the knee, that of the quadriceps extensor is the most frequent. It is frequently accompanied by paralysis of one or all of the hamstrings. The hamstrings may be paralyzed and the quadriceps be entirely normal. During the acute stage it is rarely necessary to support the knee, as contractures take place slowly. During the convalescent stage, if the patient is walking, we must study the limb to learn what kind of apparatus, if any, is necessary. Occasionally we find that in spite of extensive paralysis, the patient walks well and there is no tendency to contractures, and therefore apparatus is not indicated. If walking is impossible or there is a recurvature or flexion of the knee, then some form of splint must be supplied.

*The hip.*—The most frequent cause of disability about the hip is flexion contracture. This does not usually occur for a number of months, but I recently saw a case in which there was well marked flexion contracture of both hips two weeks after the onset of paralysis. During the acute stage it is advisable, as before mentioned, to have the bed flat and rigid. If there is a tendency toward flexion contracture, we may place a pillow under the hips. If this is not sufficient, a very young child may be placed on a convex stretcher frame. A child four or five years of age or older should have a plaster spica. In the convalescent stage some form of splint will have to be used. Occasionally a child will have complete paralysis of an entire lower limb. During the convalescent stage, such a limb is best supported by a double upright brace with pelvic band and foot plate, the knee and hip in full extension, and the foot at right angles to the leg. The combinations of paralyses vary so much that we can only hint at their treatment. We must use judgment in ordering splints. Not every type of paralysis demands apparatus. If, for example, a child presents a drop foot and weakened quadriceps of one limb, it may be sufficient to supply a splint for the ankle and none for the knee.

Since during the convalescent period many muscles that are at first paralyzed subsequently recover, apparatus should be removed frequently to permit observation. The recovery of one or more muscles may allow us to dispense with the apparatus or at least to make it smaller and less cumbersome.

#### TREATMENT.

*Acute stage.*—From the orthopedic standpoint, the treatment during the acute stage is as follows:

1. Rest is good for inflammation in other parts of the body and, therefore, is advisable for inflammation of the spinal cord. Not only the spine should be kept at rest, but also the affected limbs, which are often hypersensitive to even slight touch. Manipulations very frequently cause discomfort and should be avoided if possible.

2. Prevention of contractures and deformities is accomplished by one or other of the measures above outlined.

3. Therapeutic measures of uncertain value should be avoided. This refers especially to the use of electricity and massage during the hypersensitive stage.

*Convalescent stage.*—The treatment during this time should consist of:

1. Splints or other means to avoid contractures and deformities and thus keep the limb in good condition.

2. Muscle training, massage, and possibly electricity to improve the condition of the affected muscles.

*Chronic or stationary stage.*—During this stage we are dealing with actual contractures and deformities, evidences of inefficient and unsuccessful treatment during the first and second stages. Laxity in treatment has at some time existed when a deformity develops. Orthopedists are continuously seeing large numbers of paralytic contractures and deformities, but they can all be prevented. The methods devised to correct or improve these conditions are so numerous that it would lead us far afield to attempt an exhaustive study. Suffice it to say that they consist of tenotomies, fasciotomies, myotomies, tendon transplantations, tendon implantations, arthrodeses, astraglectomy, and other similar procedures, intended to improve the attitude of a limb, correct a deformity, stabilize a joint, transfer muscle power to a part of a joint where power has been lost, etc. In short, measures are employed to help the patient use his limbs in a manner as nearly normal as possible.

#### SUMMARY.

In summing up, I would make a plea for the infantile paralysis patient. The majority, if not all, of his deformities are preventable. Let us therefore anticipate and prevent them. To do that efficiently we must carefully and conscientiously observe our patient, and institute treatment as soon as necessary and maintain it as long as necessary. The different therapeutic measures at our command must be employed by people competent to use them. Massage must be given under the guidance of a physician. Muscle training should be given by one who understands it. Electricity must be given by one who knows its limitations. Braces should be prescribed by the physician and not by the bracermaker.



Only in this way can the physician, by carefully selecting and combining appropriate measures for each individual case and jealously watching their administration, give to the patient the benefit of our best knowledge. Lastly, I venture to believe that, though large numbers of patients have been afflicted this year, we may reasonably hope that with our improved knowledge and methods there will result proportionately fewer deformities from this epidemic than from previous ones.

I WEST EIGHTY-FIFTH STREET.

### UNDIFFERENTIATED EXCITEMENT.\*

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Two of the most common symptoms of the mentally sick are depression and excitement. Early diagnosis and classification of the various psychoses based upon early depression led to serious errors in diagnosis and prognosis in individual cases which, at times, was embarrassing to the physicians and to relatives of the patients. The hospital physician, often confronted with the necessity of revising a diagnosis as the patient recovered, and realizing the great responsibility in attempting to identify properly this depression, resorted to a very intelligent classification: undifferentiated depression. Those actually engaged in hospital work, coming daily in contact with the various psychoses, meet the condition, namely, excitement, which equally handicaps the ward physician in correct classification and prognosis. Although we realize the great difficulty in properly classifying obscure cases in which excitement is the predominating picture, we have not availed ourselves of the opportunity of classifying these cases tentatively as undifferentiated excitement. Excitement, like depression, is common to all forms of mental disease varying in the patient's reaction to stimuli, irritation, etc. Although it is most prevalent in manic depressive, toxic conditions, infective exhaustive states, agitated melancholia, and dementia præcox, it is not uncommon in constitutional inferiority, epilepsy, senile dementia, paresis, etc. A large proportion of patients presented for admission to the hospital are foreigners unable to speak the English language, and are often sent in from the streets by the police. Interrogating patients through an interpreter is not always satisfactory. Histories accompanying patients are often meager. One can readily appreciate the difficulty in classifying such cases, especially in view of the fact, as previously stated, that excitement may be the predominating feature of any of the psychoses enumerated. Toxic states showing motor excitement, flight of ideas and confusion, without any definite history, are often misleading. The presence of psychosensory disorders may be overlooked, and such states occurring in young adults between the

ages of seventeen and thirty-five years are prone to be regarded as dementia præcox or mania. To render a prognosis in accordance with such a diagnosis would be a great injustice, not only to the patient, but to the physician as well. Such a group of patients could tentatively be classified as undifferentiated excitement. The following case illustrates a state of excitement which was indeed misleading:

D. P., aged twenty-four years, laborer, born in Italy, came to America first about four or five years prior to his admission, returned to Italy on several occasions, but finally made America his home. He became unwell in August. He was committed to the hospital for the insane on August 17, 1910, presenting the following symptoms: Restless, noisy; said he was dead and came to life again; thought people were after him to kill him; stated he was Jesus Christ and that Mary was his mother; thought himself too good to poor people; used profane language; rambled from one subject to another; could not hold an intelligent conversation; was maniacal. He gave an alcoholic history. The general picture, the age, the manner and attitude, the indifference, the silliness and the extreme restlessness of this patient, led us to regard him suspiciously as a case of dementia præcox, and a tentative diagnosis of dementia præcox was made. A few days after his admission to the department, excitement began to subside; he began to take more interest in his surroundings, and in less than two weeks after his admission his mental condition completely cleared up. The certification of dementia præcox in this particular case would possibly have meant deportation of the alien and his lucidity at the time of deportation would have been embarrassing to the hospital physician. During the two weeks of his excitement, it was impossible to differentiate his condition and properly identify the disease from which he was suffering. Time alone cleared up the diagnosis, which was finally revised to confusional excitement—possibly alcoholic.

In delirium tremens, as well as in the deliria occurring in the infective exhaustive group of cases, the excitement may lead one to suspect acute manic depressive or possibly acute exhaustion, superimposed on a manic depressive. The toxic nature of the condition may possibly be overlooked if we do not have a definite history of a continued illness, as a satisfactory physical examination may be impossible owing to restlessness. The following case illustrates this point:

W. A., Jr.; white; male; laborer; age, twenty-five years; admitted April 15, 1915. He was disoriented to place and time; had illusions of identity; delusions of grandeur; train of thought incoherent; mild flight of ideas present; somewhat restless; emotionally, appeared sad. States he had been drinking and that he has had a cough. Following his admission, we obtained this information from his mother: He went to bed one evening several weeks prior to admission; about 1 a. m. went out, wandered away and was picked up by the police. Physical examination subsequent to his admission to the wards disclosed evidence of pulmonary tuberculosis. Sputum was positive for the tubercle bacillus. While in the psychopathic ward he had fever for several days. Patient became clear mentally several weeks following admission. Physically, he improved and gained weight. Diagnosis on admission of a toxic psychosis dependent on exhaustion, following pulmonary tuberculosis and the use of alcohol was confirmed at staff meeting. Was paroled December 21, 1915. This case might easily have been taken for dementia præcox or possibly a manic depressive psychosis and the cause of the excitement overlooked had a thorough physical examination been for any reason impossible.

The differential diagnosis between excitement of manic depressive and that of dementia præcox, is often difficult, particularly in patients between the ages of eighteen and twenty-five years. Too much reliance cannot be placed on histories, es-

\*Read before the Psychiatric Society, Philadelphia, November, 1916.



pecially those given by foreigners or people in the lower walks of life. Patients have been admitted to our wards who showed excitement, the diagnosis resting between manic depressive and dementia præcox. In particularly the younger patients, the diagnosis of dementia præcox was favored. In fact, our records have shown a decided increase in cases of dementia præcox with a corresponding decrease in manic depressive. Such patients were too excited to permit of a satisfactory mental examination, it being difficult to determine the presence or absence of hallucinations; an idea of orientation was difficult to obtain, etc. In certain cases the excitement subsided and the patients became lucid with good insight, apparently regaining their mental faculties and were paroled in the custody of their relatives. In true dementia præcox, complete restorations are rare; therefore the only explanation is that we are dealing with a true manic depressive.

L. G.; white; male; Hebrew; aged nineteen years; admitted April 30, 1915. His brother stated he always regarded patient as normal since his arrival in this country. A week prior to admission, he suddenly disappeared from home. Patient was admitted to psychopathic wards, March 20, 1915, from the House of Correction; does not use alcohol. On admission to the hospital for the insane, summary of mental state was as follows: Psychomotor restlessness; talkative; laughs without cause; answers questions irrelevantly; no connected conversation can be conducted with him; difficult to say whether he has hallucinations; is destructive, happy, and elated. June 29, 1915. He is quiet and talks rationally, but is still somewhat happy and foolish. July 28. He is lucid and well behaved. The diagnosis of dementia præcox was considered at the staff meeting, November 2, 1915. Patient was paroled in the custody of his relatives on September 23, 1916, after a period of lucidity which has now lasted one year.

J. M.; white; male; Hebrew; stenographer; age, twenty-one years; admitted March 10, 1916, with the following history: Four months prior to admission he lost all his savings in business and worried a great deal about it. This was followed by a disappointment in love, over which patient brooded. He refused to eat; acted queerly; was picked up by police and sent to the psychopathic ward; he was previously in a sanatorium for two weeks, but little is known about this except that he had a "nervous breakdown." Following his admission to the hospital, he displayed psychomotor restlessness; was talkative, rambling, and had a flight of ideas; oriented; no definite hallucinations could be elicited; memory seemed to be fair. May 25, 1916. He was quiet and seemed lucid. When he was presented before staff, diagnosis rested between dementia præcox and manic depressive; he was paroled June 27, 1916. Social service report states that following his parole, he has been working and seems lucid. Both of these patients on admission presented a rather manic state. In view of splendid recoveries made in the last two cases, it seems as though we possibly might have been dealing with a manic depressive psychosis.

In dementia præcox, especially those cases where there is a distinct shut in personality in those who have always been more or less reserved, the first manifestation of a breakdown may be violent excitement due to a lack of selfcontrol or to an external or internal reaction. Such a case admitted to the hospital is rather difficult for us to diagnose, as the excitement handicaps the physician in making a complete analysis of the group of symptoms. In this group of cases, the excitement is so predominating that a favorable prognosis as to the recovery may be given which would be decidedly unfair to the relatives and friends if the case should be one of dementia. The following case illustrates this particular point:

A young female, above the average intelligence, a student of music, who had always been more or less reserved, a hard worker and herself a teacher of music, suddenly after a period of a few days of mild depression, became excited. A few days after the onset of the attack, she came under observation for the sole purpose of advising a hospital best adapted for her care and treatment. At the time of the examination she was very emotional, crying, hysterical, more or less dramatic, incoherent, and oriented. She denied hallucinations; she was not confused, but presented fleeting delusions somewhat of a depressed type. A provisional diagnosis of manic depressive was made. She was received at the hospital which was recommended. At the time of her admission and for several weeks she displayed practically the same symptoms. The resident staff of this hospital also regarded her tentatively as manic depressive. After a few weeks her excitement subsided. Patient is up and around in good physical health; stares into space; answers questions when asked; displays little initiative; has a silly manner and expression about herself. At the present time a period of over two months has intervened, she is still at the hospital presenting the same symptoms as displayed at the date of her last examination. In view of the subsequent developments of the case, she is now suspiciously regarded as a case of dementia præcox. Such cases as these, examining physicians would be justified in classifying tentatively as undifferentiated excitement.

A. M. Y.; age, twenty-two years; male; white; American; admitted to the hospital November 18, 1915. Onset of illness was one month prior to admission when he commenced to act queerly; thought some one was after him; became violent and attempted to choke his mother. He jumped off a roof the day he was brought to the hospital. He used no alcohol. One sister committed suicide. On admission he was flippant, restless, and talkative; conversation rambling; oriented to place; somewhat disoriented to time; delusional; silly and foolish; had vague hallucinations of hearing. Following admission, the patient quieted down; then he became depressed and rather unresponsive; displayed little initiative. At the present time patient is quiet; seems somewhat foolish and silly. His memory seems to be fair; no hallucinations or delusions can be elicited. This period of excitement has been followed by a pause, then a slight depression and improvement. When presented to the staff, some favored a diagnosis of manic depressive mania, while the majority favored dementia præcox with excitement. Where we are not certain of the nature of the excitement, the use of the term undifferentiated excitement seems preferable to the use of the nomenclature "allied to dementia præcox" or "allied to manic depressive."

The picture of manic depressive mania may be so modified by the excessive use of alcohol as to be productive of psychosensory disorders; the active hallucinations of hearing and other senses in such cases may lead one to think that he is dealing with dementia præcox. The following case illustrates this point:

J. M.; white; male; a musician; age, twenty-eight years; admitted June 17, 1914, with the following history: At the age of nineteen years he had a nervous breakdown and was confined to Norristown State Hospital several months. Wife did not know patient at that time, so little is known about this attack. He contracted typhoid fever in the summer of 1913. Immediately following recovery he took a position, playing the piano ten hours a day in a moving picture house; became irrational and violent. He was taken to another hospital; remained six weeks; following his discharge he seemed rational. On May 15, 1914, he conceived the idea that his wife was untrue to him and he threatened to injure her. Patient was regarded as possessing a high strong temperament; he drank alcohol moderately and beer occasionally. On admission he displayed psychomotor restlessness; exhibited a flight of ideas; his train of thought was rather incoherent at times; conversation was vile, inclined to be euphoric; made attempts to be jocose; hallucinations of hearing and smell; oriented to place; disoriented to time; delusions of persecution. August 24, 1914. He was still talkative, restless, silly and foolish; talked about dope being blown in his face and smelling bad breaths. January 4, 1915. He was

quiet and seemed lucid. March 22, 1915. He was paroled to his wife. When seen recently, eighteen months since his discharge, he had taken on considerable weight and seemed lucid. Diagnosis rested between dementia præcox and manic depressive, complicated by alcoholism. Judging from the splendid recovery that patient has made, with good insight, it would seem as though we were dealing with a manic depressive psychosis, the active hallucinations perhaps being explained by alcoholism. In such a case, the use of the classification undifferentiated excitement, pending observation and treatment, should have been acceptable.

Patients admitted in states of excitement with physical signs indicative of syphilis of the nervous system present interesting problems in mental diagnoses. Our records show that the percentage of positive blood Wassermann reports in cases of manic depressive is rather high. Physical signs suggestive but not marked—such as tremors, slight pupillary irregularities, and sluggish light reflexes in cases showing a flight of ideas with incoherence, and fleeting grandiosity with motor excitement—may be misleading. Laboratory examinations of the spinal fluid inform us that the Wassermann reaction is positive. In such cases we may jump to the conclusion that we are dealing with paresis. It should be borne in mind, however, that it is possible to have an alcoholic psychosis or a manic depressive, complicated by cerebrospinal syphilis, the latter in itself not being accountable for the excitement. Observing such cases, we find that the excitement subsides and the patients are restored to lucidity. Slight suggestive physical signs remain, but the patients are able to return to their former vocations and become useful citizens of the community in which they reside. Such cases are manic depressives and alcoholics. Occasionally, they turn out to be paretics, this fact becoming known by their readmission to the hospital or by aftercare histories, stating that the patients were seized with convulsions and transferred to other hospitals. A diagnosis of undifferentiated excitement for the time being should be acceptable in such cases. The following cases illustrate the points at issue.

E. C. McM.; age, forty-eight years; male, white; canvasser; of Irish descent; was admitted March 26, 1914, with the diagnosis of paresis. Seven weeks prior to admission, he said that he expected to earn fifty thousand dollars; contemplated numerous business enterprises; talked incessantly; said he was going into the automobile and real estate business; used alcohol excessively. On admission, summary of mental state was as follows: Psychomotor restlessness; delusions of grandeur; said he owned four automobiles, considerable property, and expected to be a millionaire; also had delusions of persecution; presented an air of satisfaction and contentment; fabricated; had hallucinations of hearing; disoriented. Physical signs: Pupils almost pin point in size, irregular, slightly unequal; failed to react to light; tongue and labial muscles showed slight tremors; speech fair; station and gait normal; knee jerks absent; no ataxia; musculature good; sphincters good control; sensation normal. Wassermann reaction in blood positive. April 19, 1914. This time patient was grandiose; also had delusions of persecution; had active hallucinations of hearing; was presented before the staff on November 2, 1914; diagnosis considered as paresis or alcoholic delusional; was paroled at the request of his relatives, although he was vaguely delusional; he resumed drinking and became excited. On returning to the hospital he was noisy and talkative; after a period of lucidity of one year he was paroled July 19, 1916. Since having been on parole he has been quiet and lucid. Patient having been under observation now over two and

one half years, it would seem that paresis can be eliminated; excitement was probably due to alcoholism.

J. M.; age, thirty-five years; Russian; male; white; bartender; admitted May 27, 1914, with the diagnosis of paresis. Manager of the hotel where patient worked for the past six months stated that he never saw patient intoxicated; he was regarded as a man of a nervous disposition, easily annoyed, and excitable. A few days prior to admission, he commenced talking about building houses, buying land, taking trips to Europe, etc. On admission, the summary of his mental state was as follows: Hostile, surly, irritable, emotional attitude variable; at times euphoric; at other times would break out in anger; train of thought at times incoherent; flight of ideas; delusions of grandeur; thought he was worth millions of dollars and owned Philadelphia; orientation impaired; attention distractible; psychomotor restlessness. Physical signs: Poorly nourished; pale; pressure sores over sacrum; pupils irregular, unequal, and did not react to light; reacted to accommodation; tongue and facial muscles show no tremors; speech no incoordination; knee jerks absent; sphincters poor control; other signs could not be elicited, as he was restless; blood positive for Wassermann reaction. For four months following admission he was talkative, restless, grandiose, and destructive; talk was vile and profane; at times he was disoriented. Presented before the staff on December 16, 1914, he carried on an intelligent conversation and seemed lucid. Mentally, the diagnosis rested between mania complicated by tabs and excitement of paresis. November 15, 1915. Patient is confined to bed, as he complains of weakness in the legs; lower extremities are paralyzed; muscles on front of thighs are much wasted and there is involuntary twitching of all the muscles of the lower extremities. September 5, 1916. Spinal puncture done; fluid came out under pressure and showed sixty cells per c. c.; positive for Wassermann reaction. At present patient remains clear mentally; is still confined to bed; has continual dribbling from the bladder; sensation is impaired below the level of the fourth rib. He has now been under observation two and one half years, and as he is lucid, paresis can be ruled out. Mental diagnosis is probably mania complicated by syphilitic changes in the spinal cord. A mental diagnosis of undifferentiated excitement would have been acceptable in the last two cases mentioned while the patient was under observation and treatment.

The following case, however, illustrates one in which excitement has been the predominating picture, and yet we have been unable to classify accurately the psychosis of this patient.

H. M.; white; female; Polish; married; age, thirty-seven years; was admitted to the psychopathic ward on May 22, 1916. Three months prior to admission she began to punish her children severely by thrashing them. At that time she was seven months pregnant. Her husband noticed that she tired rather easily and frequently did not cook supper, telling her children that their father told her not to cook it. She said she heard voices. One evening she became excited, trying to choke her husband. For the past two and one half years she has complained of severe headaches; drank beer occasionally, but no alcohol. Following admission, she became violent and noisy. On May 30 she seemed to experience bearing down sensations and it was thought that she was in labor. She continued to be restless and talkative. On June 16 she became comatose; respirations were jerky; pupils widely dilated; pulse tense; rate not increased. Cervix was manually dilated; membranes ruptured; podalic version was performed; baby extracted lived only a few hours. The day following, the patient regained consciousness, but was restless and excited. Urine showed hyaline and granular casts, but no albumin. She was transferred to the insane department, June 28, 1916. She spoke English rather poorly; was disoriented; somewhat confused and incoherent in her statements; appeared silly and foolish; was mildly restless; rather defective in appearance; external strabismus present; pupils widely dilated and unequal and react sluggishly to light; tongue and facial muscles showed tremors; knee jerks exaggerated. The provisional diagnosis on admission was toxic confusional. Laboratory reports following admission to the insane department showed blood and spinal fluid positive for Wassermann reaction; urine negative.



She was presented before the staff on July 12 and paresis was considered. The classification of this patient's excitement is rather difficult. It might fit in with a puerperal psychosis, dementia præcox complicated by cerebrospinal lues or with paresis. For the present undifferentiated excitement seems to be acceptable.

#### CONCLUSIONS.

1. Before arriving at a definite diagnosis in cases showing excitement, we should abide our time with patience in order that time itself may clear the diagnosis.

2. We should be especially careful in dealing with cases brought to hospitals by people who can give no information about the patients, and also with foreigners who cannot speak enough English to give the physicians an insight into the patients' ideas.

3. In cases of excitement with delusions of grandeur with a history of alcoholic excess and presence of physical signs indicative of cerebrospinal syphilis, we should not attempt to classify the excitement immediately. A provisional diagnosis of undifferentiated excitement should be acceptable for the time being. In this way, we will avoid considerable embarrassment which might follow in rendering an early diagnosis of paresis in such cases and which might prove unjust to the patients and relatives.

4. We feel that a tentative diagnosis of undifferentiated excitement seems preferable in obscure cases occurring in early youth, and that time alone will clear up the manic depressive dementia præcox problem in these particular cases.

5. The cases mentioned show the justification of using the classification undifferentiated excitement.

6. This classification should be acceptable from the hospital executive's standpoint in submitting diagnoses to our state boards of charities, as it conveys a clearer meaning than the use of the terms "unclassified," "allied to," etc.

## STUDIES OF EYE GROUND CHANGES IN CEREBRAL SPASTIC PARALYSIS.

### *Original Observations in Eighty Surgical Cases.*

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Certain definite changes are so often observable in the eye grounds of children who exhibit spastic conditions traceable to intracranial hemorrhage at birth that the picture is characteristic. Lumbar puncture in these cases demonstrates that the pressure of the cerebrospinal fluid is above normal, and usually a history is given of difficult or instrumental delivery at birth.

These extensive studies were made possible through the courtesy and by permission of Professor William Sharpe, neurological surgeon at the Polyclinic Medical School and Hospital, New York. It has been my privilege to study with Doctor Sharpe the eye grounds in the cases of cerebral spastic paralysis selected for operation and in others that were deemed not suitable for operation, as well as in many other interesting types of intracranial cases in his extensive neurological service at the Polyclinic Hospital for the past two years. The cases

were selected for decompression on account of symptoms and signs traceable to an intracranial hemorrhage at birth and to subsequent cystic and fibrous changes at the site of hemorrhage. A most important sign separating these cases from others of a different nature consists of the changes visible in the fundus of the eye which may be attributed to abnormal increase in the pressure of the cerebrospinal fluid.

The following is the usual appearance of the eye grounds of children who exhibit spastic signs, when these are due to intracranial hemorrhage at birth.

The entire fundus is generally slightly hazy and presents the appearance of particles of finely ground black pepper shaken lightly upon it; the color without the disc is changed from the normal orange red to red; the temporal portion of the disc is paler than normal and its margins are plainly visible; there is an increased redness in the nasal portion and a slight blurring of its margins; the upper and lower margins near where the retinal vessels pierce the disc are blurred also; the veins are distended slightly out of proportion to the calibre of the arteries, and the light streaks in all of the vessels are either missing or barely visible.

While the foregoing is the usual picture, there are some eyes which exhibit milder signs, while others are even more marked. A few there are that show post neuritic signs, such as pallor of the entire disc, indistinct margins, light streaks of exudate along the vessel walls with leveling of the physiological pit; some that show an unequal distribution of sub-retinal pigment, and others an entire loss of pigment.

In the fundi of infants' eyes when an intracranial hemorrhage occurs at birth, we may expect to find the appearance of recent general edema or of a papilledema. This picture differs markedly from that seen in advanced spastics. The writer examined the eye grounds of an infant two weeks old, delivered with difficulty by instruments at birth, who had convulsions about every hour, and found a recent transparent papilledema of two diopters' elevation confined to the nasal or vascular side of the disc. At the decompression operation Doctor Sharpe found a subdural hemorrhagic clot and removed it. The fundi were examined a few days after the operation and no elevation of the disc whatever was noted. The operation was performed six months ago and the child is reported to be normal in every way since.

At operation in the eighty cases observed the dura was always found to be tense, whitish, opaque, and thicker than normal, the cortex edematous and under increased pressure. In seventeen of these cases in addition to the changes just noted in the dura and cortex, cystic formations with adhesions were found and in ten cases hemorrhagic remains with adhesions.

Accouchement in thirty of these cases was instrumental, in twenty-five difficult, in nineteen normal, in five precipitate, and in one premature. Forty-nine were diagnosed as spastic diplegia, twenty-five as spastic hemiplegia, and six as paraplegia.

Pressure of the cerebrospinal fluid obtained by lumbar puncture was normal in five, moderately



high in thirteen, high in thirty-three, very high in fifteen, and extremely high in fourteen.

The ages of the children when they applied for relief were as follows:

Two weeks .....	1	Six years .....	5
Eight weeks .....	1	Seven years .....	7
Ten months .....	1	Eight years .....	9
One year .....	2	Nine years .....	1
One year and a half .....	2	Eleven years .....	2
Two years .....	6	Twelve years .....	1
Two years and a half .....	4	Thirteen years .....	2
Three years .....	16	Fourteen years .....	4
Four years .....	9	Fifteen years .....	1
Five years .....	5	Twenty-three years .....	1

So

By the time the greater number of these afflicted children reach the neurological surgeon today, the spasticity has existed for some time and the eye grounds show only regressive edematous changes which go hand in hand with the degree of intracranial pressure and the age of the patient. Even at this late day the results obtained by a decompression operation in selected cases are gratifying.

Spastic paralysis due to intracranial hemorrhage at birth comprises seventy per cent. of this type of palsies in children, and it is well to note that every case exhibits changes in the eye grounds either of recent or regressive edema attributable to varying degrees of intracranial pressure.

#### CONCLUSION.

Every child whose delivery was difficult or instrumental should have its eye grounds examined by competent observers directly following its birth, whether convulsions occur or not. If pressure signs are determined in the fundus of the eye and confirmed by the measurement of the cerebrospinal fluid on lumbar puncture, a decompression operation removing the hemorrhagic clot as soon as possible would greatly lessen the lamentable condition which results from neglect of this procedure.

127 WEST FIFTY-EIGHTH STREET.

### THE THERAPEUTICS OF OLIVE OIL.

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That olive oil is a food of high caloric value and enhances general nutrition permits of no dispute. Its status as a therapeutic factor, however, in certain types of gastric disorders still remains unsettled.

True, Cohnheim, Rosenheim, Thompson, Beaumetz, and others advocated its use in ulcers, hyperacidity, cholelithiasis, etc. Nevertheless it apparently failed to take deep root among the general practitioners of the United States.

Probably because of the overenthusiasm of its advocates as a curative measure, particularly in the treatment of gallstones, or owing to the questionable methods adopted by the unscrupulous in demonstrating gallstones (?) recovered from the feces of their patients, the oil unfortunately fell into disrepute.

From previous observations made in the use of olive oil in test meals, and also because of the almost universal adoption of mineral oils in a certain class

of cases, it became desirable to repeat in part the studies already made by others, and in addition to compare the therapeutic and physiological values of olive oil with those drugs now commonly used. Accordingly a series of experiments was conducted on dogs, and clinical observations were made upon patients.

Gastric fistulas were established in the animals, and after complete recovery standard test meals of a fixed diet were given. The gastric juice was collected within a fixed period after the ingestion of the test meal and the estimation of free acid was made. Twenty gastric analyses were made and the average obtained was used as a basis in the following experiments:

*Experiment I.* Estimation of free acid in gastric juice of dogs fed on fat free test meals: Meat, two ounces; skim-milk, three ounces; dog biscuit, one. Gastric juice was collected two hours after ingestion of test meal. Estimation: Free acid, 50; total acidity, 80.

This experiment was repeated sixteen times on eight animals, with variations of ten to fifteen degrees in the estimations. The average obtained was: Free acid, 56; total acidity, 80. The color of the gastric juice was almost uniformly watery or cloudy.

*Experiment II.* Dogs were fed standard test meal, plus two ounces of olive oil. Estimation of acid contents made two hours after ingestion showed: Free acid, 38; total acidity, 60.

This experiment was repeated eight times with variations of ten to twelve degrees in estimations. The average obtained was: Free acid, 40; total acidity, 60. Seventy-five per cent. of test meals were bile stained.

*Experiment III.* Standard meal, plus two ounces of cotton seed oil. Estimation made two hours after ingestion showed: Free acid, 38; total acidity, 64. Average obtained of eight experiments: Free acid, 39; total acidity, 66. Seventy-two per cent. of test meals were bile stained.

*Experiment IV.* Standard test meal, plus two ounces of mineral oil. Estimation made two hours after ingestion showed: Free acid, 34; total acidity, 58. Average obtained of eight experiments: Free acid, 38; total acidity, 64.

*Experiment V.* One eighth grain of silver nitrate administered on empty stomach, followed by standard test meal one half hour later. The gastric juice was collected two hours after ingestion of test meal. Estimation showed: Free acid, 43; total acidity, 70. Average of eight experiments performed, Free acid, 42; total acidity, 70.

*Experiment VI.* One fifteenth grain of extract of belladonna administered on empty stomach, followed by standard test meal one half hour later. Gastric juice obtained two hours after ingestion of test meal showed: Free acid, 36; total acidity, 60. Average obtained of eight experiments: Free acid, 37; total acidity, 62. Eighteen per cent. of test meals were bile stained.

*Experiment VII.* Fifteen grains of bismuth subnitrate administered on empty stomach, followed by standard test meal one half hour later. Gastric juice was collected two hours after ingestion of test meal. Estimation showed: Free acid, 40; total acidity, 64. Average of eight experiments: Free acid, 42; total acidity, 68.

*Experiment VIII.* Thirty grains of sodium bicarbonate administered on empty stomach, followed by standard test meal one half hour later. The gastric juice was collected two hours after ingestion of test meal. Estimation showed: Free acid, 42; total acidity, 76. Average obtained of eight experiments: Free acid, 40; total acidity, 70.

A series of experiments was also conducted on dogs with biliary fistulas in order to determine the physiological effect of olive oil and cotton seed oil on biliary secretions. The results obtained thus far, however, are too irregular and uncertain to warrant any conclusions of therapeutic value.

The clinical data obtained thus far embrace sev-

eral types of cases, namely, constipation of varying etiology, simple hyperacidity and pyloric spasm, fissure of stomach, and simple peptic ulcer, cholecystitis, cholelithiasis.

The best results were obtained in constipation and simple hyperacidities, particularly in instances which showed lack of nutrition.

In hyperacidity and pylorospasm due to fissure or simple ulcer, there was a noticeable abatement of symptoms and a general improvement in most cases. Improvement was most marked in instances which showed a tendency to constipation, and evidence of poor nutrition.

The clinical data were checked up by test meals given before and several weeks after olive oil treatment.

In the cases of cholecystitis and cholelithiasis no improvement was noted.

#### CONCLUSIONS.

Olive oil not only reduces the acid content and overcomes pylorospasm, but in addition possesses decided advantages over silver nitrate, belladonna, bismuth, etc. Its action is local and not general as in the case of belladonna, nor does it tend to constipate like bismuth salts, nor does it threaten with unpleasant sequelæ as in the prolonged use of silver nitrate.

It is well to bear in mind the action of a fissure or an acute ulcer of the stomach upon the glandular structure and the pyloric sphincter, and the reaction of the pylorus and the hyperacid gastric juice upon the ulcer.

Thus the ulcer is kept active by the hyperacid juice and the spasmodic contraction of the pylorus, which in turn are kept active by the irritation of the ulcer.

Olive oil not only inhibits the gastric secretion, but also relieves pylorospasm, and incidentally acts as a protective covering over the injured mucous membrane.

The action of the oil is also enhanced, inasmuch as it remains in the stomach for a longer period than any other drug. As already mentioned, its laxative and nutrient properties become valuable in instances where such results are most desirable.

While olive oil is equally as efficient if not superior to any other form of medical treatment in the diseases mentioned, it is, however, contraindicated in other diseases of the stomach such as dilatations, subacidity, and achylia.

1809 WALLACE STREET.

## Contemporary Comment

**Human Disease Carriers.**—In more than one way man is his own worst enemy. He is the source from which originates many of the means of disabling or destroying his fellowmen. How this truth applies with reference to disease we see illustrated day after day, says *The Journal of the Indiana State Medical Association* for January, 1917.

Within the past few years a very grave problem has been forced upon us, the problem of disease carriers. They apparently are healthy individuals who excrete, constantly or intermittently, bacteria which may be transmitted to others and incite in-

fection in them. Because of their apparent good health, these carriers are permitted to come into intimate contact with their fellowmen. They do not know, of course, that by this contact they may spread disease around wherever they go. The community takes it for granted that anyone who shows no signs or symptoms of illness is free from disease and is entitled to every human right and privilege. It is only after the damage has been done, after an epidemic may have been started by such a carrier, that he or she is isolated and restricted in so far as it is necessary to protect the public health.

Already a good deal is known about this method of transmitting disease, but we have only just begun to see the light in dealing with this problem. It is known definitely that typhoid fever, diphtheria, and pneumonia may, and not infrequently are, transmitted by human carriers. It is believed that epidemic meningitis, poliomyelitis and streptococcic sore throat also are conveyed in this manner. It is very likely, furthermore, that many other types of infection are kept going in the same way. It is quite probable, for instance, that in the regions where the dysenteric infections prevail, the disease may be transmitted by human carriers. It is quite probable, also, that some of the exanthemata are conveyed by human carriers of the virus, whatever its nature may be.

The transmission of infection by persons affected with an infectious or contagious disease is an entirely different matter from the transmission of infection by a so called carrier. Those who are suffering from the effects of infection of any kind are—or ought to be—cautioned as to the danger of their spreading the infection around the community, and the proper measures for safeguarding the public health must be observed by all concerned. The victim of disease is invariably just as willing to protect the public health as the public is glad to be protected by keeping away from known danger of infection. But in the case of a carrier, both he and the public are ignorant of the true situation. The danger is not known, or is not recognized until it has led to results that may have been more or less disastrous.

In one respect, human carriers are like persons affected with a contagious or an infectious disease, i. e., they are all a real menace to their community in so far as prevention of disease is concerned. Now, if we believe that the number of carriers of disease of one kind or another is, without doubt, much greater than we had thought, we realize that perhaps here is the most important problem we have to deal with in our efforts to control the infectious diseases. We must bear in mind that even after the patient successfully recovers from his disease he may be just as much of a real menace as he was during his acute illness. He may be cured symptomatically, but not bacteriologically. The latter probably will be of little or no importance to him individually, but it will be of the greatest importance to his fellowmen.

Here, then, is a new duty which we cannot neglect. In every case of this kind the physician should determine whether his patient is cured and free of bacteria.

# Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CLXXVIII.—How do you treat acne vulgaris? (Answers due not later than January 15, 1917.)

CLXXIX.—How do you treat eczema in children? (Answers due not later than February 15, 1917.)

CLXXX.—How do you treat ringworm? (Answers due not later than March 15, 1917.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of \$25 for the best answer to Question CLXXVII has been awarded to Dr. John E. Lind, of Washington, D. C., whose paper appears below.

## PRIZE QUESTION NO. CLXXVII. THE TREATMENT OF DELIRIUM TREMENS.

By JOHN E. LIND, M. D.,  
Washington, D. C.

In delirium tremens we have an acutely excited patient who is suffering from exhaustion and toxemia. We have then three things to treat: the excitement, the exhaustion, and the toxemia. This is done by sedatives, overfeeding, and elimination.

It is extremely important to have a trained nurse constantly in attendance who is experienced in such cases, and is tactful in dealing with the patient's whims and in persuading him to take nourishment and medication. When the patient comes under treatment stop the alcohol entirely and give four compound cathartic pills. These are not repeated, but a Seidlitz powder is given every morning until the patient is convalescent. Hydrotherapy is triply effective; it subdues the excitement, relieves the exhaustion, and promotes elimination. Give a hot-air bath until the patient perspires freely, then place him in a hot pack. This is given by wrapping him completely except the head in sheets which have been wrung out in water at 105° F. Over these are wrapped blankets, which are pinned tightly, and an icecap is applied to the head. The patient remains in this pack from half an hour to an hour, is then taken out, and given a brisk rubbing with a dry towel. These packs may be repeated several times during the day. At about 6 in the evening of the first day of treatment the following prescription is given:

℞ Veronal . . . . . }  
Sulfonal, . . . . . } .....ãã gr. v.  
Trional, . . . . . }

M. et ft. Chart No. 1. Sig. To be taken in a half a glass of warm milk.

At 7 p. m. he is put in a warm bath, where he remains until 9. At 8, while in the bath, he is given one tablespoonful of the following prescription:

℞ Paraldehydi, . . . . . }  
Glycerini, . . . . . } .....ãã fl. ʒiv;  
Spiriti aurantii compositi, . . . }  
Aque, . . . . . } .....qs. ad. fl. ʒiii.

At 9 o'clock he will ordinarily be very sleepy and should be allowed to sleep undisturbed until morning. There is no harm in inducing sleep by light hypnosis or by suggestion. If the patient becomes

excited during the night the following may be given by hypodermic: Morphine sulphate, grain 1/8; hyoscyne hydrobromide, grain 1/100; and strychnine sulphate, grain 1/60. If it is necessary to give this hypodermic, do not repeat it during the treatment.

During the treatment the patient should take as much nourishment as possible. As there will usually be a disgust for or absolute refusal of food, this should be appetizing in appearance and taste; of small bulk and easily assimilable. Eggs beaten up in milk, orange, or grapejuice albumin, chicken or beef broth highly seasoned, and rice cooked in milk may be given.

Whenever the patient is seen by the doctor the heart should be carefully examined and there should be no hesitation in using stimulants, for the battle is won or lost within a few days. Strychnine, caffeine, camphor, and digitalis are the stimulants of choice. Collapse may often be successfully combated by infusion or enteroclysis of normal saline solution.

Following the deep sleep which marks the turn of the tide in the patient's favor there is the period of convalescence, when he is subjected to a building-up process. Drugs are withdrawn as far as possible, although an iron and arsenic combination may be beneficial. The diet is increased gradually, exercise in the open air is instituted, and the patient encouraged to take a hot bath at night and a cold one in the morning. It is at this time, too, if ever, that something may be done for the chronic alcoholic. A brief analysis of the causes of his alcoholism should be made and they should be explained to him in his own terms. He should be told that the solution of the problem is in his own hands and encouraged to attempt it.

Dr. Joseph A. Mendelson, of Washington, D. C. remarks:

Mania a potu develops almost invariably in the person who uses spirituous liquors habitually, that is to say, the gentleman who takes his eye opener in the morning, an appetizer before meals, and a night cap before retiring, with an occasional drink in between times, and who seldom takes enough at any one time to become actually drunk. The person who occasionally goes on a spree is not so prone to manifest delirium tremens.

When one used to three, four, or more drinks daily becomes acutely ill or is injured and is thereby deprived of his alcohol, or if a desire to swear



off leads to a sudden cessation of the daily drug-ging, then there arises immediately the danger of a possible attack of mania. All alcoholics are potential subjects for delirium tremens.

The patient with an acute illness or trauma, especially a head or bone injury, who has an alcoholic history should at once be treated along the following lines: Free purgation by magnesium sulphate one and a half ounce given on an empty stomach, before breakfast is of great service. Elimination should be kept a little above the normal. The diet should be liberal and hot meat or chicken broths with tincture of capsicum minimis five to the cup should be given between meals, at least once every four hours.

Every four hours the patient should be given one half ounce of the excellent formula especially devised for the purpose by Dr. William A. Steel, of Philadelphia, which is as follows:

R	Potassii bromidi, .....	gr. xviii;
	Tr. capsici, .....	℥iii;
	Spt. ammon. aromati, .....	℥x;
	Tr. cardamon. comp., .....	℥ss.
	Tr. gentian comp., .....	℥ss.

M. et sig. 3ss in water q. 4 h.

This usually serves to keep the patient quiet and at rest. If, however, this should prove inadequate the above mixture may be alternated with one half ounce of whiskey every four hours. If this treatment does not control the condition the patient should be given paraldehyde drams two and sodium or potassium bromide grains twenty every two hours. Lumbar puncture gives wonderful results, some of the fluid being withdrawn to relieve tension. This is usually all that is necessary, though a little magnesium sulphate solution may be injected into the spinal canal through the needle by means of a Luer syringe.

When these measures fail there is only one other course, namely: Morphine sulphate grains  $\frac{3}{4}$  to  $\frac{1}{2}$  and scopolamine hydrobromide grain  $\frac{1}{150}$  to  $\frac{1}{100}$  injected hypodermically, and often enough to control the symptoms, care being taken to avoid overdosing, and to maintain elimination.

Feeding must be persisted in and the patient carefully watched at all times. It may be necessary in extreme cases to restrain the patient. These patients do best in an institution, but physical restraint should be the last thing for these unfortunates who are "more to be pitied than scorned." A kindly, even tempered, and intelligent attendant may do more by care, attention, and hydrotherapy than any cruel and inhuman appliance of restraint.

Dr. E. E. O'Donnell, of New York, states:

The fact that the textbook treatment is so varied is sufficient evidence that it is also unsatisfactory. Depending as it does on the masking of certain symptoms by sedatives, it takes little cognizance of the pathological conditions which are the immediate causes of the symptom complex. Until these biochemical changes are understood, a specific medication can only be hoped for. The symptoms of delirium tremens are seen in exact counterpart in conditions of widely differing etiology, and are re-

markably similar to certain definite acute dyscrasias observed in maladjustment of the kinetic system. There are many evidences which would seem to prove that the lesions are in one or more of the closely related ductless glands, and that the metabolic changes are due to the disturbances of their hormone interactivities. The treatment herein advised, therefore, is founded on the principle that delirium tremens is the culmination of an acute dyscrasia aggravated rather than incited by alcohol.

The clinical picture of the onset of delirium tremens with restlessness, cold perspiration, rambling talk, tremor, insomnia, polyuria, hyperacidity, fermentation, tachycardia, dilated pupil, flushed face, and bulging eyeballs, corresponds exactly with that of acute hyperthyroidism.

Crile's description of the intense physical and mental effects upon soldiers at the battle front, who endured dangers, privations, and shell shock, which he ascribes to oversecretion of the thyroid and adrenals, clearly demonstrates that there is a close similarity of these symptoms and the hallucinations of the special senses known as the horrors. This is true even to the facial expression. The fact that fright, anguish, or an accident is often mentioned as inciting cause of the condition furnishes corroborative evidence. Korsakoff's syndrome, common among the vodka drinkers of Russia, represents the chronic phase of delirium tremens.

The tonic and clonic muscular spasms, gritting of the teeth, and the not infrequent convulsions followed by stupor are strikingly similar to symptoms seen in uræmia, epilepsy, eclampsia, and tetany. The researches of Biedl, of Vienna, and of Loeb and Carrel have proven that muscle irritability depends on the calcium content of the plasma, which in turn is controlled by the parathyroids. The therapeutic application of this knowledge has produced excellent results, especially in eclampsia and tetany. It would seem that calcium and magnesium salts are antidotal to the carbamates and the aminoacids which have been produced by the faulty metabolic processes.

In the most severe cases of delirium tremens the clinical picture of coma vigil, tremulous pulse, anuria, and dry brown fissured tongue—the so called typhoid state—corresponds exactly with that seen in adrenal defect.

Assuming then, that delirium tremens is the culmination of an acutely disordered metabolism, the obvious treatment is the correction of the dyscrasia or autointoxication; in other words, to treat the patient, not the disease. This is a matter of observation, analysis, and deduction which will tax the skill of the physician to the utmost. A specific medication is within the domain of physiological chemistry.

If the patient shows symptoms of hyperthyroidism, complicated as it always is with hyperadrenalism, I give the following:

I.

R	Acidi arsen., .....	gr. i;
	Ergotin., .....	gr. xxx;
	Quinine hydrobromid., .....	3iiss;
	Ext. pancreas, .....	3ii.

Ft. Thirty capsules. Sig. One every five hours after eating.

## II.

Ten drops of pituitrin to be injected every four hours.

In cases showing lack of parathyroid I give the following:

R Gland parathyroidi, ..... gr. iii;  
 Calcii lactatis, ..... ʒvi.  
 Ft. Thirty powders. Sig. One every five hours.

If there be a lack of adrenal secretion I inject subcutaneously five drops of adrenalin every four hours, and strychnine if necessary. Adrenal cortex by mouth restores tone and vitality.

Good nursing, massage, and hydrotherapy are also necessary. Easily digested, nourishing diet, with a minimum of salt, is essential. Alcohol should be given sparingly.

When the need of an immediate sedative is urgent I find the following useful:

R Tr. capsici, ..... ʒiiss;  
 Liq. Fowler, ..... ʒiii;  
 Tr. hyoscyami, ..... ʒiiss;  
 Sod. bromidi, ..... ʒiiii;  
 M. Rhei et sodæ q.s. ad. four ounces.  
 Sig. Take ʒi q. four hours, well diluted.

*Dr. Joseph H. Marcus, of New York, directs:*

*Prophylactic Treatment.*—Delirium tremens is often excited by acute traumatism, fracture of one of the long bones, acute infection, pneumonia, or erysipelas. A too abrupt withdrawal of the alcoholic beverage is oftentimes active in producing a violent outbreak of delirium tremens. In the above mentioned conditions, and in other ailments or accidents that necessarily confine the patient to bed, a careful history should be taken and a thorough physical examination conducted. Greater stress should be laid on the personal and family histories—and if not obtainable from the patient, the required information should be sought for from the relatives. If the physician is given the slightest suspicion, always attempt to ascertain the quantity of alcohol daily consumed by the patient; then the dose given may be gauged accordingly. In these cases whiskey is always given. Allow four drams as the average dose every three hours, alternating with strontium bromide twenty-five grains. These doses are gradually diminished in quantity and the interval lengthened. Dilute the whiskey with vichy or other mineral water. In doubtful cases give the whiskey and bromide, and grade the dose in conformity, whether male or female.

*Active Treatment.*—1. General: Confine the patient to a quiet, darkened, and well ventilated room. See that it is impossible for the patient to subject himself to injury. A good plan is to lay two mattresses on the floor, one on each side of the bed. Competent nurses should be in attendance, preferably male, and strong and alert. Resort to properly applied bandages for physical restraint, protecting the underlying skin from abrasion by the use of talcum powder and absorbent cotton placed beneath the bandage. The straitjacket is fraught with danger and should be avoided, if possible. 2. Elimination: a) Active elimination is instilled at the outset and is best accomplished by the administration of five grains of calomel with fifteen grains of sodium bicarbonate. Follow, in three hours, with one ounce of magnesium sulphate or one glassful of magnesium citrate. A few minutes later, give the following high compound enema:

Two grains of glycerin, two drams of turpentine, four ounces of magnesium sulphate, and six ounces of water. (b) Skin and kidneys: An agreeable diuretic is the imperial drink, given in large quantities. Hot packs and warm tub baths should be given, watching the circulation. If liquids are not retained when given by mouth, then accommodate with normal saline solution per rectum. If necessary, administer the saline intravenously. (3) Feeding: As a rule, no trouble is experienced in giving food. In some cases the patient refuses to take nourishment by mouth. Again, if the stomach is rebellious and does not retain food, nutrient enemata should be used for the time being. (4) Drugs: Spiritus frumenti and strontium bromide as directed before. Strychnine sulphate 1/30 grain, and fifteen minims of digalen may be given hypodermatically every four hours, for four doses, to support, stimulate the heart and respiratory functions. Atropine sulphate, 1/100 grain, may be added if the patient's skin is clammy and perspiring. One dram of paraldehyde is given for sleep. If necessary, one fourth grain morphine sulphate is given hypodermatically. If the stomach proves rebellious, lavage may be used, using a weak solution of boracic acid. A gastric sedative may then be given.

A valuable adjunct in the treatment is spinal puncture, withdrawing twenty c. c. of fluid and instilling a saturated solution of magnesium sulphate.

If there is a tendency to stupor, a blister to the back of the neck, and the actual cautery should be used. Careful watching of the heart and respiratory systems is always indicated.

*Dr. Frank C. Makepeace, of New York, states:*

In delirium tremens we have the following important symptoms to combat, delirium accompanied by constant noisy and incoherent talk, with the presence of hallucinations of sight and hearing; marked insomnia and restlessness with great tremor, especially of the lips and extremities; fever of more or less degree; and constant danger of heart failure.

The patient should be immediately placed in a hot pack, which is given as follows: Place a heavy blanket on the bed and cover it with a sheet wrung out of very hot water, place the patient on this sheet, cover him with another sheet, treated in the same manner, and a heavy blanket; and then fasten him in this entire roll with straps or ropes. When he has been placed in the hot pack give him one of the following: Ten grains each of trional and sulphonal dissolved in a half glass of hot milk; ten grains of Dover's powder with half glass of hot milk; or a hypodermic of hyoscyne hydrobromide 1/100 to 1/50 grain and atropine sulphate 1/100 grain. In extreme cases it may be necessary to combine two of the foregoing, or to give one ounce of paraldehyde.

As a general rule, the patient will fall into a deep sleep, which will last from one to five hours, when he will awake with the fever gone, mental symptoms relieved, and tremor much less, but in a very weak condition.

It is necessary to clear the bowels, stimulate the heart, and give plenty of easily assimilated nourishment. Magnesium sulphate or citrate of magnesia should be given to move the bowels. The best heart stimulant is tincture of nux vomica.

(To be concluded.)

# Editorial Notes and Comments

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

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Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, FEBRUARY 3, 1917

## VACATION AND EFFICIENCY.

Modern efficiency methods demand that during the working period, all the faculties and all the energies be taxed to the utmost, that there should be no waste either of material or of energy, but that the vital forces should be given up entirely to the needs of the particular work in hand. The aim is an efficiency of effort and production.

But merely to train an individual to separate himself from all his vitality in behalf of an endeavor is not conducive to a collective efficiency. It must be the aim of the efficiency advocate and of the efficiency method to train a people or a class to utilize, but not to wear out their faculties. The best must not be consumed in an attempt to secure a high degree of efficiency, for the consumption of the individual becomes a rapid one, and the difficulty of replenishment greater all the time. Much of the technic of the efficiency expert must be directed toward the producer—to make him a more efficient human being and to prolong the period of his maximum capabilities. The efficiency must be of the producer first, and of the product last. Production must be regulated for speed, so that no one will be required to speed up beyond endurance. The aim of efficiency must be, moreover, in the collective sense to find an opportunity not only for the most

gifted, but for everyone to exercise the energies with which he is endowed, no matter how small.

The vacation systems, which have recently attained such popularity, are Nature's safety valves for the relief of the high pressure resulting from these methods. It is becoming recognized that a vacation period is necessary in order to put one into shape for another year's grind. The vacation should be the nearest approach to the simple life—when taken with that purpose in view. It is for this reason that the country with all its many inconveniences is so often chosen for the place of vacation. The vacation period allows the absorption and the elimination of the fatigue products from the system accumulated in the pressure period of work. The longer the vacation, therefore, the better the subsequent work. Vacations are essentially regenerators and rejuvenators.

It is the change, really more than the rest, that is of so much value in a vacation. Besides the absorption of the fatigue products there is an opportunity given those functions which have remained inactive and sluggish, and even atrophic, to exercise and develop. It is a restoration of balance. For confined and sedentary workers, even hard and coarse country work is restful and invigorating. For indoor workers this sort of a vacation means a new lease on life. Very often a borderline case of tuberculosis is maintained a little longer above the line by a proper vacation. The increased tendency to arteriosclerosis and other degenerative conditions, as well as premature senility, nearly all the result of high pressure and efficiency, can be much neutralized by periodic vacations, a vacation free from the grind, of course, but also from the worry incident thereto. The vacation is a therapeutic measure come to stay.

## ROYAL INHERITANCE AND PSYCHOPATHIC PROBLEMS.

The recent death of King Otto I of Bavaria, king only in name, revived an interest in the fate of the house of Bavaria. It is an interest which is more than a passing one. It brings into the light of scientific consideration a long train of facts connected with the tragic inheritance in this royal family. The limitation of marriage, with its attendant system of intermarriages, to which the royal houses of Europe have always been subjected, offers a valuable opportunity for the definite study of problems of heredity and the fixity of its laws. Such a study in order to be complete must comprise also a personal study as far as possible of the persons who pass on



the inheritance, and thus the interest deepens to that of a sympathetic human investigation.

Galton's statement of the law of inheritance provides for the appearance side by side in a family of an exponent of transmitted weakness and defect, or of strength and marked ability. The royal pedigrees, available for study as others are not, manifest this in striking degree, and afford examples of distinguished ability and superiority, mental and moral, in certain lines far in excess of those who manifest hereditary taint.

An inheritance of strength or of defect tends to spend itself unless reinforced by a like tendency through marriage with like stock. Such reinforcement even to the point of a strong convergence of certain lines comes about through the limited intermarriages in royal families. Sometimes it works for good in the continuance and strengthening of a good inheritance and the counteracting of traits of weakness already in force. At other times it intensifies and concentrates the evil.

The latter has been true to a marked extent in the genealogical history of the unfortunate king of Bavaria and his equally afflicted brother, Ludwig II, and has given to Bavaria a long period of regency under merely nominal kingship. Both were sons of Maximilian II, who was recognized as a constitutional neuropath and whose sister revealed still more plainly a bad mental inheritance. Ludwig II, the older of the two sons, was of a distinctly paranoid type of character, indicated by distrust, doubt, inability to concentrate, and a desire for solitude. He was also of phantastic, artistic tastes, throwing himself into an enthusiastic, absorbing interest in Wagnerian characters and particularly admiring Louis XIV, with whom he came to identify himself. In 1886 he was adjudged "insane" and a regency appointed. Six days later he took his own life.

The regency was maintained when his brother Otto I succeeded nominally to the throne, from which he was deposed in 1903 in favor of the present monarch, Ludwig III. He early showed symptoms of dementia præcox, which soon ended in a complete mental collapse.

It has been stated that he inherited his psychosis from his father's side of the house. A brief review of some earlier members among his ancestry will prove this but half a truth. Three generations back from his mother, Marie, Princess of Prussia, (the two grandfathers of Princess Marie married sisters), the taint becomes evident in Ludwig IX, Land-Grave of Hesse-Darmstadt, a man who displayed traits of mental weakness, pedantry, despotism, fearfulness of danger and of suffering, together with a dread of ghosts which amounted to actual

hallucinations. There was in him a bad convergence of heredity, which is traceable in part to the seriously tainted house of Jülich-Cleve, a house which has contributed its influence also through two paths of descent which united in Maximilian I, Otto's father's grandfather.

Another convergence of taint manifests itself in the physical weakness and weak organic condition of the brain, which finally caused the death of August William, Prince of Prussia and paternal great-grandfather of Otto's mother. William the Younger occurs three times in his pedigree. This William belonged to the house of Brunswick-Hanover in the latter part of the sixteenth century. The inheritance which he had to pass on through his seven sons and eight daughters was that of a transmissible psychosis, and with it also an hereditary blindness which afflicted him. He is one of the ancestors also of the Hanoverian house of England with its psychotic line of kings.

The ancestry of the same August William, in the paternal grandfather's line, the only one which does not claim the blood of William the Younger, passing through Frederick William the "Great Elector" and his son, Frederick I of Prussia, shows the inheritable arteriosclerotic and gouty diatheses which are of genetic interest.

It is possible here merely to denote these important strains and to select for mention a few of the intensely human pictures which the individual bearers have manifested in their high station. As Strohmayer has said, it is only the disposition which is inherited. The individual life decides whether it shall develop or not into a pathological condition.

The life of individual freedom which high position grants offers opportunity for selfindulgence and lack of restraint. On the other hand, the responsibility of royalty and opportunity for service of a higher order has not only been seized upon by those endowed by nature for the birthright of authority, but it has proved the salvation of others who had inherited the weaker traits. Yet the force of inheritance could not be stayed and in the concentration of its power in the lines which converge in the parentage of this unfortunate king there is no room left for wonder at his fate. There is, moreover, no need or place for any other than a strictly scientific accounting and explanation for the psychopathological facts.

This is a significant eugenic problem, and yet beyond it lies a still more vital human consideration. This is the question of interpretation and control of the individual life through a wider understanding and application of psychic factors of adaptation and reaction, which turn the balance for the individual life.

## FUNCTIONS OF THE CEREBROSPINAL FLUID.

Only recently has satisfactory information been obtained regarding the physiology and pathology of the cerebrospinal fluid and of the anatomy of its retaining membranes. Normally it is a clear limpid fluid of low gravity and under a definite pressure which is independent of blood pressure although it may be affected by the blood pressure. It is a secretion of the epithelium of the choroid plexus and the secreting pressure of this organ or gland, as it has been well called, determines the pressure of the fluid. In the fluid are dissolved inorganic salts similar to those in the blood plasma, together with traces of protein and dextrose. There are few if any formed elements. Pathologically this picture is known to change in various characteristic ways.

Professor Halliburton in his presidential address before the neurological section of the Royal Society of Medicine (*Lancet*, November 4, 1916), brings together the latest findings on this subject under the caption, "The Possible Functions of the Cerebrospinal Fluid." He notes that three classes of substances promote the secretion and raise the pressure of the cerebrospinal fluid, aside from the secondary influence of increased blood pressure. 1. Excess of carbon dioxide or lack of oxygen in the blood, and drugs which decrease respiration. 2. The volatile anesthetics, either by interfering with respiration or by affecting the conditions of secretion. 3. A specific substance consisting of an extract of the choroid gland or of the brain. The exact nature of this hormone is not known, but in general paralysis and softening of the brain it is found in the fluid itself. The cerebrospinal fluid has been proved to disappear by way of the blood stream.

Professor Halliburton supposes that the cerebrospinal fluid fulfills a constant requirement for support and pressure in the central nervous system. The presence of an independent mechanism for regulating pressure indicates the importance of not having the central nervous system dependent on the blood pressure. The fluid cannot thus be considered the lymph of the brain, as it is not in direct communication with the blood nor dependent on the blood pressure. But within this limitation it is the direct medium of exchange for the nerve cells and bathes these cells as the lymph does other tissue cells. The very simplicity of the cerebrospinal fluid is considered significant and Halliburton finds in it as in the blood a direct counterpart of Locke's and Ringer's solutions, with the addition of a certain quantity of protein and formed elements. Attention is called to the still unsolved problem of the reason for the

excess of protein in the blood, which is considerably above nutritive requirements.

Halliburton reaches the conclusion that cerebrospinal fluid is essentially the same as Locke's solution, and that its simplicity, specialized secretion, and peculiar pressure maintenance are necessary because of the delicate nervous mechanism which it envelops and which must be bathed in an "ideal physiological saline solution to maintain osmotic equilibrium." He thinks the trace of protein probably sufficient nutriment to replace cell structure broken down in functioning, and the sugar an adequate source of energy. The protection of the neurones requires the exclusion of harmful substances from the blood, and therefore the mechanism of this fluid excludes almost completely drug substances circulating in the blood.

Our recognition of the importance of the cerebrospinal fluid as a channel for drug administration, as a diagnostic medium, and as a normal functioning tissue of the body, is increasing. Much work remains in elucidating the further problems of its physiology and of the anatomy of its course, but a desirable beginning has already been made.

## NEW DENTAL NEEDS.

Although the development of the dental sciences has been phenomenally rapid there has unfortunately been a great leaning toward the esthetic, prosthetic, or mechanical phases of this work, often to the neglect of the more important pathological aspects. The mere remedying of appearance, while not to be underestimated in importance, can have but little effect upon pathological conditions underlying dental needs. Indeed, elaborate prosthetic work can often cover up and render difficult of detection much dental and even alveolar disease. No prosthetic work is wisely undertaken without the thorough certainty that all disease conditions have been entirely remedied.

With the development of the bacteriology of dental conditions, however, an increasingly great amount of attention is being paid to dental pathology and actual dental treatment. While the medical profession is not capable of applying dental needs, and does not so desire, it is usually in a position to see the conditions first and to observe the baneful general effects upon the system of diseased teeth and their appendages. It can be seen, therefore, what good results would accrue from a closer cooperation between the two professions.

Aside from the effect of specific tooth infections, diseased teeth are avenues of infection for all kinds of organisms that flourish in the oral cavity or are

introduced otherwise. Besides the amoeba the number of organisms pathological in nature that live therein includes the staphylococcus aureus and albus, the pneumococcus group and streptococci, especially the streptococcus viridans, the bacillus subtilis, the streptococcus haemolyticus, diphtheroid bacilli, colon bacilli, leptothrices, etc. It is not improbable that in some acute infections the teeth are the primary foci. This is especially the case with certain subacute arthritides where dental foci probably play an important role.

In pyorrhea alveolaris we have a definite disease entity caused through infection by badly maintained and diseased teeth. The specific organism believed to be at the bottom of this condition is an amoeba. In well developed cases the symptoms are rather characteristic. There is the formation of pus pockets about the teeth, and the exudation of pus therefrom, loosening of the teeth and their loss, bleeding of the gums, recession of the gums, and at times even the hypertrophy of the gums at the gingival margin. But these are rather the later and end symptoms. There is then little doubt as to the nature of the condition, but a great deal of difficulty in treatment and in effecting a cure. To be of value the recognition of this condition must occur early before much destruction has been accomplished. Suspicion should be aroused in the direction of this condition when pus cells are found in the scrapings from about the teeth roots. It is in the early stage that prophylactic measures and treatment can be best instituted. It is in this stage that patients are most likely to consult the physician for the indirect or general results such as general anemia, malnutrition, intestinal and digestive disturbances, arthritic symptoms, and the like. Perhaps the only adequate method of prevention of dental disturbances is the frequent periodic examination of the teeth both by the naked eye and by bacteriologic means.

### ELECTRICAL TREATMENT OF THE WOUNDED.

It goes without saying that the present war has brought into play all the ingenuity of surgeons and physicians and all the resources of surgical skill and medical science. Full scope has been afforded for the trial of every method calculated to be of service in the treatment of injured or sick soldiers. Among the various means of relieving pain and of attempting to restore the use of impaired functions, electricity has not been overlooked. According to the judgment of those who have had experience in the employment of electrical measures with this object in view, the results have been satisfactory.

Dr. W. J. Turrell (*Lancet*, December 16, 1916), writing on the value of electricity from the standpoint of the wounded soldier, concludes as follows:

1. A considerable number of those who would otherwise remain permanently unfit can be rendered fit for general military service.
2. The severe pain of many of those wounded or injured by exposure in military service can be completely arrested or greatly relieved by these methods.
3. Electrical treatment is of great benefit in many of the less serious cases, often effecting a speedy cure and a quicker return to the fighting line.
4. Electrotherapy, fully and efficiently developed, will result in a very considerable reduction of the amount paid for state pensions, and, what is more important, will restore function to many crippled limbs.

## News Items

**Harvey Society Lectures.**—The sixth lecture in the course will be given on Saturday evening, February 3rd, by Prof. J. W. Jobling, of Vanderbilt University, his subject being the Influence of Nonspecific Substances on Infections.

**A Section in Historical Medicine at the Academy.**—At a meeting held at the New York Academy of Medicine on Tuesday, January 23rd, the Section in Historical Medicine was organized, with Dr. James J. Walsh as chairman and Dr. Charles M. Williams secretary.

**Smallpox in Waco, Texas.**—Assistant Surgeon Witte reported to the United States Public Health Service at Washington, D. C. that during the week ending January 20, 1917, 7 cases of smallpox, with 3 deaths, were reported at Waco, Tex., making a total of 107 cases, with 21 deaths, at this place since April 1, 1916.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, February 5th, Wills Hospital Ophthalmic Society, Academy of Surgery, Clinical Association, Blockley Medical Society; Tuesday, February 6th, Laryngological Society, Medical Examiners' Association; Wednesday, February 7th, College of Physicians; Thursday, February 8th, Pathological Society; Friday, February 9th, Northern Medical Association.

**Personal.**—Dr. Carl Vogel, of Elroy, Wis., has been appointed a special assistant to the American Embassy at Vienna, in order that he may act as inspector of war prison camps in Austria-Hungary for that embassy.

Dr. Harvey W. Wiley, of Washington, D. C., addressed the Economic Club of New York, Tuesday evening, January 30th, on the subject of the high cost of living, in which he emphasized the importance of teaching the public the fundamental principles of nutrition.

**Mortality Statistics of New Orleans.**—The yearly report of the Department of Health of the City of New Orleans shows that during the year 1916 there were reported to the department 6,847 deaths from all causes, 3,902 white and 2,945 colored, corresponding to an annual death rate of 14.13 in a thousand for the white population, 28.87 for the colored, and 18.11 for the total white and colored. Deducting the number of deaths of nonresidents, the annual death rate for the whole population is reduced to 15.82 in a thousand. This is said to be the lowest death rate on record for the city of New Orleans.

**A Symposium on Inebriety.**—At a stated meeting of the New York Academy of Medicine, held Thursday evening, February 1st, the program consisted of a symposium on inebriety. Dr. Minus S. Gregory, director of the psychopathic and alcoholic wards at Bellevue Hospital, read a paper on the Modern Conception of the Nature of Inebriety. Dr. Charles F. Stokes, formerly surgeon general of the United States Navy and now medical director of the board of inebriety, New York City Farm, read a paper on Narcotic Addiction. The subject was discussed by Dr. Samuel W. Lambert, Dr. Thomas G. Salmon, Dr. Foster Kennedy, and Dr. George H. Kirby, of the Manhattan State Hospital.



**Southern Gastroenterological Association.**—The association was organized recently in Atlanta, Ga., with the following officers to serve for the first year: President, Dr. J. C. Johnson, of Atlanta; vice-president, Dr. Marvin H. Smith, of Jacksonville; Dr. J. T. Rogers, of Savannah, secretary-treasurer; councillors, Dr. S. K. Simon, of New Orleans, Dr. G. M. Niles, of Atlanta, and Dr. Seale Harris, of Birmingham. Active membership in the society is restricted to investigators and physicians of the seventeen Southern States who are engaged primarily in the diagnosis and treatment of diseases of the digestive tract.

**Health of Troops on the Mexican Border.**—According to official reports giving health statistics of the regular army and the National Guard on duty at the Mexican border, the percentage of sick increased materially during the two weeks ending January 20th, the rate being 3.53 per cent. sick among regulars and 3.47 among the militia. Officials deny that any epidemic has made its appearance among the troops and call attention to the fact that despite the recent increase in the sick rate the "health rate" of the soldiers is much lower than for any city having approximately as many inhabitants as there are men on the border. Pneumonia continues to be the hardest problem for the army surgeons.

**Moving Pictures in Public Health Education.**—In North Carolina the State Board of Health has an automobile fully equipped with a light and moving picture outfit, with which moving picture health shows are given throughout the State, in cities and towns, at country fairs and other gatherings, in churches, halls, tents or out of doors.

In New York City similar work is being carried on through the Health Department's Bureau of Public Health Education, but experience has taught that here it is preferable to show health pictures as a part of the programme of the existing moving picture theatres than to give special shows under the Bureau's auspices. It is the practice of the Bureau of Public Health Education to loan, free of charge, health reels to moving picture theatres which will show them as part of their regular program. This usually means at least three or four shows in one day.

**A Low Death Rate in Boston Last Year.**—Boston's death rate for 1916, based on a provisional statement from the health department, is 16.72, compared with 16.05 in the previous year. This is said by the department to be the second lowest death rate in the history of the city, despite the unusual prevalence of grippé and pneumonia last January, February and March, the Summer Street bridge accident on State election night and the epidemic of infantile paralysis. All reports from doctors in private practice and from hospitals for December may not have been received, but there is little expectation of a material change in the figures. The deaths for the year numbered 12,717, compared with 12,021 in 1915. Of the total for 1916, deaths of nonresidents numbered 1,795, compared with 1,640 in 1915, and known deaths of Bostonians outside the city numbered 675, compared with 704 in 1915. Corrected for these two factors, the 1916 death rate per 1,000 population is 15.25, compared with 14.81 in 1915.

**A High Death Rate in New York Last Week.**—Reports issued by the Department of Health of the City of New York show that during the week ending January 27, 1917, there were 1,904 deaths from all causes, corresponding to an annual death rate of 17.34 in a thousand of population. Of the total number of deaths, 38 were from influenza, 131 from bronchopneumonia, and 294 from lobar pneumonia. The following table shows the number of deaths during the past few weeks, compared with those during the corresponding week of last year:

	1917	1916	1917	1916	1917	1916	1917	1916
January	6.	8.	13.	13.	20.	22.	27.	29.
Total Deaths	1895	1880	2076	1863	1916	1760	1904	1812
Death Rate	17.23	17.08	18.88	16.93	17.42	16.41	17.34	16.46
Deaths from Influenza	49	85	60	109	44	87	33	81
Deaths from Broncho-								
pneumonia	146	148	142	138	130	123	131	122
Deaths from Lobar								
Pneumonia	276	293	366	284	328	259	294	217

Fortunately the contagious diseases, scarlet fever, measles and diphtheria are not as prevalent as they have been in previous years. In fact, the contagious disease hospitals of the Department of Health are filled to only twenty-five per cent. of their capacity.

**Ohio County, W. Va., Medical Society.**—This society held its annual banquet at the Windsor Hotel, Wheeling, Thursday evening, January 18th. Dr. John L. Dickey, of Wheeling, acted as toastmaster. Dr. André Crotti, of Columbus, Ohio, was the principal speaker of the evening. He delivered an address on Goitre, which was discussed by Dr. James Schwinn, Dr. Frank Le Moyne Hupp, and Dr. Gregory Ackermann, of Wheeling, and Dr. Sherman, Dr. Theodore Diller, Dr. Beach, and Dr. John A. Lichty, of Pittsburgh. Dr. J. R. Caldwell, president of the society, and Mayor H. L. Kirk, of Wheeling, also delivered addresses. One hundred and thirty-one members and guests attended. On February 2nd, Dr. E. A. Peterson, of Cleveland, Ohio, addressed a public meeting held in Wheeling under the auspices of the Ohio County Medical Society and the Board of Education of Wheeling. On February 9th Dr. John A. Bodine and Dr. Charles H. Chetwood, of New York, will address the society.

**Restaurants under Control of Health Department.**—Because of certain legal difficulties encountered by the Department of Health of the City of New York in dealing with insanitary and dirty restaurants and hotels, the Board of Health at its meeting on January 30th enacted an ordinance prohibiting the operation of any restaurant in the city of New York except under a permit from the Board of Health. As a result of the action taken by the board hundreds of restaurants all over the city are expected to make effective efforts to comply with the sanitary regulations promulgated by the Department of Health. The ordinance adopted reads as follows:

No person shall conduct, operate, or maintain any restaurant in the City of New York without a permit therefor issued by the Board of Health or otherwise than in accordance with the terms of said permit and the regulations of said board. The term "restaurant," as herein used, shall be taken to mean and include every buffet, lunch room, grill room, lunch counter, dining room of hotel, and every other public place where food is prepared, cooked, served, sold and consumed on the premises, every lunch counter in a saloon where food is given away, and all kitchens appurtenant thereto or connected therewith.

The permit system for hotels and restaurants is already in force in Chicago, St. Louis, Springfield, Ill., Minneapolis, Spokane, San Francisco, Wilmington, N. C., and Portland, Me. In addition to this, a number of states, such as Tennessee, Florida and Wisconsin control hotels by a permit system. The new ordinance goes into effect immediately and the Department of Health is preparing to handle the large number of applications which will now be received.

**Infantile Paralysis Aftercare Clinics.**—With the completion of the first series of infantile paralysis aftercare clinics, Acting Commissioner Linsly R. Williams, of the State Department of Health, has issued a statement showing that out of 2,887 patients reported to the department prior to October 1, 1916, 1,891 had been examined by the department surgeons, up to January 20, 1917. Of the 996 patients otherwise not accounted for, the greater number either have recovered completely or are under competent orthopedic care.

When the clinical work was begun, 3,688 patients had been reported. As the disease is one which the law requires to be reported, some data regarding each case was on file with the Department of Health. This data was checked over and a total of 801 deaths was discovered which had occurred either from poliomyelitis or from some other disease following the attack of poliomyelitis. The clinics were started on October 17, 1916, at White Plains. Since that time seventy-two clinics have been held throughout the State and on Long Island, with an average attendance at each clinic of twenty-seven patients. In each instance a complete physical examination has been made of the patient and a record chart filled out showing the extent and nature of the paralysis.

The department is undertaking a series of subsequent clinics, which will be held in approximately the same cities as where first given, in order to provide a comprehensive and complete follow up system of examination. It is expected that upward of two months will be required for the second series of clinics. Examination of the patients is under the direction of Dr. Robert W. Lovett, who is assisted by Dr. Armitage Whitman, Dr. H. J. Cook, and Dr. J. H. Hodgen. In each instance the attending physician is asked to attend the clinic and consult the department surgeons.

# Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

## SODIUM BICARBONATE IN GASTROINTESTINAL DISORDERS.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Concluded from page 180.)

The marked relief afforded in many gastric conditions by sodium bicarbonate, coupled with the frequently obstinate nature of these conditions, is naturally conducive to prolonged use of the remedy, and the question arises: Is the continuous use of the drug—or of other alkalies—likely to produce unfavorable effects, and if so, do the benefits attending its employment outweigh these effects? To the massive amounts administered in former times was ascribed by Trousseau a condition of "alkaline cachexia," and in dogs daily doses of one half to two ounces have been observed to cause death in three to five days, with pathological findings consisting of anemia of the liver, spleen, and lungs, and hyperplasia of the intestinal follicles and the Malpighian bodies. Amounts smaller, but sufficient to saturate completely the hydrochloric acid of the gastric juice, may prove harmful by inhibiting gastric digestion and, since the acid in the stomach has been shown by Pawlow to be a specific excitant of the pancreas, likewise intestinal digestion. A few observers have attributed to excess of alkalies the production of an atrophic gastritis, due to changes in the secreting cells similar to those caused by phosphorus poisoning. All the above mentioned harmful effects are, however, results of a grossly immoderate use of these drugs, such as need not at any time arise in therapeutics if due care is taken.

Of greater immediate significance is a consideration of the possible loss of the symptom relieving effect upon continuous use of a given *moderate* dose of sodium bicarbonate, as well as of the presence or absence of an actual curative effect of the drug on the existing disorder of gastric function. Opinions in these directions vary considerably. Thus, on the one hand, may be cited the opinion of Hayem, expressed in 1908, in which he refers to the frequency with which, in the more marked cases of gastric pain during digestion, the unfortunate patients, seeking relief from alkalies, are led progressively to increase the size of the amount of sodium bicarbonate taken, from two and a half or three drams a day to five, seven and a half, and even ten drams daily; or, a gradually increasing number of vichy tablets may be consumed. Hayem avers that the cases in which the attacks of gastric pain become more and more frequent and prolonged occur chiefly among patients treated with alkalies. The pains increase in severity and the drug, instead of moderating the disturbance, maintains and even augments it. He has, therefore, been led to discard alkalies in the treatment of digestive pain, substituting bismuth subnitrate in large doses on the empty stomach every morning—except tem-

porarily in attacks of violent pain, in which morphine would be required if sodium bicarbonate was not administered.

In partial opposition to Hayem's view is, for example, that of J. Kaufmann, who considers that, with proper dieting and corrected mode of living, more than a mere symptomatic effect results from the use of alkalies. That the dose of sodium bicarbonate required for relief in hypersecretion necessarily increases as time goes on is shown to be an error, at least in some instances, by his reference to a patient who for over forty years took daily about six teaspoonfuls of sodium bicarbonate, which he depended upon to avoid undue gastric discomfort, while continuing to indulge in any and all desired articles of food and drink. While noting the absence of an actual curative effect in this case, since the need for the alkali persisted, Kaufmann exonerates the alkali as regards perpetuation of the secretory disorder—the cause of the latter having continued—and claims a definite curative effect for the alkalies in hyperacidity by virtue of their actions in relaxing pyloric spasm and in abolishing, in the process of neutralizing free hydrochloric acid, an irritant and excitant to further acid secretion by the gastric glands. In continuous hypersecretion—gastrosuccorhea, Reichmann's disease—Kaufmann recommends that alkalies, with bismuth, be liberally used before and after meals and whenever pain or discomfort calls for amelioration; "alkalies should always be continued for a long period of time." In some respects similar are the views of A. Bassler, who, while enjoining care with bicarbonates and carbonates lest an atony from distention by large amounts of carbon dioxide develop or the "bicarbonate of soda habit be contracted, in which often viciously large doses are habitually partaken of," states that the use of alkalies may be kept up for long periods without danger to the stomach.

On the whole, it would seem that with due circumspection on the physician's part, the dangers attending continued use of sodium bicarbonate—especially if combined with other alkalies—are less than Hayem's statements would lead one to suppose, though, in many instances it is perhaps best to consider the administration of alkalies a temporary measure only, to be employed only during the periods of exacerbation.

A peculiar feature of the prolonged action of alkaline treatment in hyperacidity is mentioned by Linossier and Lemoine, viz., that when a case of continuous hyperchlorhydria has been "cured" with alkalies gastric analyses show no less hydrochloric acid than had been present before treatment. In fact, according to Hayem, in patients with hyperchlorhydria returning from an active course of treatment at Vichy, the hyperchlorhydria is seemingly increased. This change, is, however, only an apparent one, the liberation of hydrochloric acid merely having been caused to take place



earlier, with consequently more prompt and normal evacuation of the stomach. The same useful effect in hyperacid cases with delayed evacuation can be obtained by a course of sodium bicarbonate in twenty to twenty-five days, the drug being given in daily amounts of one and a half to three drams divided into three doses, administered as though intended for the relief of late digestive pain. Hayem has, however, in late years substituted for this procedure the administration of artificial Carlsbad water, the effects of which seem to be more pronounced as well as more lasting. In obstinate cases treated by other procedures without result, systematic Carlsbad medication in the intervals between exacerbations led to progressive attenuation and final cessation of the paroxysms. The composition of the artificial Carlsbad salts is: Sodium sulphate, forty-four parts; sodium bicarbonate thirty-six parts; sodium chloride, eighteen parts, and potassium sulphate, two parts. Hayem does not refer to the method or time of administration. The usual procedure consists in giving one teaspoonful of the salts in a half pint of water at 90° to 120° F., one hour before breakfast. The artificial salts are generally considered equal in therapeutic value to the imported variety. The action of the combined salts, of course, passes beyond a simple alkaline treatment. By other appropriate combinations of sodium bicarbonate with sodium chloride, sodium sulphate, and sodium phosphate, according to indications, and by varying the concentration and time of administration, it is possible to cleanse the gastrointestinal tract of mucus and modify secretions and peristalsis in various ways.

Useful effects of sodium bicarbonate not already touched upon include: 1, The insuring of salivary digestion of starches in the stomach by the administration of alkalis before meals; 2, the neutralization of sour articles of food, including unripe fruits, and of unsaponified fats, which by preventing proper alkalinity in the duodenum, inhibit the duodenal reflex for opening of the pylorus and retard gastric evacuation; 3, possibly, a reduction in the secretion of pancreatic juice upon ingestion of sodium bicarbonate in solution—an effect which Wilbrand believes may prove of value for sparing the pancreas in diabetes mellitus.

**Fundamental Considerations in the Treatment of the Psychoneuroses.**—Donald Gregg (*Boston Medical and Surgical Journal*, January 11, 1917) defines psychoneuroses as functional conditions of emotional origin, that interfere more or less seriously with the efficiency and health of psychoneurotics. They involve a circle in which are included the mind, the nervous centres, the glands of internal secretion, and the viscera. The circle exists normally, but when the individual becomes conscious of the impulses returning from the viscera, and this consciousness starts a secondary series of impulses involving the same circle the results may be considered a psychoneurosis. Some methods of treatment attack the problem from one point in the circle, others attack another point. Change of environment, isolation, and the lessening or solution of en-

vironmental difficulties tend to decrease the arousing of emotions. Hydrotherapy, electrotherapy, heliotherapy, and mechanotherapy, massage, and surgical intervention tend to modify the activities of the autonomic system and the glands of internal secretion. The same measures, together with mechanical aids, such as belts, braces, and posture exercises, tend to facilitate the activities of the viscera. Occupation and diversion tend to divert the individual's attention from his visceral symptoms and prevent some of the secondary circles of emotional activity from being formed. Rest, extra feedings, fresh air, general hygiene, and drugs lessen irritability and tendencies to excessive reaction to stimulation. Hypnosis and suggestion also tend to prevent the formation of such secondary circles. Christian Science works along the same line. Psychoanalysis and psychotherapy, in so far as they help the individual to understand and properly appraise his symptoms, are certainly of therapeutic value in arresting the formation of secondary emotional circles, but they are two edged tools and may do more harm than good.

The proper treatment of the psychoneuroses should not consist in attacking the condition from a single point, whether by means of occupation, rest, isolation, hydrotherapy, surgery, drugs, electrotherapy, suggestion, psychoanalysis, or psychotherapy. It should consist in attacking the patient's vicious circle of emotional activity from as many different points as possible at the same time, and by a combination of efforts to lessen emotional activity, reduce irritability, and rectify visceral activities. Results can be hoped for that are not to be gained, or are gained only at great cost of time and labor, when treatment is confined to a single therapeutic measure.

**Pyloric Stenosis in Infants.**—W. E. Gallie and L. B. Robertson (*Canadian Medical Association Journal*, January, 1917) state that with the establishment of diagnosis the rational indication for treatment is the relief of the obstruction, and that its nature depends entirely on the completeness of the closure of the pyloric outlet. If the patient is rapidly losing ground with vomiting of all food, absolute constipation, and suppression of urine, nothing but immediate operation can save him. If the symptoms are not so severe it is wise to study more accurately the degree of obstruction, and to try to relieve any pyloric spasm by gastric lavage. A measured quantity of breast milk may be fed to the patient and, after the lapse of the time ordinarily required for the emptying of the stomach, the contents of the latter are aspirated and measured. In mild cases the amount retained in the stomach is small, and the prospect for relief through regular gastric lavage is good. But if the retention shows a daily increase with exaggeration of the symptoms, recourse must be had to immediate surgical intervention. They employ the Webber-Rammstedt method. The abdomen is opened by a small incision through the right rectus above the umbilicus. The tumor is discovered and delivered through the abdominal wall; its appearance, thickness, and density noted. By squeezing on the air in the stomach the degree of stenosis can be demonstrated. Along the upper border of the white tumor is a space about an eighth



of an inch wide that is practically bloodless, and an incision is made along this area for the full length of the swelling down to the mucous membrane, the external surface of which is exposed throughout its whole length. The muscle is so hard that little retraction takes place, so it may be necessary to press apart the margins of the wound until the mucous membrane is exposed for a width of an eighth of an inch or more. The relief of the stenosis can be demonstrated by squeezing air through the pylorus from the stomach, or by passing a stomach tube into the duodenum. If any small vessels have been cut they must be tied, but there is practically never any bleeding. The viscera are then returned and the abdomen closed. The postoperative treatment is of the utmost importance. Hypodermoclysis immediately after the operation of from 100 to 200 c. c. of normal saline and four per cent. glucose solution. This may be repeated during the next few days. Stimulation in the form of the hypodermic injection of adrenalin in five minim doses. Measures to keep up the temperature of the patient to normal should be employed, such as the use of hot water bottles and a special coat made of cotton sometimes used for premature babies. Until the effects of the anesthetic have passed off the child's head is lowered, after which the position is changed to the semiupright, to facilitate the emptying of the stomach, and the eructation of gas. As soon as the effects of the anesthetic have passed off, usually an hour after the operation, a few drams of water are given, and an hour later a mixture of three drams of the mother's milk and a dram of water. This is repeated at regular three hour intervals. If possible breast milk should be provided, and the normal nursing of the child interrupted no longer than a week or ten days. Careful feeding is absolutely imperative, as digestive upsets are very apt to be fatal. In conclusion the writers admit that many of the cases, in which the hypertrophy of the muscle is slight and the obstruction due mostly to spasm, can be relieved by medical treatment, but such treatment should not be persisted in if prompt improvement does not appear. The patient must not be weakened by starvation until he is no longer a safe subject for an abdominal operation.

**Twilight Sleep.**—*The Practitioner*, January, 1917, contains a symposium on this subject. Some of the writers are guarded in their expressions, others speak frankly. Herbert Williamson says that his experience leads him to believe that scopolamine and morphine injections diminish the pain of labor in the majority of cases; that amnesia is complete in about one third; that in a small proportion of the cases active delirium is produced by the drugs; that labor is prolonged; that the loss of blood in the third stage is increased, but that severe bleeding is not common; that no other ill effects are produced in the mother; that the danger to the child is undoubtedly increased; that the dangers are lessened by constant and careful supervision; that the treatment should not be undertaken unless the patient's surroundings are favorable, unless the obstetrician is prepared to remain with his patient from the first injection until labor is completed, and unless skilled help is readily available, should operative interference become necessary. Comyns Berkeley says that

he had great difficulty in procuring the necessary drugs, so he has been able to try the method in only a few cases. These showed a greater percentage of instrumental deliveries, and three of the women were most violent. J. S. Fairbairn seems to think that it should be reserved for long and tedious labors, and for cases presenting special indications. It certainly involves greatly increased expense to the patient. Annie McCall reports nineteen cases in detail, and considers the method of the greatest value in some cases, but not suitable for general use. P. L. Giuseppe has used the method in a large number of cases, is opposed to its use in country practice, and considers it of special value in primiparae, especially when they are nervous, or have heart lesions, and when the cervix dilates slowly. J. P. Hedly thinks it most useful when the first step of labor is tolerated badly, and when it seems likely to be long. He never gives the initial dose in the second stage, as the chances of a good result are small and it makes the babies blue and sluggish at birth. M. W. Kapp urges its adoption as safe and simple, so it can be used in humble as well as in wealthy homes. He thinks it cheap and practical.

**Treatment of Poisoning by Asphyxiating Gas.**—P. Sisto (*Riforma medica*, November 20, 1916) remarks that in the Italian army prophylaxis consists in providing those exposed to the gas with masks having layers of gauze impregnated with aqueous or glycerinated solution of potassium carbonate, sodium carbonate, or hyposulphite which have the power of fixing chlorine, bromine, and acid gases in general. After exposure the actual treatment consists of inhalations of oxygen and subcutaneous injections of camphorated oil and ether, hypodermoclyses, and venesection. Bloodletting is best done with the lance rather than the needle on account of the ready coagulability of the blood. Digitalis was of great service especially in the graver cases.

**Some Surgical Considerations Concerning the Operation for Goitre.**—H. B. Epstein (*American Journal of Surgery*, January, 1917) states that the operation for the relief of goitre calls for the following important considerations the observance of which has largely contributed to the success attained in the modern operation for thyroidectomy:

1. The collar incision should be of sufficient length to permit a free dissection, the ample space giving the surgeon better exposure and making the procedure safe.
2. The choice of alert assistants, for rapid hemostasis is essential. This together with speed saves the patient from unnecessarily long anesthesia, too much handling, and shock.
3. After separating the fibres of the sternothyroid muscle, keep close to the gland throughout the separation. If necessary, the sternocleidomastoid muscle may be cut across to give better exposure to the parts, the ends being sutured after the gland is removed. Care should be exercised to avoid the spinal accessory nerve.
4. Careful dissection of the posterior and lateral borders in order to avoid injury to the carotid sheath or the inferior laryngeal nerves.
5. Be sure to expose freely the upper pole of the gland so that a safe ligation may be performed with a generous pedicle. If necessary, cut the transverse layer of the deep cervical fascia.

**Tonsillectomy during the Course of Acute Rheumatic Fever.**—Morris (*Journal of Laboratory and Clinical Medicine*, December, 1916) reviews briefly the literature dealing with the relationship between tonsillitis and acute rheumatic fever. In particular he discusses those articles which deal with operative treatment of the tonsils in such conditions. The general tendency has been to defer operation until the arthritic condition, as well as the tonsillar, has quieted down. Morris, however, believes that there may be certain dangers in waiting. If the tonsils are the source of infection, there is not only the possibility but the probability that secondary involvement of the heart may occur. As a result of his limited experience he believes that when there are no longer any visible indications of an acute inflammation of the tonsils, the danger of allowing them to remain is probably greater than that of removing them. Before operating, he advises the use of salicylates in full doses so as to relieve the pain in order to allow more freedom of motion.

**Vein Ligation in Infectious Thrombosis.**—Hoseman (*Medizinische Klinik*, November 5, 1916) says that as a prophylactic and curative measure in cases with infectious thrombosis, or in which such a thrombosis is to be feared, the ligation of the main venous trunk at a point above the thrombus and in an entirely normal area has proved of great value. The operation itself is very simple and prevents the dislodgment of thrombi carrying infection and their passage as emboli into the vital organs. The ligation of the vein often has a strikingly beneficial influence on the infection of the extremity by the production of an effective and prolonged state of hyperemia. In certain cases the treatment may be extended by the incision of the vein and evacuation of the thrombus followed by lavage and drainage. Such an operation is specially advisable in cases about the head in which there is danger of an infective thrombus extending into the internal carotid artery where it would almost certainly be fatal.

**Endometritis.**—R. C. Henderson (*Journal Kansas Medical Society*, January, 1917) states that the prime essentials in the treatment of endometritis are the removal of the cause and the proper curettage of the uterus. The latter measure may not be possible in every case, under which condition resort must be had to local treatment of the uterus, combined with efforts to build up the patient's general health by rest, exercise, and diet. The local treatment should comprise the use of a vaginal douche of one to 4,000 bichloride of mercury followed by one of normal salt solution. The vagina should then be mopped dry and the endometrium painted with tincture of iodine, Monsel's solution, or phenolated camphor, the latter of which usually gives very good results. Multiple punctures of the cervix may be required if there is much congestion, and erosions of the cervix or vagina should be touched with the solutions just mentioned. If the disease be gonorrhoeal, phenol or ten per cent. solution of silver nitrate should be applied. A large cotton tampon saturated with glycerin or glycerin and ichthylol should be introduced and retained for forty-eight hours. After its removal the patient should douche

with normal salt solution and return for examination once weekly or oftener if necessary. Where there is uterine malposition the effort to correct it by the use of tampons or a properly fitting pessary should be made. Many cases of endometritis can be cured by the employment of the methods just outlined and many others can be materially benefited, but the results are less favorable than those which follow proper curettage.

**Treatment of Lambliæ Infections.**—Clifford Dobell and George C. Low (*Lancet*, December 23, 1916) state that they have investigated the effects of several of the most widely recommended drugs for the removal of *Lambliæ intestinalis* from the intestine of man. They made their studies upon a single especially suitable case, free from other forms of parasitic infection and otherwise in normal health. They first found that a few stool examinations cannot be taken as criteria of cure of this infection, for in a series of daily stool examinations without treatment this patient had intervals of from one to ten days during which his stools were entirely free from *lamblia*. He was then tried, successively, on betanaphthol with bismuth salicylate, methylene blue, turpentine, and guaiacol carbonate. None of these drugs had any influence on the passage of *lamblia*, except in some cases to increase both the number of the parasites found in the stools and to make their occurrence much more frequent for a considerable period of time. Methylene blue also had the further disadvantage of producing rather troublesome toxic symptoms. Other cases were studied which had received emetine hydrochloride hypodermically, emetine bismuth iodide, bismuth subnitrate, thymol, salol, kerol, cyllin, and liquid paraffin, all without any influence upon the infection.

**Treatment of Trachoma.**—W. W. d'A. Carhart (*Medical Record*, January 6, 1917) divides trachoma into three types, papillary, follicular, and mixed, and the treatment into medical and surgical. In medical treatment five per cent. copper citrate ointment with gentle massage is better than the old copper sulphate or bluestone applications. Some oculists rub in a one to 500 or one to 300 solution of bichloride of mercury after cocaineization, while nitrate of silver one half to two per cent. may be used in follicular cases taking care to avoid argyrosis by intermittent treatment. Carhart likes twenty-five per cent. argyrol in follicular cases other remedies are solutions of permanganate of potash, ichthylol, itrol, iodoform, and aristol. Electrolysis, radium, and the x ray have given variable results. Exacerbations are treated as any acute conjunctivitis by copious warm boric acid cleansing, weak bichloride solutions, argyrol, or protargol. Surgical treatment aims at removal of the follicle bearing tissue of the eyelid, and expression, grattage, and similar methods should be limited to nonvascular types of the disease. Trachoma complicated with corneal involvement or pronounced vascularization should have persistent medical treatment followed if necessary by a Heisrath Kuhnt tarsal excision if necessary. This operation carefully performed at the first suspicion of corneal ulcer of pannus will prevent the development of these complications and it also removes the adenoïd layer of the lid with the trachoma follicles.

**Tickling Cough.**—A. Kinsey-Morgan (*Lancet*, December 23, 1916) commends the use of codeine for the relief of tickling cough, especially that which follows influenza, tuberculous laryngitis, etc. For this purpose he prescribes it in the following mixture:

R Codeine	0.1
Acidi citrici	0.3
Syrupi tulitani	
Syrupi pruni virginianae	10.00
Aque	

M. et S. One teaspoonful.

**Treatment of Extrauterine Pregnancy.**—E. MacD. Stanton (*Medical Record*, December 23, 1916) believes in delayed operation only if the patient is in such collapse as to be unable to stand any operation whatsoever, but that these patients in the tragic stage stand anesthesia and operation better than any other cases with similar blood pressure and pulse. He does not believe in removing the opposite tube to prevent a second extrauterine gestation as such cases have a good chance of subsequent normal pregnancies. Hysterectomy as a preventive measure is unjustifiable, drainage is seldom advisable, while transfusion of blood gives brilliant results.

**The Milne Treatment of Scarlet Fever.**—M. del Prado y Lara (*La Cronica Medica*, November 19, 1916) considers that this method of treatment converts the disease into a benign condition, renders it noncontagious, shortens the duration, prevents complications, and renders quarantine unnecessary. The treatment consists of painting the pharynx and tonsils every two hours during the first twenty-four hours with ten per cent. phenol in olive oil; inunction of the entire body with oil of eucalyptus morning and evening for four days, then once daily for six days more; and surrounding the head and chest with gauze to prevent broadcast dissemination of infective particles by coughing.

**Modern Problems in the Treatment of Cancer with the X Rays.**—Max Steiger (*Korrespondenz-Blatt für Schweizer Ärzte*, December 9, 1916) advocates the use of the x rays after every operation for cancer, as well as for inoperable cases. He asserts that ninety-eight per cent. of the myomas treated by the x rays were cured or greatly improved, and that one hundred per cent. of cures were obtained in the hemorrhagic troubles of the climacteric. Great satisfaction also followed this treatment in tuberculous glands of the neck, tuberculous peritonitis, and pruritus vulvi et ani. But every operable cancer should be operated on. He compares irradiation from radioactive substances, such as radium and mesothorium, with the x rays, and says that the gamma rays of the former, which are least in number, are identical with the latter, and states that they have a selective action on cancer cells. Yet in another place he gives the wave length of the gamma rays of radium as shorter than Röntgen rays. He speaks favorably of the Coolidge and Lilienfeld tubes as approaching the needed type, but disapproves of aluminum as not heavy enough for a filter. He uses a zinc filter 0.5 mm. thick, which holds back the soft rays better and allows more of the hard rays to pass.

**Operations on the Uterus and Vagina Without an Anesthetic.**—Henry A. Wade (*Medical Record*, December 23, 1916) states that there are certain areas in the female genital tract which are poorly supplied with nerves, such as the mucous membrane of the fundal and cervical portions of the uterus, and the anterior and posterior walls of the vagina. Conditions amenable to operation without either local or general anesthesia are fundal or cervical endometritis, cervical lacerations, procidentia uteri due to hypertrophy of the cervix or to increased calibre of the vagina, acute flexions of the uterus, cystocele, and rectocele.

**Beriberi.**—G. Marshall Findlay (*Practitioner*, January, 1917) finds that the main line of treatment in this disease must be to supply the deficiency of vitamine. Even in slight cases the patient should be kept in bed for some days, and great care should be taken with the diet. Yeast, in virtue of the large amount of vitamine it contains, should be included in some form. Dried yeast may be stirred up with milk to form a paste, and this, when sweetened with sugar, makes quite a palatable dish. Substitutes for yeast may be found in porridge, oats, and pea soup, while raw, or lightly cooked eggs are of great value. The special symptoms of the disease require treatment. Strychnine or digitalis should be given for the cardiac condition, while adrenalin is of service in cases of syncope. Massage and electricity are required for the neuritis. Prophylaxis is of the greatest importance, since, with proper precautions as to diet, there appears to be no reason why beriberi should not vanish.

**Fly Poisons.**—Earle B. Phelps (*Dominion Medical Monthly*, January, 1917), as a result of laboratory experiments, has found that there are two substances which possess the requisite properties of safety and efficiency to act as a muscicide. They are formaldehyde in a one per cent. solution, which is equivalent to a two and one half per cent. solution of the ordinary forty per cent. solution, in which form it is usually sold. If used in stronger solution, the odor repels the flies. Sodium salicylate is also used in a one per cent. solution. It possesses the advantages of easy preparation, of being a solid which does not lose its strength, and which can be kept in a concentrated form. Both formaldehyde and sodium salicylate do not lose their efficiency at lower temperatures nearly as rapidly as do the arsenical preparations which enter into the composition of most of the flypapers at the present time. For household use the solutions are prepared by adding three teaspoonfuls of either the forty per cent. solution of formaldehyde or the same quantity of powdered sodium salicylate to a pint of water. Nearly fill a glass tumbler with the solution, place over this a piece of blotting paper cut to circular form and somewhat larger in diameter than the tumbler, and over this invert a saucer. Invert the whole device and insert a match or a toothpick under the edge of the tumbler to allow access of air. The blotting paper will remain in the proper moist condition until the entire contents of the tumbler have been used. A little sugar sprinkled upon the paper will increase the attractiveness of the poison.



# Miscellany from Home and Foreign Journals

**Anaphylactic Action of Grains on the Respiratory Tract.**—J. A. Turnbull (*Boston Medical and Surgical Journal*, December 28, 1916) says that the proteins of grain have a distinct anaphylactic action on the respiratory tract in some individuals, which manifests itself in various ways in different parts. The entrance of these foreign proteins is through the gastrointestinal and respiratory tracts. Boiling increases the action of these proteins. High temperatures of from 300 to 500° F. will destroy their anaphylactic properties for many, but even after 500° F. for half an hour there remains an anaphylactic protein to which some are sensitive. The cutaneous test is a valuable means of diagnosing the foreign proteins to which individuals are sensitive. He presents tables that show the skin reactions obtained from wheat, barley, oats, corn, and rice, with reports of fifteen cases in which respiratory troubles were occasioned by these grains. The best place to make the test is the flexor surface of the forearm. The test material, whether liquid or powder, is applied to the skin, and a linear incision is made in the skin through it without drawing blood. Positive reactions appear in from two to twenty minutes in the form of a wheal, of a wheal and hyperemia, or of hyperemia. The onset of the reaction is accompanied in many cases by burning and itching sensations, which the patient is unable to locate until later.

**Thymus Disease in Children.**—H. B. Sheffield (*Archives of Diagnosis*, October, 1916) believes that genuine hypoplasia or hyperplasia of the thymus is due either to a primary congenital anomaly of this organ or develops later secondarily to changes in the thyroid or other lymphatic gland. In the cases attributed to lung and heart disease, pertussis, rubeola, protracted malnutrition, etc., the manifestations are only transient in character. The syndromes arising from thymic hypoplasia or hyperplasia are not as hard to recognize as was formerly thought. Hypoplasia, by inducing a reciprocal diminution in the thyroid secretion, produces arrest of growth, frailty of the bones, general debility, and lowered mental capacity, as exemplified in infantilism, particularly the Brissaud and Lorrain types. In thymic hyperplasia, the signs differ both according to the degree of enlargement and the functional activity of the thymus. Thymic hypertrophy may not be associated with increased function of the gland, which may, instead, be functionally incapacitated. Even where thymus secretion is excessive the symptoms caused vary greatly. Through a corresponding increased activity of the thyroid the symptoms may be confined to those of hyperthyroidism, viz., tachycardia, insomnia, altered disposition, abnormal perspiration, often slight exophthalmos, and possibly struma. In other thymic hyperplasia cases, examination reveals nothing but a few signs of rachitis or scrofulosis, in spite of which death may inexplicably occur from mild causes such as a serum injection, narcosis, or a minor operation (status lymphaticus). No definite signs characterize this condition either during life or at necropsy. In another group of

cases of thymic hyperplasia percussion reveals marked dullness over the upper portion of the sternum, particularly to the left as low as the second rib and often also to the back between the scapulae. In addition, there are swollen lymph glands in the lower lateral region of the neck, which may sometimes be seen to continue deeply down between the clavicle and the side of the sternum. In long standing hypertrophy, secondary manifestations, such as dilatation of veins of the neck, dislocation of the heart, accentuation of auscultatory signs of the heart and lungs, and arching and distention of the thorax, may be detected. The thymus occasionally becomes palpable as an arched elastic swelling in the midline above the incisura sterni. Thymus enlargement is distinctly discernible with the Röntgen rays. Encroachment on the thyroid, vessels and nerves, trachea, and bronchi cause signs special to each. As a rule, the symptomatology is essentially that of cardiac asthma (asthma thymicum).

**Icterohemorrhagic spirochetosis in France.**—L. Martin and A. Pettit (*Presse médicale*, December 14, 1916) report, in addition to experimental work with the virus of this disease, two cases seen in France, the one in a physician who had handled the virus in the laboratory, and the other in a French soldier. No less than fifty-two cases of this disease, chiefly prevalent in Japan, have lately been met with by various observers in the Anglo-French armies. The clinical diagnosis of the condition is difficult, differential features being afforded neither in the hemorrhages, which are inconstant, the temperature curve, in which recrudescences may be wanting, the jaundice, which varies markedly in intensity and tint, nor the condition of the conjunctiva, congestion of which may be absent. A striking symptom, however, is the early, frequent, and intense myalgia. An infection featured by sudden onset, pronounced fever—39° to 40° C.—marked typhoid state, more or less intense icterus, backache, myalgia, especially in the calves of the legs, and joint pains suggests a spirochetosis, the diagnosis of which is to be confirmed by microbiologic methods. The best test in cases not too far advanced consists in injection of the patient's blood and urine into a guinea-pig, which will succumb in four to eight or more days with icterohemorrhagic symptoms, edema, and adynamia. In later cases, somewhat inferior tests include the reaction of deviation of the complement and the reaction of neutralization—the latter carried out by mixing serum from the patient with an otherwise rapidly lethal dose of the virus and injecting it into the guinea-pig. From the prophylactic standpoint, careful disposal of the urine and feces of the patients are of great importance. In the treatment, arsenicals seem to have proved a failure, in spite of the identity of the virus as a spirochete. The usual measures for infectious jaundice are indicated, stress being laid on buccal and colonic washings, together with hot baths and adrenalin. The authors have prepared a horse serum which in guinea-pigs gives distinct curative results.

**Neurasthenia cordis.**—Kurt Singer (*Medizinische Klinik*, November 19, 1916) emphasizes the difficulties which arise in making correct diagnoses of neurotic cardiac disturbances, as distinguished from certain organic forms of heart disease. In addition to the importance which must be placed upon the presence of general neurasthenic symptoms, two features stand out as especially helpful in deciding in favor of the condition being of nervous origin. One is the almost constant association of Head's hyperesthetic areas for the cardiac region with the neurasthenic heart. The second is the fairly frequent occurrence of an increased vagus effect upon the heart, which can best be elicited by making the patient exercise a few moments by bending the knees and then stopping at once in a squatting position with the head bent forward. The only fallacy in the use of the latter test is its not infrequent occurrence in neurotic persons who have no cardiac symptoms.

**Toxic Effects of Urea.**—A. W. Hewlett, Q. O. Gilbert, and A. D. Wickett (*Archives of Internal Medicine*, November, 1916) point out that in the increase of nitrogenous substances in the blood, which not infrequently occurs in the later stages of nephritis, the urea shows distinctly the greatest increase among these nitrogenous substances. Five experiments were performed, including four upon the authors themselves, in which one hundred grams of urea, dissolved in water, were taken by mouth, either in a single dose or in doses divided over a period of from three to six hours. It was found possible thus to increase the concentration of urea in the blood from the normal of 0.04 to from 0.16 to 0.245 gram in 100 c. c. At such levels of urea definite symptoms occurred, consisting of headache, dizziness, apathy, drowsiness, bodily weakness, and fatigue. These symptoms are comparable to those encountered in the asthenic type of uremia. For every gram of excess urea in the body there is a rise of concentration in the blood approximating 0.0025 gram in 100 c. c.

**Traumatic Periosteomas.**—Rocher (*Presse médicale*, December 14, 1916) reports nine cases of this condition following tangential injuries of bones by bullets or shell fragments, with contusion, abrasion, or rupture of the osseous tissue. Sometimes large, these periosteomas resulted at times from the traumatism alone, at others from the traumatism followed by infection, the irritated periosteum producing new bone in the zone of contusion. In three cases the growths developed behind the great trochanter; in two, at the lesser trochanter, and in one each, in the deltoid region, middle third of the humerus, neck of the radius, and iliac crest. The periosteoma was shaped like a triangular spur or a pedunculated cauliflower, or was ovoid, rounded, and flat, or of indefinite shape. Some periosteomas showed perforations or deep depressions containing fungus outgrowths. Some were formed of compact, others of spongy bone. The treatment consisted of enucleation, either en bloc or by morcellation. Plenty of tissue was removed to obviate recurrence, and the area was finally painted with zinc chloride solution.

**Dysentery Carriers.**—A. M. Kennedy and D. D. Rosewarne (*British Medical Journal*, December 23, 1916) state that they made routine stool and urine examinations on several hundred convalescents from typhoidal or dysenteric conditions to discover the presence of carriers. A total of about 5,000 examinations were made. Only six carriers of bacillary dysentery were found among the whole number, three of *Bacillus dysenteriae* Y, and three of Shiga, one of the latter also harboring *Entamoeba histolytica*. These cases had carried the organisms from four to seven months. One Shiga case gave a positive agglutination reaction, and two of the Y cases agglutinated a known strain of that organism in high dilution, but failed to react against their own organisms. Twenty-four carriers of *Entamoeba histolytica* were found, one being in a man who had never been out of England. The time during which the parasites had been carried varied from two and one half months to thirteen years. Less than half had received emetine in the early stages of their illness. Eleven of the patients harbored *Lambliia intestinalis* as the sole organism, and in the majority in the encysted form. Several of these cases had had more or less chronic intestinal disturbances, at which times flagellate forms of the parasite were present in the feces. Contrary to the general view, they believe that this parasite may be pathogenic for man. No drug was found to have antiparasitic properties against *Lambliia intestinalis*, the most satisfactory treatment still being the repeated administration of small doses of calomel combined with a morning saline.

**Bacillemia Due to *Bacillus faecalis alkaligenes*.**—C. H. Shearman and T. G. Moorhead (*British Medical Journal*, December 30, 1916) report on the observation of cases suffering from infection by the *Bacillus faecalis alkaligenes* from both the bacteriological and clinical aspects of the condition. This organism has not been recognized as infective to man, except in a few rare instances, but one of the authors secured pure cultures of it from the blood of a number of men suffering from conditions originally diagnosed as enteric infection—that is, infection with *Bacillus typhosus* or one of the paratyphoids. Not only could it be isolated from the blood in pure cultures during the height of the febrile period, but it could be shown that the blood of such individuals was capable of specifically agglutinating the organism in relatively high dilution. Blood from others and from normal persons did not agglutinate the organism. Positive cultures could be secured only during the initial febrile period. The differential diagnosis of this disease is possible only by means of blood culture or agglutination tests. The onset was usually sudden with slight chill, severe headache, general aching of the limbs, nausea, and often vomiting. There were also abdominal pain and constipation. Aside from a coated tongue, slightly elevated pulse rate, and some degree of fever, the physical examination in these cases was negative. The fever would reach 102° F. and last for two to five days, falling to normal by lysis. Often there was an interval without fever followed by a second febrile period during which all of the symptoms returned.

**Filariasis.**—Marcus W. Lyon, Jr. (*Journal A. M. A.*, January 13, 1917) relates the histories of two cases of infection with *Filaria bancrofti* and reviews the 142 cases reported for eastern North America. He points out that of 135 cases with full records, no less than 104 acquired their infection in the United States; that the disease is distributed from Canada to the Gulf of Mexico and from Boston to St. Louis; that there is an endemic focus in Charleston, and probably there are foci in other Southern locations; and, finally, that the disease is probably communicated by the mosquito, *Culex quinquefasciatus*, which is a city and house insect with wide distribution extending as far north as Washington, D. C., and St. Louis.

**The Function of the Pituitary Body.**—William Boyd (*Journal A. M. A.*, January 13, 1917) briefly reviews the functions of the two lobes of this structure, particularly those of the posterior lobe. He also points out that the histology of this lobe is not such as to suggest that its secretion reaches the blood stream directly through its own blood supply. It is well known that the infundibular process extends into the posterior lobe in some animals and that globules of the colloid secretion of the lobe make their way into the infundibulum. It has further been proved that the spinal fluid produces effects, when injected, which are similar to those produced by extracts of the posterior lobe. These observations have pointed to the infundibulum, third ventricle, and spinal fluid as the course by which the secretion finally reaches the blood stream. He cites a case which seems to support this view in a striking manner. The patient suffered from symptoms characteristic of the lack of posterior lobe secretion and on autopsy it was found that there was no pathologic lesion of this lobe, but that a tumor encircled its stalk, completely cutting off its communication with the third ventricle by way of the infundibular process.

**The Histopathology of the Autonomic Nervous System in Certain Somatic and Organic Nervous Diseases.**—Mary Elizabeth Morse (*Journal of Nervous and Mental Diseases*, January, 1917) reports a study of the thoracolumbar, semilunar, and intestinal ganglia of seventeen cases in connection with the central nervous system and the ductless glands. The cases were as follows, two each of pellagra, senile dementia, paresis, cerebral syphilis, generalized arteriosclerosis, and one each of pernicious anemia, imbecility plus mitral insufficiency, dementia præcox plus lobar pneumonia, alcoholic dementia and generalized tuberculosis, manic depression and carcinoma of the stomach, involutional depression, and katatonic hirntod. In no instance were the ganglia normal, though the changes were rather insignificant in the cerebral syphilis cases; in the others well marked or severe lesions were found. The conditions found may be grouped as acute and chronic degenerative changes in the nerve cells, and exudative manifestations in the stroma. Chronic degenerative changes in the ganglion cells predominated in the chronic organic nervous diseases, and were also found in ganglia in the vicinity of organs showing chronic lesions. Acute changes predomi-

nated in the case of katatonic hirntod, and in the local ganglia in certain pathological conditions, valvular heart disease, acute enteritis, and peritonitis. Both acute and chronic conditions, and those which might be either, were present in pellagra, pernicious anemia, tuberculosis, and involutional depression. In several instances the lesions were not universally distributed, but were limited to ganglia in the vicinity of affected structures. The cases showing universal incidence of lesions include those showing diffuse organic disease of the central nervous system—pellagra, pernicious anemia, arteriosclerosis, paresis, senile dementia, and katatonic hirntod; also involutional depression, disseminated visceral disease, and tuberculosis. Those showing a localized distribution were in apparent relation to visceral lesions. The group that showed notable exudation overlapped the other two and included those showing plasma and endothelial cells, a noteworthy number of lymphocytes, and mast cells, or serous exudate.

**Serum Reaction in Epidemic Cerebrospinal Meningitis.**—Ubaldo Gasperini (*Riforma medica*, December 4, 1916) declares that whereas the Weichselbaum meningococcus is not found in the spinal fluid in all cases of this condition, the precipitatoreaction is constantly present and is specific for this type of the disease. It is absent in tuberculous meningitis, in the meningitic phenomena of the common infectious diseases as well as in the normal spinal fluid.

**Bad Teeth and Their Effects on Efficiency.**—Carl E. Smith (*Journal A. M. A.*, January 13, 1917) presents some striking figures as the result of 30,000 mouth examinations, made on 17,000 Americans and 13,000 foreigners. Only four per cent. of the whole number had clean, healthy mouths, nine per cent. were without cavities, and ninety-six per cent. required some form of dental service. In the total number of cases about 60,000 cavities were found, 40,000 teeth had been extracted, and 18,000 extractions were necessary. The presence of a cavity in a tooth is a source, in his experience, both of inefficiency and of actual monetary loss to a laboring man, for an aching tooth impairs his working capacity and may cause him to be absent from his work on several occasions. If neglected it will certainly lead to the formation of an abscess or to the involvement of other teeth and to the impairment of digestion through interference with proper mastication. It is a conservative estimate to state that each diseased tooth will cost the man two dollars, through waste of time and cost of repair. The trouble should not be attacked by examination of adults and restoration of their mouth to a normal state, but rather it should be attacked from a preventive standpoint. This prevention should not be delayed until the time of routine school examination, but should antedate it to the extent of beginning in infancy with the cutting of the first tooth. In New York city eighty per cent. of the failures of promotion of children in the public schools could be laid to defective teeth. The vast importance, from an economic aspect, of the proper prophylactic and therapeutic care of the teeth is emphasized by the figures just cited.



# Proceedings of National and Local Societies

## NEW YORK ACADEMY OF MEDICINE.

*Stated Meeting Held December 7, 1916.*

The President, Dr. WALTER B. JAMES, in the Chair.

**The Nature of Pneumonia and the Serum Treatment.**—Dr. RUFUS COLE said that if pneumonia occurred occasionally in epidemic form with the same severity that it occurred every winter in New York, it would cause great consternation and alarm. At the present time there were 6,000 deaths here every year due to lobar pneumonia alone, to say nothing of bronchopneumonia. There were several reasons for sufficient attention not being given to the prevention and cure of this disease. One was that the impression prevailed that pneumonia mainly affected the unfit, the aged, and the alcoholic; yet over half the cases occurred between the ages of twenty and sixty and in the healthy and strong. A second reason was that it was felt that the mode of infection was little understood, and without this knowledge no preventive measures could be instituted, and that the treatment as at present carried out had little effect on the outcome. However, new facts were being discovered and it was probable that the time was not far distant when definite improvements in methods of prevention and cure would be made effective.

Most cases of pneumonia were caused by pneumococci. Previously it was thought that all pneumococci were identical, but it was now known that there were at least four types of the organism. Over 500 cases of pneumonia had been studied for the purpose of determining the relative frequency of the different types of infection. The results showed that sixty to sixty-five per cent. of all cases were due to pneumococci of Types I and II, while ten to fifteen per cent. were due to pneumococci of Type III, the remaining twenty-five per cent. being due to pneumococci belonging to Type IV.

Studies were also made to determine the frequency of occurrence of the different types in mouths of normal persons. On examination of the sputa of 527 people, 254, or about half, showed pneumococci. They were of the atypical or Type IV in about seventy-five per cent. In seventeen per cent. the pneumococci were of Type III, while, on the other hand, in less than twelve per cent. they were of the so called fixed types, I and II. In practically all the instances in which organisms of these fixed types I and II were found in normal mouths, it was possible to trace a close association between the persons harboring them and a case of pneumonia of the same type. Pneumococci of Types I and II tended to disappear from the mouth after a short time, just as they did after a convalescence from pneumonia.

The interpretation of these facts seemed to be that pneumonia due to pneumococci of Types I and II were to be considered as specific infectious diseases, just as were typhoid and paratyphoid fever; pneumonia infection occurred by transference of the organism from a previous case, either directly or through a healthy carrier. In pneumonia due

to organisms of Type IV infection was probably autogenous. The interpretation of the conditions as regards pneumonia of Type III was difficult; these were organisms of high virulence, yet were quite widely distributed in healthy mouths, and, so far as was known, there was no difference, immunologically or otherwise, between the organisms of this type found in healthy mouths and those found in disease.

Isolation of cases of pneumonia of Types I and II should be more strictly observed than had previously been done. With the present knowledge, it was not possible to have an opinion as to whether isolation of cases due to pneumococci of Type III would be of any value or not. So far as isolation with infection of Type IV was concerned, it would probably have no effect. While the matter of type difference was of importance as regarded epidemiology and prevention, it was of still greater importance in regard to the matter of specific cure. Specific treatment might be carried out in one of two ways: Use might be made of so called immunity reactions, or drugs having specific harmful action on the invading bacteria might be employed. The only drug of the latter kind was optochin, of which Doctor Chesney would speak. The use of the immunity reaction to hasten recovery might be made in one of two ways: First, an attempt to stimulate the infecting organism itself to produce the immunity reaction more rapidly and to a greater extent than would naturally be the case under the influence of the infection alone. The only method at present for doing this would be by the administration of vaccine, but little could be hoped for from this method in an acute disease like pneumonia. The second method by which immune reactions might be made helpful was by the administration of the serum of animals rendered immune to this disease, and this had been the method employed by the speaker.

On account of the specificity of types it was manifestly necessary to determine in each case the type of infecting organism before serum treatment could be commenced. The speaker had a method for doing this. While laboratory facilities were necessary and for each case a mouse was sacrificed, the method was not difficult and could be carried out by any properly equipped laboratory. Moreover, from the standpoint of prognosis alone such a determination of type was of great importance. Immune horse sera had been prepared against the three important types, I, II, and III. The serum against pneumococci of Type I was of high power. That of Type II was considerably less powerful, while that of Type III had very little effect, either in the test tube or in experimental animals. So far no attempts had been made to treat patients with Type III infection with serum. A limited trial had been made with serum against pneumococci of Type II, but the results had not been promising. The use of immune serum against infection with organisms of Type I, however, had given very gratifying results and experience indicated that with proper

use this serum had great therapeutic value. In the hospital of the Rockefeller Institute seventy-eight cases were treated, with six deaths. The mortality was twenty-five per cent. due to Type I infection, before the serum was commenced, so that it was evident that the serum was of considerable value. Of the six fatal cases, one died on the fifty-third day following pneumonia from general streptococcus infection; one during convalescence from pulmonary embolism; three were treated only on the day of death, late in the disease, leaving but one case that received treatment over two days and that could be said to have been fairly treated.

In order to obtain the best results certain rules must be observed. First, serum must be given in large amounts intravenously and its administration must be commenced as early in the disease as possible; its use must be continued until infection was definitely overcome. Before administering the serum a small dose of normal horse serum should be given subcutaneously in order to desensitize the patient in case he was sensitive to horse serum.

Among the treated cases the incidence of empyema had been greater than in the untreated cases. This probably meant that in a large number of the cases, otherwise fatal, the infection was localized, instead of becoming general. This corresponded to what was known of the course of infection in partially immunized animals. Clinical experience suggested that the serum had some antitoxic action, but methods for demonstrating this were at present unknown. The fact that this serum was effective made it theoretically possible that refinements in technic and improvements in the method of producing the serum might also later make the immune serum effective in infections due to the other fixed types.

**The Use of Digitalis in Pneumonia.**—Dr. ALFRED E. COHN said that apart from the intoxication due to pneumonia itself, it was a matter of general knowledge that death might occur from collapse. For many years, the experiments of Romberg and his associates formed the basis for the belief that this collapse was due to vasomotor failure, and treatment was devised with the idea of stimulating the vasomotor mechanism.

Gibson placed great importance on the behavior of the blood pressure as a means of making prognoses, low pressure indicating an evil prognosis; but in recent years his clinical observations and the experimental results of Romberg had undergone review, and the work of Porter and Newburgh and Means and Minot, gave more important contributions to the knowledge of these matters and gained new viewpoints for further investigations.

Newburgh and Minot, in the first place, showed that the behavior of the blood pressure was not the valuable guide Gibson supposed, and concluded that a study of the blood pressure curve did not suggest that there was a failure of the vasomotor centre in pneumonia. Porter and Newburgh then studied the state of the vasomotor apparatus in pneumonia experimentally in animals, and concluded that the evidence they obtained proved that the vasomotor centre was not impaired in fatal pneumonia. From their experiments it was evident that if it was not the vasomotor centre which

failed, it was manifestly useless to continue to prescribe the drugs believed able to stimulate this centre and to have an effect on blood pressure, such as strychnine, camphor, caffeine, adrenalin, etc. Newburgh and Porter then studied the reaction of the heart muscle of pneumonic animals and here they found that as hearts from dogs dead of this disease contracted normally when supplied with normal blood, the heart muscle was not vitally injured. But they observed in the course of their experiments that the respiration often failed before the circulation in animals which died; and further, that if artificial respiration were supplied, the hearts would continue to beat after spontaneous respiration had failed. When they came later to examine the respiratory mechanism, they found that this was injured, for its reaction to carbon dioxide was much diminished.

Now if, as had been shown experimentally, the heart was not extensively injured in pneumonia, it should be possible to influence it in the same way that nonfebrile hearts could be influenced. If that were so, it was a matter of the first importance, for, as would be shown in a special instance, in the course of the disease the heart might require support. In so far as the most valuable drug known for aiding the heart was digitalis, this study for the present was confined to its action in detail.

Two years ago the speaker had demonstrated to the Academy that one could tell that digitalis was acting before the onset of symptoms disturbing to a patient. The evidence for this consisted primarily in a change in the T wave of the electrocardiogram. At about the same time when this change took place the P-R interval began to lengthen, but usually the T wave change came first. These criteria were applied to a study of the action of digitalis in pneumonia and as a result the evidence could not be proven. Physicians were divided in opinion about the usefulness of digitalis, so it seemed best to show first that the drug acted and in the second place that it acted beneficially.

1. The first change looked for was in the T wave; it required about 1.0 gram at 0.4 gram a day; it might be possible to accelerate this. Charted statistics showed: a, pneumonia, in fever, with enough digitalis, changes occurred; b, pneumonia, in fever, with no digitalis, no changes occurred.

2. Additional evidence that digitalis acted in pneumonia related to its effect on conduction. When digitalis was given the P-R interval lengthened and the lengthening might go on to the production of heart block. Without digitalis the experiments showed no instance of heart block in about 500 cases. Those cases in which it had been reported that heart block took place bore out this contention, for with a single exception all had a sufficiency of digitalis. Block did not occur until a sufficiency had been given. When it occurred it did no ultimate harm. It should usually be possible to avoid it.

3. In the third place, evidence that digitalis acted could be obtained when it was given to patients who either had auricular fibrillation or in whom it developed in the course of pneumonia. a. It was not infrequent—12 in 123, or 9.7 per cent. b. When it occurred, the pulse rate rose immediately, high

enough to alter the prospect of recovery. c. Non-febrile cases of auricular fibrillation responded to digitalis by a fall in the  $V_s$  rate. If it acted the same way in pneumonia a similar result could be expected when giving the drug. From the evidence it was possible to state definitely that digitalis acted.

The evidence in the first eight cases showed: 1. Rate fell. 2. Rate fell to, or lower than, the first S. R. 3. Finally, with three exceptions, A. F. gave way to S. R. The rate in A. F.—in three at least—was lower than the second S. R.

There were several additional matters. Fever was present when these observations were made and did not interfere with the digitalis action. Auricular fibrillation might develop spontaneously in pneumonia; digitalis was not responsible. Auricular fibrillation might disappear even after digitalis had been taken. Auricular fibrillation, if controlled, was not fatal. Even when the disease proved fatal, patients had recovered from the irregularity before death.

As a result of these experiments it had been concluded that digitalis did not harm and it might be lifesaving. Therefore, for the time being, in the Rockefeller Hospital the following rules had been adopted: 1. Digitalis was given to all patients as a routine. 2. If patients were treated early they were given 1.0 gram at the rate of 0.5 gram a day. 3. If patients were not seen until later, 1.0 gram was given on the first day. 4. If an indication arose later, digitalis was given again at the rate of 0.5 gram a day until the indication was satisfied, but it was not continued beyond 2.0 grams.

This study convincingly showed, first, that digitalis acted, and, second, that under certain circumstances, which were apparently not infrequent, its action was beneficial.

**Treatment of Pneumonia by Optochin.**—Dr. ALAN M. CHESNEY said that there was no doubt that ethylhydrocuprein, or optochin, as it was known commercially, exerted a curative action in pneumonia. It was a derivative of hydroquinine and was first demonstrated by Morgenroth and his coworkers to possess a specific inhibitory action on pneumococci in the test tube. Wright showed that the blood serum of patients who had received the drug was also bactericidal for pneumococci.

A study of the time of appearance of this bactericidal action in the patient's blood after administration of the drug was undertaken in order to determine what system of doses was best adapted for acquiring this condition early and maintaining it constantly. It was desirable to establish such bactericidal action in the body as rapidly as possible in order to prevent the bacteria from becoming fast to the drug.

Specimens of blood were obtained from patients before and at intervals after the administration of the drug. The bactericidal activity of the serum was tested by the plate method upon actively growing cultures of pneumococci. The studies were based upon twenty-eight cases and were carried out in collaboration with Dr. Henry F. Moore. The results showed that a bactericidal action for pneumococci could be secured in the blood serum of patients if they were

given an amount of the drug represented by 0.024 gram per kilogram of body weight for twenty-four hours. This amount was sufficient in every case to produce the action sought for within twenty-four hours and to maintain it constantly during treatment. It was possible to divide the amounts so that the initial dose was relatively the largest and followed by small doses. Attention to the body weight was of extreme importance. The time of appearance of bactericidal action of the drug was shortened provided the first dose was relatively large and was followed at intervals of not more than three hours by smaller amounts. Thus, for an individual of average size the amount administered in twenty-four hours was 1.5 grams and during the first twenty-four hours the best method of regulation was to give an initial dose of 0.45 gram, following it at intervals of three hours by individual doses of 0.15 gram. During the second period of twenty-four hours the drug could be given in ten doses of 0.15 gram. It was best given in capsules. The hydrochloride was much more readily absorbed than the base and hence was to be preferred. The oral route of administration had been found to be more satisfactory than the intramuscular route since, for some reason, the bactericidal action appeared in the patient's serum much more quickly when the drug was given by mouth. In three cases the pericardial fluid was found to equal the blood in its pneumococidal action.

One drawback was the toxicity of the drug. Optochin might give rise to toxic symptoms, chiefly referable to the eye and the ear. In all the cases of pneumonia treated with this drug and reported in the literature, one instance of permanent blindness had resulted and temporary impairment of vision in about four per cent. Some of these cases of amblyopia received relatively large amounts of the drug. In a total of 786 cases reported in the literature, the mortality was about twelve per cent. Leschke had called attention to the importance of beginning treatment early. He collected from the literature 204 cases treated on or before the third day, with a resultant mortality of five per cent, contrasting with 119 cases treated after the third day with mortality of twenty-one per cent.

When a patient with lobar pneumonia was given ethylhydrocuprein, or optochin, by mouth there was imparted to the blood stream and also to the pericardial fluid, the property of destroying pneumococci with entire safety to the patient in the main.

Dr. DAVID BOVAIRD said that there was no disease with which the practising physician had to deal in which he had a deeper interest than in lobar pneumonia. If this interest had seemed to fail, as Dr. Cole suggested, it had been by reason of the seeming hopelessness of the efforts to treat this disease.

It was interesting on an occasion like this to look back over an experience of twenty-five years with this infection. Three principal objectives had been kept in view by the clinician: 1. Efforts to control invasion of the lung by external applications, medicine, antiseptics, and bactericides, but none of these influenced the consolidation once it had begun. 2. Controlling the effects of fever or other constitutional manifestations of the disease by hydrotherapy, drugs, and above all fresh air which at all



events contributed to the comfort of the patient. 3. Controlling the circulatory action of the disease and cardiac complications by various means such as the trinity pill—strychnine, aconitine, and digitalin; remedies for vasomotor conditions such as caffeine, adrenalin and intravenous injections of salt solution; treatment with alcohol, strychnine, and digitalis.

The one agent that had survived had been the use of digitalis. Before there was such conclusive evidence as that presented by Doctor Cohn this evening, most clinical observers were convinced of the value of digitalis and held to the use of it to a greater or less extent. Gratitude was therefore due to one who came forward to prove as a result of careful experimentation that the clinical experience, in one respect at least, was borne out.

Efforts had been made at the Presbyterian Hospital to carry out work with the serum spoken of by Doctor Cole. Out of one group of 100 cases of lobar pneumonia in adults treated just previous to this pneumococcus antitoxin, there was a mortality of thirty per cent. Within the last eighteen months fifteen cases of Type I pneumococcus had been treated in which there was a mortality of two cases, both on the surgical side of the hospital, one from empyema and the other from pneumonia alone; thirteen cases on the medical service had resulted in complete recovery. The serum had definite beneficial action. One young man of twenty-eight had right upper lobe pneumonia; temperature on the second day was 108° F. and at one time it reached 108.4°. On the fifth day he received two injections of serum, whereupon the temperature fell and remained down and two days later was normal. The man made an excellent recovery. A woman of thirty-two had right lobar pneumonia. She received the serum on the third day, temperature falling immediately after the first injection, reaching normal in forty-eight hours and remaining there. A man of twenty-five came under treatment on the day of onset. He was given the serum within thirty-six hours, receiving two successive injections on the second day. Temperature fell immediately and in forty-eight hours reached normal. Recovery practically occurred on the second day of a perfectly frank lobar pneumonia. Such experiences were enough to convince the staff that in this serum there was a remedy of very decided potency.

Dr. L. EMMETT HOLT said that in times past the gastrointestinal diseases led in the mortality of young children, but for the last six or eight years in New York the curve of intestinal diseases had fallen steadily, while the mortality from acute respiratory diseases greatly exceeded that from diarrheal diseases in children under two years. For the first ten months of this year there were but 2,642 deaths from diarrheal diseases, compared to 3,820 from acute respiratory disease. The indications were that for this year the mortality for children under two years of age would be nearly 1,300 greater from acute respiratory diseases than from gastrointestinal.

Pneumonia had thus come to be the most important disease in young children. Pneumonia of the first two years was not usually the clear cut lobar type; it was a mixed infection. While the pneumo-

coccus was present, other important organisms were found which added to the severity of the disease, greatly modified its clinical aspect and rendered it less amenable to specific treatment than the pneumonia of adults. Observations made at the Babies' Hospital indicated that seventy-five per cent. of the pneumonias in children under three years of age were associated with Type IV pneumococcus of Doctor Cole's classification. The serum treatment, therefore, afforded little prospect of great help in the treatment of pneumonia in young life because of the mixed infection and because a large proportion of the cases belonged to Type IV. Doctor Cole had shown how frequently this Type IV was found in the saliva of normal persons. The reason for the great prevalence of this infection in young children lay in their extreme susceptibility.

Dr. ARTHUR F. CHACE said that it had been of great advantage to hear pneumonia attacked from so many angles; from the standpoint of stimulation of the heart and from the standpoint of chemotherapy and serum therapy. He had been particularly impressed by the fact that medicine had been advanced much more rapidly under scientific methods of investigation than by the former methods of clinical methods of observation. This was particularly true with regard to the so called specifics in pneumonia. This was very definitely shown by a comparison of the older methods of investigating the action of quinine, salicylates, etc., clinically, with the scientific investigation of optochin.

With early diagnosis and the application of specific therapy much could be accomplished in the treatment of pneumonia. A word of warning, however, should be sounded against the use of stock polyvalent vaccines. The polyvalent vaccine offered a great temptation to the general practitioner, and emphasis should be laid on the fact that it was impossible to provide a stock vaccine that was of dependable therapeutic value. It was possible to accomplish much by using the combined action of serums and optochin.

Dr. ROBERT H. HALSEY said that he thought every one who had ever had anything to do with pneumonia would appreciate the work shown at this meeting. He was particularly interested in the remarks of Doctor Cohn in regard to digitalis. Clinicians might divide these cases, from the standpoint of the heart and circulatory apparatus, into two classes: 1, Those where the heart showed no difficulty as the disease progressed, rhythm remained regular and frequency of the heart did not go to any unusual height, the patient came out without any unusual cardiac change and it was unnecessary to use digitalis; 2, those in which the heart did show changes.

There was undoubtedly a time when digitalis was necessary and then it should be used and used promptly; but if used in every case some of them would get heart block even with small doses. It seemed unwise to put extra stress of dissociation of auricle and ventricle on a heart already burdened with a disease. Whether auricular fibrillation in pneumonia started with the disease or not made little difference, since usually it could be controlled by the use of digitalis, but it seemed as though indications for the use of digitalis should be found before resorting to it.

# AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

*Twenty-ninth Annual Meeting, Held at Indianapolis, Indiana, September 25, 26, and 27, 1916.*

The President, Dr. HUGO O. PANTZER, of Indianapolis, in the Chair.

*(Continued from page 191.)*

## Chronic Intestinal Stasis. Some Case Reports.

—Dr. WILLIAM SEAMAN BAINBRIDGE, of New York, stated that chronic intestinal stasis, or what he had often termed defective human plumbing, was increasingly being accepted as one of the fundamental causes of disease. Gradually the profession was coming to consider the condition as an entity, with far reaching results. Many of those to whom stasis and constipation were at one time synonymous were broadening their viewpoint and learning that there might be residual intestinal content doing damage to the entire organism, regardless of whether there be activity of the lower bowel or not. This was evidenced by the fact that some of the worst cases of stasis occurred in those with diarrhea.

Unfortunately, in the minds of many of the profession—happily their number seemed rapidly diminishing—intestinal stasis had been thought to indicate only one kind of treatment—the removal of a large portion of the intestine with its consequent extreme surgical risk.

Those who had given thoughtful attention to the teachings of Lane and others were recognizing the truth of the oft repeated statement that the vast majority of all cases of chronic intestinal stasis belonged to the physician, through whose prompt and proper care the necessity of seeking ultimate relief at the hands of the surgeon would be obviated. Between this overwhelmingly large group and the relatively small number of neglected patients, those far advanced in the disease, or previously treated by improper or inadequate surgery, who must have part of their plumbing removed in order to attain comparative health and not drift into chronic invalidism with attendant complications which might terminate life, there remained a midgroup. In these cases a careful application of conservative surgery to the abdomen, according to the principles of the mechanics of the intestinal canal, returned the patient to the first group, where, with medical care and reasonable attention to hygiene and dietetics, he could be restored to health and strength.

The writer, who had been for many years a close student of body plumbing, had published from time to time articles covering various phases of the subject of chronic intestinal stasis. It was his purpose in this and in a number of subsequent papers to report succinctly a series of case histories illustrative of various types of stasis treated surgically and, though brief, it was hoped these would comprise the essentials in such a manner as to present a sufficient groundwork upon which to base conclusions. "Evidence was and must be the test of truth"; as it was only by weighing the evidence in relation to methods of treatment that medical progress was possible, it was hoped that case reports which gave actual results might serve to facilitate this end.

**Tuberculous Glands of the Mesentery.**—Dr. ARTHUR T. JONES, Providence, R. I., drew these conclusions: 1. Tuberculous mesenteric glands were often a primary disease of the true tuberculous type. The bovine type was undoubtedly present in many children and without producing symptoms, the glands remaining quiescent, or having a tendency to subside. 2. It was impossible to make a correct diagnosis before operation, as a rule, unless there were palpable glands which might be felt through the abdominal wall, or by the finger in the rectum. 3. That tuberculous mesenteric glands might be present without giving symptoms. 4. There were two clinical types: (a) a slightly progressing one generally with palpable glands; (b) an acute fulminating type most often stimulating and impossible generally to differentiate from appendicitis. 5. Prognosis in the subacute stage is good without operation. In the acute stage exploratory laparotomy should be done, but glands should not be removed unless definitely indicated either from adhesions, ulceration, size of mass producing pain, or much obstruction. 6. Tuberculous glands of the mesentery might not present symptoms until breaking down began in the glands, producing symptoms of tuberculous peritonitis, intestinal obstruction, or symptoms simulating acute appendicitis. 7. In children and young adults with a history of right sided abdominal pain with or without palpable masses tabes mesenterica should always be considered as a possibility."

**The Relation of So Called Ether Pneumonia to Pelvic and Abdominal Surgery.**—Dr. WILLIAM EDGAR DARNELL, of Atlantic City, N. J., stated that for many years it was commonly taught that ether irritated the bronchi and was largely the cause of what was known as postoperative pneumonia. Such pneumonia was spoken of and still is in most hospitals as "ether pneumonia." Yet any surgeon in reviewing his experience might find many facts to disprove and few or no proofs that ether was the cause of pneumonia after an operation.

Ether was administered in most hospitals many times every day, yet the condition known as ether pneumonia was a rare occurrence compared with the number of ether administrations given. If the pneumonia were the result of the ether, we ought to expect to have many cases every week. Again, if ether produced all the havoc it had been credited with, the administration of it by the intratracheal method might almost come under the classification of criminal malpractice. Yet we knew that this was done safely every day.

Rovsing had proved experimentally that, although ether did occasion increased secretion of the salivary glands of the mouth, the larynx, trachea, and bronchi were not irritated at all, even when experimental animals were killed by administering ether through a tracheotomy tube until they were dead. The only way, therefore, that ether could produce pneumonia was by the aspiration of the accumulated saliva in the throat, usually the result of technical error on the part of the anesthetist, who should not allow the secretion to accumulate in the throat. Such secretions might, of course, be easily infected from the buccal cavity. It was quite pos-



sible under such circumstances that tonsillar infections, involvement of the nasal accessory sinuses or the teeth, might be one of the causes of postoperative pneumonia which has been attributed to ether. Attention had frequently been called to the importance of the sanitation of the nose, throat, and mouth before all operations.

If we looked on pneumonia after an abdominal operation in the same light as we did the development of a subphrenic abscess after an appendectomy, each bore the same analogy to the point of original infection. The only difference was that in the one case the new focus of infection occurred above the diaphragm and in the other beneath it, but both were brought about by the carrying of infection from the original source in the abdomen up through the lymphatics and veins by the retroperitoneal route. The idea was further strengthened by the fact that most postoperative pneumonias would show a mixed infection containing streptococci, colon bacilli, or other organisms in addition to pneumococci. On the other hand, it was often true that the appendix, the gallbladder, the Fallopian tubes, and the ovaries might be the seat of a pneumococcus infection.

It would seem proper to conclude therefore that cases of pneumonia following operations were not due to the ether. The term "ether pneumonia" should be discarded and forgotten. Postoperative pneumonia occurred with great rarity except after abdominal operations and was then probably due to an infection already existing in the bronchi or lungs at the time of operation, or to imperfect aeration and ventilation of the lungs by reason of the fear of taking deep breaths after a laparotomy, but most often such pneumonia was a secondary infection of the lung following a septic abdominal condition.

**Hospital Management and Mismanagement.**—Dr. GORDON K. DICKINSON, of Jersey City, N. J., discussed the fundamental origin of all hospitals. There was no proper definition of the term. There were three essential factors: Patients; attendance by physicians and nurses; superintendent and the board of managers. From the viewpoint of the first he discussed therapy, diagnosis, and education; from that of the second came system, red tape, economics, and autocracy. From the third, the board of managers, made up entirely of the lay public, came ignorance of the needs and the ideals of the institution, often working solely through the superintendent who had made a home of the hospital for himself. We looked for finances and encouragement, but the results were disheartening.

**The Surgeon's Responsibility to the Economics of the Hospital.**—Dr. EMERY MARVEL, of Atlantic City, N. J., said that a mutual dependence existed between the hospital and the surgeon. This relation imposed upon the surgeon the duty of guardianship for, and a responsible duty to the institution. He became, in part, responsible for the waste and abuse of its resources. He was directly responsible for loss of service and embarrassment to the organization when late for operation, dressings, or other appointments; the waste in using unnecessary or unduly expensive supplies, and for misuse of funds occasioned by encouraging expenditures for construction and equipment which did not give commensur-

ate beneficial returns. A staff surgeon must share responsibility for the neglect to utilize opportunities which, if taken advantage of, would benefit the hospital. It was his duty to inspire enthusiasm in attendants, maintain congenial atmosphere for the patients, and to teach improvements in service. It was the surgeon's opportunity to teach the patient better care for self and to give him knowledge how to prevent recurrence of the disease or injury. His opportunities for service to conserve the institution's interest were many and his responsibility proportionate.

**'Heat as a Method of Treatment in Some Forms of Cavity Carcinoma.**—Dr. JAMES F. PERCY, of Galesburg, Ill., referred to some of the historical probabilities of the use of heat in cancer, and gave briefly a résumé of his own work. In addition, he suggested the possibility of destroying cancer in the vagina, rectum, and bladder by the continuous application of a bearable or a supportable degree of heat without the use of a general anesthetic. He gave this degree of heat as from 49° C. to 60° C. He pointed out the difficulty of treating cavity carcinoma, especially that of the vagina, because of its usual lack of bulk or mass, as there was not enough tissue through which heat could be disseminated. If the ordinary pasteurizing temperature, delivered through the Percy cautery, was used, too much destruction of normal tissue cells might result from the treatment. If the parts were thin and the cancer disseminated, and not in mass, the author had found in two cases that the continuous application of the above mentioned degree of heat caused in one case a local disappearance of the growth, and in the other, also a vaginal case, a clearing up of the local symptoms, but not the entire disappearance of the growth which had invaded the cervix and base of the bladder. In both of these cases the continuous heat was applied, averaging eighteen hours a day in each case for six weeks.

## Letters to the Editors

### COORDINATION AND QUICK PERCEPTION.

SPRINGFIELD, MASS., December, 1916.

To the Editors:

Doubtless many have read the interesting accounts of remarkable speed and accuracy in the performances of C. M. McCutchen, of Denver, Col., at revolver shooting. While it sounds very wonderful for the acceptance of the ordinary mind, that a pistol shot can make target hits at the rate of five shots in three fifths of a second, the statement comes from a most reliable source; also that the performance was witnessed by a United States army officer with a stopwatch. The most interesting point that we get from this performance is in the fact that it demonstrates very conclusively to what a wonderful degree man's coordination can be developed; how the brain, nerves, and muscles, together with the special senses, can be developed in their harmonious action; and with a rapidity second only to that of electricity. Inseparable from the latter thought is that of developing quick perception, as a wonderfully valuable asset to the life of man. Scarcely anything in the whole metaphysical organism of humanity can be considered above the latter element which is necessary and of the greatest importance in every successful career. Coordination and quick perception and a larger proportion of versatility will inevitably result from training the mind to quick perception.

ROBERT H. MACNAIR, M.D.



## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

**Syphilis.** By LOYD THOMPSON, Ph.B., M.D., Physician to the Syphilis Clinic, Government Free Bath House, Visiting Urologist to St. Joseph's Hospital, Consulting Pathologist to the Leo N. Levy Memorial Hospital, Hot Springs, Arkansas, etc. Illustrated with seventy-seven Engravings and seven Plates. Philadelphia and New York: Lea & Febiger, 1916. Pp. 415.

This book is well bound, of convenient size, and the arrangement and type are attractive and make reading easy. Syphilis is covered in this work from every standpoint beginning with the earliest history of the disease and including the latest work on the subject. The pathology and laboratory tests of the disease are especially described in detail and explained in such a manner as to be clear to the most uninitiated in such work. There are numerous excellent photographs and several colored plates which greatly aid the text. It is a work scientific enough for the specialist and laboratory worker and at the same time sufficiently lucid and simple to be of service to anyone in the practice of medicine.

**Geriatrics the Diseases of Old Age and Their Treatment.** Including Physiological Old Age, Home and Institutional Care, and Medicolegal Relations. By I. L. NASCHER, M.D., Chief of Clinic, Department of Internal Medicine, Mount Sinai Hospital Dispensary, New York; formerly Special Lecturer on Geriatrics, Fordham University School of Medicine. With an Introduction by A. JACOBI, M.D. Second Edition, Revised. With fifty Plates Containing eighty-one illustrations. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. 527. (Price \$5.)

This somewhat formidable tome of 527 pages is the second edition of this work in the comparatively new department of medicine devoted to old age, known as geriatrics. It takes up not only the pathological conditions that accompany advancing years, but also such changes as are physiological after the menopause in women and the critical period in men. It also goes into those diseases which occur incidentally in old age but are not peculiar thereto. The last part of the book is devoted to hygiene and medicolegal relations of the aged. Great care and labor are evidenced in its preparation.

## After Office Hours

In *Harper's* for January there is an amusing automobile story by Wallace Irwin that will entertain all of us whether we own a flivver or a limousine.

The best thing in the February *Cosmopolitan* is George Ade's "Fable in Slang." It was also the best thing in the January number.

The February *Smart Set* is clever as always. Mr. Mencken waxes merry at the expense of the contemporary poets. "The Candles of Romance" handles a difficult subject, the passing of the illusion in marriage, in an artistic way.

The *New York Times* for January 14th gave nearly a whole page of its magazine section to a review of Alexander McLane Hamilton's autobiography, "Recollections of an Alienist." Doctor Hamilton, in the course of a long and distinguished life, has been everywhere and seen everything. The book is dedicated to Dr. Joseph A. Blake.

In the *Survey* for January, old John Barleycorn receives a solar plexus blow, this time from a woman. Elizabeth Tilton, under the general title of "Turning Off the Spigot," discusses first, "What makes men stop drinking?" and second, "What nations drink." Certainly her statistics are convincing enough, although these as a rule are dangerous things. The physician who is for prohibition can get some telling figures from the article.

In the *Current Opinion* for January appears a little article on what might be called "field psychiatry," the tedious tracing of family histories through all their branches. Dr. Charles B. Davenport tells how he investigates the emotional defect of persons in question, as well as obtaining the ordinary data. The magazine also has an article on that subject of perennial interest—life on Mars. A recruit to the spiritualistic ranks, Conan Doyle, former physician and now author, gives his views at second hand in the *Current Opinion*. We do not believe that Sherlock Holmes would have been convinced on the same evidence. An article on birth control helps to make this number unusually interesting.

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In the *Survey* for January 13th appears an article which should be of absorbing interest especially to physicians and lawyers. It is an account of the examination of a murderer by the Binet-Simon tests in open court in the presence of the judge and jury. The man had committed a brutal crime and public feeling was strong against him. While he had dementia præcox, which ordinarily does not lend itself satisfactorily to examination by these tests, fortunately the deterioration was so manifest—indeed, he was probably originally defective—that it could be demonstrated in a convincing manner in open court. It is supposed to be the first case of the kind; whether it is or not, it is indicative of the changed attitude toward the criminal. Other articles in this number which are of interest to the physician are one dealing with a proposed leprosarium, one on ergotherapy in general hospitals, and one on old age insurance.

## Meetings of Local Medical Societies

**MONDAY, February 5th.**—Clinical Society of New York Throat, Nose and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

**TUESDAY, February 6th.**—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Association of Troy and Vicinity; Broome County Medical Society.

**WEDNESDAY, February 7th.**—New York Urological Society; Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Psychiatric Society of New York; Society of Alumni of St. John's Hospital, Brooklyn; Schenectady Academy of Medicine; County of Rockland Medical Society; Medical Society of the County of Genesee; Long Island Society of Anesthetists.

**THURSDAY, February 8th.**—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Society of Sanitary and Moral Prophylaxis, New York; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua; Cayuga County Medical Society; Medical Society of the County of Allegany.

**FRIDAY, February 9th.**—New York Academy of Medicine (Section in Otolaryngology); Society of Externes of the German Hospital of Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York; Clinical Society of the German Hospital and Dispensary; Manhattan Dermatological Society.

**SATURDAY, February 10th.**—New York Association of the Medical Reserve Corps of the United States Army.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the fourteen days ending January 24, 1917:*

- ACKER, R. B., Assistant Surgeon. Directed to continue on duty at the Marine Hospital, Chicago, Ill.
- AUSTIN, H. W., Senior Surgeon. Granted one month's leave of absence on account of sickness from February 1, 1917.
- BOLLEN, JOSEPH, Assistant Surgeon. Ordered to proceed to Elkins, West Virginia, for duty in investigations of reported outbreak of poliomyelitis.
- CARTER, H. R., Assistant Surgeon General. Directed to proceed to Colleton County, S. C., and vicinity to investigate malaria conditions in the neighborhood of the Salkhatchie Swamps; detailed to deliver addresses on malaria at the meeting of the New Jersey Mosquito Extermination Association at Atlantic City, N. J., January 25 and 26, 1917.
- ELEN, R. L., Assistant Surgeon. Ordered to report to Assistant Surgeon C. A. Wheeler for temporary duty in field investigations of pellagra.
- Foy, C., Surgeon. Ordered to proceed in succession to the cities of Picua and Springfield, Ohio, to conduct studies of public health administration.
- HART, R. W., Assistant Surgeon. Ordered to proceed to the Marine Hospital, Detroit, Mich., for duty.
- KING, W. W., Surgeon. Authorized to remain in Washington, D. C., on temporary duty from January 23 to March 3, 1917, to collect data and observe laboratory technic for his assistance as a member of the Institute of Tropical Medicine and Hygiene in Porto Rico.
- LEAKE, J. P., Passed Assistant Surgeon. Ordered to proceed to Elkins, W. Va., for duty in investigations of reported outbreak of poliomyelitis.
- LIDDELL, T. J., Assistant Surgeon. Granted one month's leave of absence from January 21, 1917.
- McCoy, G. W., Surgeon. Ordered to proceed to Chicago, Ill., on or about February 15, 1917, to attend a meeting of the Council on Pharmacy and Chemistry of the American Medical Association.
- MEYERS, C. N., Organic Chemist. Ordered to proceed to New York for conference in the preparation of the case of the United States Government relating to the proper classification of novocaine.
- NEILL, MATHER H., Assistant Surgeon. Ordered to report to the chairman of a board at the Bureau January 30, 1917, for examination to determine his fitness for promotion to the grade of passed assistant surgeon.
- SMITH, H. F., Assistant Surgeon. Ordered to proceed to Elkins, W. Va., for duty in investigations of reported outbreak of poliomyelitis.
- SMITH, J. H., Assistant Surgeon. Ordered to report to the chairman of a board at the Marine Hospital, New Orleans, La., January 30th, for examination to determine his fitness for promotion to the grade of passed assistant surgeon.
- SWEENEY, A. R., Assistant Surgeon. Ordered to report to the chairman of a board at the Marine Hospital, Chicago, Ill., January 30th, for examination to determine his fitness for promotion to the grade of passed assistant surgeon.
- WARNER, H. J., Passed Assistant Surgeon. Ordered to proceed to El Paso, Texas, for temporary duty for a period of about four months in immigration, quarantine and epidemic work.
- WHITE, H. K., Assistant Surgeon. Ordered to report to the chairman of a board at the Marine Hospital, New Orleans, La., January 30th, for examination to determine his fitness for promotion to the grade of passed assistant surgeon.

### Boards Convened.

Boards of commissioned medical officers convened for the examination of certain assistant surgeons to determine their fitness for promotion to the grade of passed assistant surgeon, January 30, 1917, as follows: Marine Hospital, Chicago. Detail for the board: Surgeon J. O. Cobb, chairman; Assistant Surgeon H. C. Yarbrough, recorder.

Marine Hospital, New Orleans. Detail for the board: Passed Assistant Surgeon F. Simpson, chairman; Assistant Surgeon S. L. Christian, recorder.

### Appointments.

Dr. Robert Booth Acker and Dr. Robert Watson Hart appointed and commissioned as assistant surgeons from date of oath.

## Births, Marriages, and Deaths

### Died.

- ALDRICH.—In Bath, N. Y., on Thursday, January 18th, Dr. John O. Aldrich, aged sixty-eight years.
- ALLRED.—In Winters, Texas, on Saturday, January 13th, Dr. Joseph L. Allred, aged fifty-six years.
- BAHNSON.—In Winston-Salem, N. C., on Wednesday, January 17th, Dr. Henry T. Bahnsen, aged seventy-one years.
- BALDIN.—In Waco, Texas, on Tuesday, January 16th, Dr. Thomas Richard Baldin, aged sixty-one years.
- BROWN.—In Pleasant Unity, Pa., on Saturday, January 13th, Dr. James Logan Brown, aged seventy-two years.
- CHAMBERS.—In Baltimore, Md., on Monday, January 22nd, Dr. John Wesley Chambers, aged sixty-one years.
- CHANEY.—In Mt. Airy, Md., on Friday, January 19th, Dr. Irving Drury Chaney, aged thirty-five years.
- CLEMENT.—In Augusta, Me., on Thursday, January 11th, Dr. Victor A. Clement, aged seventy-two years.
- CORNELL.—In Raritan, N. J., on Saturday, January 20th, Dr. Jacob Bell Cornell, aged sixty-six years.
- CRAIG.—In West Schuyler, N. Y., on Friday, January 19th, Dr. William H. Craig, aged sixty-nine years.
- CRUMP.—In Salisbury, N. C., on Wednesday, January 17th, Dr. William L. Crump, aged sixty years.
- ERB.—In Allentown, Pa., on Wednesday, January 24th, Dr. Horace B. Erb, aged fifty-seven years.
- FERRY.—In Cambridge, Mass., on Monday, January 22nd, Dr. James F. Ferry, aged forty-six years.
- FIELDER.—In New York, N. Y., on Wednesday, January 24th, Dr. Frank Sidney Fielder, aged fifty-one years.
- FREELAND.—In Tarrytown, N. Y., on Wednesday, January 24th, Dr. Nicholas H. Freeland, aged seventy-three years.
- HAAS.—In New York, N. Y., on Thursday, January 18th, Dr. Leopold F. W. Haas, aged forty-two years.
- HART.—In Lake Odessa, Mich., on Saturday, January 20th, Dr. William S. Hart, aged seventy-seven years.
- HARTER.—In Herkimer, N. Y., on Saturday, January 20th, Dr. Frederick J. Harter, aged sixty-one years.
- HITCHCOCK.—In Fitchburg, Mass., on Sunday, January 21st, Dr. Alfred Owen Hitchcock, aged seventy-four years.
- KISSLING.—In Milwaukee, Wis., on Thursday, January 18th, Dr. Charles L. Kissling, aged forty-eight years.
- LANE.—In New Haven, Conn., on Sunday, January 14th, Dr. Frederick P. Lane, aged thirty-six years.
- LELAND.—In Lowell, Mass., on Monday, January 15th, Dr. Clarence H. Leland, aged sixty-eight years.
- LOGANS.—In South Glens Falls, N. Y., on Thursday, January 18th, Dr. Cassius J. Logans, aged seventy-one years.
- McWILLIAMS.—In Chicago, Ill., on Sunday, January 14th, Dr. Samuel A. McWilliams, aged ninety years.
- MOYE.—In San Antonio, Tex., on Thursday, January 18th, Dr. Leon L. Moye, of Vidalia, Ga., aged thirty-eight years.
- NIXON.—In Columbia, Ill., on Friday, January 12th, Dr. Madison G. Nixon, aged seventy-three years.
- RANKS.—In Shelburne, Vt., on Wednesday, January 17th, Dr. Walter H. Ranks, aged forty-two years.
- SCHOOLEY.—In Toledo, Ohio, on Thursday, January 18th, Dr. Ebenezer W. Schooley, aged seventy-six years.
- SMITH.—In New York, N. Y., on Thursday, January 18th, Dr. Angus H. L. Smith, aged twenty-seven years.
- VANDEWALKER.—In Hammond, Ind., on Wednesday, January 17th, Dr. James Gilbert Vandewalker, aged eighty-two years.
- VIBBARD.—In Albany, N. Y., on Friday, January 19th, Dr. Arthur A. Vibbard, aged fifty-one years.
- WALKER.—In Falmouth, Mass., on Friday, January 12th, Dr. James Taylor Walker, aged sixty-six years.
- YOUNG.—In Lafayette, Tenn., on Thursday, January 18th, Dr. Z. M. Young, aged seventy-five years.

# New York Medical Journal

INCORPORATING THE

## Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 6.

NEW YORK, SATURDAY, FEBRUARY 10, 1917.

WHOLE No. 1993.

## Original Communications

### THE RIGHTS OF THE UNBORN CHILD.\*

By BARTON COOKE HIRST, M. D.,  
Philadelphia.

The right of the unborn child to life is undenied and indisputable, but as a matter of fact this right is more frequently denied during intrauterine life than at any other period of man's existence for the following reasons: In the first place, there is the inadvertent and often unavoidable loss of life from spontaneous miscarriage. Few people realize the proportion of miscarriages to births of living children. In an analysis of over 7,000 names in my private case books it appeared that for every four children delivered at term, there was one miscarriage before the viability of the fetus. These statistics agree with those of others. Some of these miscarriages might have been prevented. They are due to imprudence and ignorance on the part of the mother. The larger proportion, however, were unavoidable, from the many accidents and diseases incidental to intrauterine life.

It is in the first group of cases that much will be accomplished by the present movement in favor of prenatal care; a comparatively new name for an old procedure. In justice to the specialists engaged in obstetrics it is only fair to state that it has always been our practice to keep an observation on pregnant patients and to give them the advice which at present is included in the prenatal care of the unborn child—advice as to diet; prudence about catching cold; the manner of bathing; management of the bowels; physical effort; the avoidance of jolts and jars; a routine estimate of blood pressure; routine urinary examinations; pelvic measurements; abdominal palpation; an estimate of the size of the infant before birth, and care of the breasts have been a part of the routine management of all our pregnant patients for years, and there is no doubt that attention to these matters has prevented a certain percentage of prenatal mortality; but there remain many cases in which, in spite of the most prudent and careful management, pregnancy comes to an untimely end.

The recent agitation and publicity in regard to prenatal care, however, is certain to accomplish much good in directing the minds of physicians in general to the importance of careful attention to

pregnant patients, and in awakening in the public mind a realization of the importance of this movement.

The greatest good that has been accomplished by a dissemination of knowledge in regard to prenatal care by the clinics established for this purpose in many of the large cities of this country and the greatest good to be accomplished in the future is among the poorer and more ignorant classes of the population who do not as a rule receive the best medical attention. As a means of disseminating a wider knowledge and appreciation among the general public of the right of the unborn child to life this movement deserves unqualified approval and support.

As one of the means of diminishing the enormous waste of human life before it reaches the stage of independent existence, this movement should be welcomed by all intelligent and public spirited people. What it is intended to accomplish, however, should be clearly recognized. It is not the prevention of stillbirths or the improvement of the race, as much as the avoidance of a premature termination of pregnancy that is sought.

The statistics collected in New York and Baltimore demonstrate that not too much is to be expected of prenatal care in the lessened percentage of stillbirths or of early infantile mortality, but something can unquestionably be accomplished in the prevention of unnecessary and avoidable miscarriages.

Another factor in prenatal mortality which is accountable in large measure for the denial of the right of the unborn child to life, is the appalling frequency of criminal abortion, evidences of which we physicians see about us every day. It is one of the most interesting and one of the most serious sociological problems which confront us at the present time. The question which must be faced today is whether it is better to prevent conception or to destroy the life which has been already begun. However much we may deplore the fact, it would seem that a choice of the two evils is inevitable. People in general the world over are apparently determined to regulate the birth rate by one means or the other. Economic conditions; the love of luxury; selfishness; disinclination to bear pain; suffering and inconvenience; the unmistakable loosening of moral control in the younger generation which has become much more apparent in the last ten years in this

\*Read before the Philadelphia County Medical Society, January 10, 1917.



country than it ever was before, with the consequent illegitimate impregnations and their criminal termination—all contribute to a limitation of the fertility of women.

How this condition of affairs is best to be met and if possible improved is one of the most puzzling problems presented to the sociologist of the present day. The burden of rearing, clothing, and educating children is not likely to be less onerous in the future than it is at present with the high and increasing cost of all the necessities of life. It is not surprising, therefore, that the struggling family barely able to maintain itself in comfort and decency, is unwilling to increase its burdens to a point where they become well nigh intolerable.

One of the unmistakable consequences of the emancipation of women is a relaxation of moral sense and control in regard to sexual matters, with the result that illicit intercourse among the young girls of the working classes and those who are independently employed is more common, I think, than it was a generation ago. A necessary consequence is an increase of illegitimate impregnation or a more widespread practice of the prevention of conception.

It is impossible to gather reliable statistics of criminal and self-induced abortion, but no doctor can remain ignorant of the increasing frequency of this practice. The knowledge among women of the means at their disposal for terminating pregnancy is being utilized to an enormous extent. What direction improvement in this matter may take in the future it is impossible to foretell. My own conviction is that as woman becomes more accustomed to her emancipated condition today and in the future, she may acquire greater selfcontrol after an experience of the vicissitudes of life in an independent and unprotected position, which is certain, I think, to bring out in her qualities which her female ancestors lacked. Experience will teach her in the course of time that continence and chastity are after all the better course in life, until she unites her fortunes permanently with the man of her choice, with whom a family can be reared in decency and self-respect. Meanwhile the church, the law, and medicine by precepts, regulation, and advice can hasten the acquisition of this mental attitude on the part of our young girls and women.

We come next to the most interesting phase of this discussion: The deliberate destruction of embryonal life in a therapeutic abortion. Fortunately our discussion is limited to the destruction of fetal life before viability, for we are no longer driven to the distressing necessity of destroying the life of a viable child in order to secure its extraction from the mother's womb or through her pelvis. The improvement in operative obstetrics has made it unnecessary to consider any form of embryotomy in the delivery of the living infant; but we cannot dismiss the necessity in rare instances of destroying the life of the embryo in order to preserve that of the mother. I can understand perfectly the objection to this procedure on the part of highminded and conscientious men who bear in mind that precept of the Decalogue "Thou shalt not kill."

But the physician who is confronted in his practice with the problems of life and death, with disease

and its treatment, must necessarily, it seems to me, accept the view that occasionally the sacrifice of embryonal life is not only justifiable, but a duty incumbent upon the conscientious physician. I have read with the greatest interest the arguments pro and con in that dispute between Professor Treub, of Amsterdam, and the Roman Catholic Bishop of Haarlem. There is much to be said on both sides of the question, but the judgment of the physician acquainted with the facts of medicine and of disease, it seems to me, should outweigh that of the churchman necessarily without actual experience in medical conditions.

I was called to see a young woman in her first pregnancy suffering from pernicious vomiting. I felt confident that the only thing to save her life was a therapeutic abortion, to which the husband consented; but later that night he recalled his consent because he had meanwhile consulted his parish priest, who forbade the operation. I asked to be relieved from the responsibility in the case, but the husband begged me so pathetically to remain in charge and do what I could that I foolishly consented. Everything possible was done; consultations were called; three trained nurses were in attendance, but at the end of ten days' treatment it was perfectly obvious the patient was going to die. I announced this fact to the husband, when he begged me then to induce abortion. I told him I was afraid it was too late, but undertook the operation. It proved to be too late and the patient died a couple of days afterward.

In another case, I saw a patient, in consultation with two other physicians. She had a very grave gestational toxemia with involvement of the heart and kidneys. It was plain to all the physicians in attendance that the termination of her pregnancy was necessary to save her life, but we were forbidden to perform the operation of induction of labor prematurely before the viability of the child by the priests, who were always in conference with us when we physicians met in consultation. It was only when we were able to announce that the fetus was dead, as we could no longer hear its heart sounds, that we were permitted to terminate the woman's gestation, but interference here again came too late; the patient died a few months later from the progress of her kidney disease. I believe that had pregnancy been interrupted earlier the disease could have been arrested and the patient's life at least prolonged. Now what was gained in these two cases, even in the eyes of the church? Both patients were lost in each instance.

Fortunately, with increased resources in therapeutics these cases in which the death of the mother is inevitable unless her pregnancy is terminated and in which the death of the mother involves that also of the fetus; fortunately, I say, these cases will in the future be rarer than they have been in the past, but they will still occur; and the problem of losing both patients or saving one will be from time to time presented to every physician engaged in the practice of obstetrics.

While these extreme cases are becoming rarer and, I hope, will become more so, there are others in increasing numbers on the borderline in which it is a serious question what should be done. Take,

for example, a woman who has had a child or two and then acquires phthisis. She is sent to a sanatorium, where her disease is arrested, at least; sometimes apparently cured. She returns home and almost immediately becomes pregnant and shortly afterward there is a return of all her tuberculous symptoms, advancing so rapidly with her pregnancy that it is doubtful whether she will survive until delivery at maturity, and it is practically certain that her life will be extinguished shortly afterward. Whereas had she been allowed a greater length of time she might perhaps have eventually completely recovered.

Another illustration is the case of a woman five months pregnant with a systolic blood pressure of 240, with organic disease of the kidneys and heart and with arteriosclerosis. It is unlikely that such a woman will go on to a date in pregnancy in which the child is viable; is it not practically certain that she and the fetus will both lose their lives before the period of viability in the latter? Would it be justifiable in such a case to destroy the living fetus a few weeks before its inevitable death in order to prolong the life of the mother?

What should be done in a case of this kind? A woman who has had six or seven children in the last two or three pregnancies has had eclampsia each time and has lost the infants. She comes under a physician's notice when she is between two and three months pregnant; she is told that she should not be in that condition; she replies that she has had that advice from several physicians and has informed her husband, who will pay no attention to the physician's warning and insists on frequent marital relations without precautions to prevent conception. Even in these early weeks of pregnancy the woman is found to have a blood pressure over 200, with evidences of heart and kidney disease. Would not the best treatment in such a case be the induction of abortion and the excision of the patient's tubes through the vaginal vault? She would unquestionably lose the embryo in her womb long before maturity and very likely would herself be a victim to the indifference or brutality of her husband if she were allowed to conceive again. These are interesting questions in medical casuistry to which I do not pretend to give an authoritative answer; but I do contend that the conscientious physician should be untrammelled in his decision; that with a full sense of his responsibility to God and man and a consciousness of the duty he owes his profession, he should be allowed to follow the instinct to save life implanted more and more deeply in the medical mind as his experience grows. Neither law nor the church, always in arrears in medical knowledge, should oppose an obstacle to medicine's lifesaving instinct. No one has an unqualified right to life; the murderer's life is a forfeit to the law; the soldier's life is often a forfeit to the State. Neither law nor the church condemn this violation of the Sixth Commandment. How much more merciful is medicine; how much less liable to condemnation, if it extinguishes a precarious life already doomed to extinction and in compensation saves a life still capable of preservation! Has not the woman herself a right to life? Has she not the right to demand the sacrifice of her em-

bryo by the common law justification of selfdefence or even by the old Biblical law that "Whoso sheddeth man's blood by man shall his blood be shed"? For if the presence of an embryo in the womb insures a woman's destruction, in what other light can it be regarded than as the potential murderer of its host, the mother?

The decision of this momentous question must be left to the physician, who occupies the unique position in civilized communities of arbiter of life and death without judge or jury. I am proud to think that it can safely be left to him. Assailed with, and resisting temptations greater than confront the average human being; daily giving his services for the benefit of his fellow creatures; constantly striving to do the right thing by the sick entrusted to his care; a member of a guild directly descended from that ancient triumvirate of king, priest, and physician once combined in a single man, I know of no body of men with a finer sense of *noblesse oblige*, with greater instinctive rectitude, or more undeviating honesty of purpose.

1821 SPRUCE STREET.

## THE VICIOUS CIRCLE IN ORAL SEPSIS.\*

*Clinical Report on the Systemic Results of Focal Infections.*

By NATHANIEL BOWDITCH POTTER, M. D.,

New York,

Professor of Clinical Medicine, Columbia University, College of Physicians and Surgeons; Visiting Physician, New York City Hospital; Chief of Medical Department, St. Mark's Hospital; etc.

Without prelude beyond asking my readers' indulgence, I venture to include under oral sepsis, in addition to dental infections, all focal infections of the lymphoid tissue of the pharyngeal ring, or of any of the accessory cavities communicating with the mouth, nose, or nasopharynx. Anatomical, physiological, and pathological proximity is sufficient justification for this inclusion. Whether a blind pocket at the tip of a tooth root, a crypt sealed by connective tissue in the depths of a tonsil, or an antrum with its outlet blocked; an infection in any of these places is, for all clinical purposes, quite the same problem.

Wherever the infection may be, one or more of the foci of the central cause radiate to a vicious circle of complex pathological conditions, and frequently result in lifelong invalidism. The list of diseases in which oral sepsis may prove to be of considerable or paramount etiological significance is as follows:

- |  |                       |
|--|-----------------------|
| 1. Neurasthenia.                           | 16. Chorea.           |
| 2. Neuritis, reflex or remote effect.      | 17. Arteriosclerosis. |
| 3. Neuralgia.                              | 18. Meningitis.       |
| 4. Myalgia.                                | 19. Pleuritis.        |
| 5. Myositis.                               | 20. Bronchitis.       |
| 6. Arthritis, acute, subacute, or chronic. | 21. Asthma.           |
| 7. Osteitis.                               | 22. Pneumonia.        |
| 8. Peritonitis.                            | 23. Nephritis.        |
| 9. Gout.                                   | 24. Pyelitis.         |
| 10. Basedow's disease.                     | 25. Cystitis.         |
| 11. Furunculosis.                          | 26. Gastric neuroses. |
| 12. Sepsis.                                | 27. Peptic ulcer.     |
| 13. Endocarditis.                          | 28. Appendicitis.     |
| 14. Pericarditis.                          | 29. Colitis.          |
| 15. Myocarditis.                           | 30. Cholecystitis.    |
|  | 31. Herpes zoster.    |

During the past ten years I have studied many examples of such circles as are enumerated in the

\*Presented at the New York Academy of Medicine before the Medical Association of the Greater City of New York, in the Symposium on Dental Infections and Their Systemic Manifestations, May 15, 1916.



foregoing list; and each year the list has grown, and continues to grow. Most of them have been due to one of the streptococci, generally the viridans; and although unfortunately I have little absolute and unassailable proof with which to convince my readers of such a central cause radiating to the vicious circles of effect, it has not been from lack of effort. Having failed to obtain an appropriate cutaneous reaction, an attempt was made, with the cooperation of Bradbury and McNeil, to incriminate such streptococci, by means of a complement fixation reaction, similar to the one now so universally accepted for gonococci. Our preliminary results, soon to be published, are not brilliant. However, despite the inherent difficulty of working with a germ possessing so many closely related varieties, cross fixing so readily, and harbored by most healthy persons, a careful study has given us hope that either improved technic in the fixation test, particularly in the preparation of an antigen, or the development of a cutaneous test, may eventually succeed and place the responsibility in many obscure acute cases and in cases of prolonged chronic invalidism.

From my office practice during the past ten years, I have selected a dozen examples to demonstrate different phases of the problem. For the sake of brevity and to avoid tiring my readers with wearisome case records, I have abbreviated each case to the shortest understandable limit.

I have purposely omitted all acute or fulminating cases, and have intentionally selected only ambulatory examples of what often strike a physician, overburdened with the immediate exigencies of much acute practice, as wearisome and uninteresting chronic invalidism or neurasthenia. They serve to exemplify many sides of the clinical problem, to indicate the possibility of two or more sources of infection, to expose the difficulty of judging, not only the relative etiological significance but also the proper sequence of attacking the resulting vicious circle, and finally to show that in most instances, patience, sufficient time, adequate general treatment, and the intelligent cooperation of such skilled associates as I have had the good fortune to obtain, will eventually cure, or materially relieve distressing and alarming symptoms of chronic disease; or, what is still more important, prevent crippling invalidism.

Attacks of severe migraine or of neuralgia, even when as definitely periodical as in the following case, are not necessarily due to malaria, to eye strain, or to nasal defects.

CASE I.—Male, twenty-three years of age, from October, 1909, to January, 1910, suffered from severe periodical attacks of migraine, beginning at five each afternoon, lasting until seven o'clock. He consulted four authoritative ophthalmologists, and his glasses were changed six times without benefit; repeated local treatment to the nose and several operations upon the septum and the turbinates by three different specialists produced no benefit. The result of my examination showed a sensitive wisdom tooth; its pulp was found to be exposed and was devitalized with the result of an immediate and permanent cure of his migraine.

Where both tonsils or adenoids and teeth are definite foci of infection, a long period of observation, much intelligent cooperation with both dental and throat specialists, and a very nicely balanced judgment may be required before finally deciding upon the location of the infectious foci, and the most

promising sequence for breaking the vicious circle. Usually it should be attacked at more than one point simultaneously; and prophylactic treatment must be regularly and frequently applied to both infectious sources, if we are to expect any really fruitful results, or hope to spare the patient a tonsillectomy.

CASE II.—Female, thirty-six years of age (Fig. 1A), suffering from 1, profound neurasthenia for many years; 2, two attacks of slight hematuria without demonstrable cause; 3, frequent severe colds and infections of adenoids and tonsils; 4, chloranemia for years; 5, periodic development of facial edema, mostly periorbital, and, 6, pyorrhea for many years; 7, falling hair and brittleness of nails; 8, leucorrhea; 9, myalgias (see sectors of circle and above). In addition to pyorrhea, a tooth abscess with a sinus which alternately closed and opened discharging pus, existed and was treated from 1901 to 1912 before the patient and her dentist could be persuaded to sacrifice the tooth. Cultures from this pus

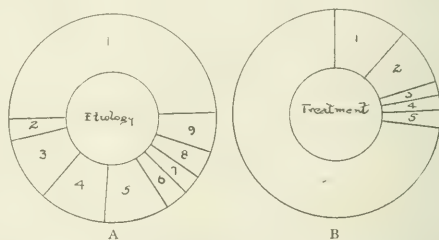


FIG. 1.—Diagrammatic representation of condition before and after treatment in a case showing the vicious circle in oral sepsis. See text, Case II.

showed a hemolytic streptococcus and the patient's blood serum a positive complement fixation. A strong psychical disturbance operative from 1903 to 1907 was an important factor in the patient's general condition. Her treatment for several years was symptomatic, general, psychic, local, and prophylactic both to teeth and to mucous membranes of tonsils and adenoids; but no pronounced permanent effect was produced until the tooth was finally extracted in 1913. There was found to be a much wider and more serious involvement than had been supposed with caries of the bone and a spreading of the infection to the roots of the two adjoining teeth. The relative size of the sectors (1-5) in the circle (Fig. 1B) represents diagrammatically the approximate degree of improvement existing today. The pyorrhea still requires frequent treatment. 1, Pyorrhea. 2, Colds and adenoid infections. 3, Edema. 4, Trophic disturbances. 5, Neurasthenia.

I have already pointed out (1) the occurrence of a low opsonic index to the staphylococcus at the menstrual time in some patients with chronic infection and lessened immunity. Although not actually measured by opsonic determinations, the same striking effect of the menstrual period has been repeatedly observed in the patient (Case II) just mentioned. Most of her colds and tonsillar and adenoid infections occur just before or during her catamenia.

Further difficulty occurs with a negative radiogram, with the assurance from the dental specialist that all the teeth and their roots are in a sanitary condition, with nothing distinctive from cultures at the gum edge or toward the tooth roots; and with such evidence of a chronic tonsillitis as the presence of a few moderately enlarged glands at the angle of the jaw, and the constant exhibition of a little pus in the same pocket of one tonsil, the culture therefrom, either pure *Streptococcus viridans*, or with this organism present in reasonable predominance and constancy, and with a ++++ streptococcus



complement fixation test. Under such conditions we may be obliged to delay some time before deciding upon the proper point for attacking the vicious circle, as is well demonstrated in the following:

CASE III.—Female, forty years of age, had symptoms of acid dyspepsia (possible ulcer) in 1905, shock in 1908 followed by pronounced depression, and neurasthenia to 1913, cervical arthritis confirmed by radiogram in 1910-1911, lumbago in 1911, sciatica in 1911, fruste Basedow's disease 1911 to 1912, myocardial insufficiency 1911 to 1913 with palpitation, dyspnea, chills and sweats at night; indigestion, epigastric fullness and pains with signs of a dilated heart, mitral insufficiency, and an engorged liver. The treatment followed from 1910 to 1912 and directed against the general symptoms, arthritis, cardiac condition, and neurasthenia as well as in 1913 with vigorous local treatment to tonsils, produced unsatisfactory results; and the patient evidently slowly lost ground. Finally another dentist aided by radiographic examination reported as follows: "Extensive pyorrhea, apical disease which must have existed for years, four nonvital teeth, and a gangrenous tooth pulp." His prompt efficient treatment, including the extraction of two teeth in 1914, produced an immediate and very remarkable improvement in all the above symptoms. Since then I have only seen the patient once; but her improvement has persisted except for occasional stiffness of the neck, a little fatigue, slight dyspnea upon exertion, and some remnant of her general nervous symptoms. She recently reported by letter as being in excellent condition.

An interesting and rather amusing addition to the foregoing, is the following: Tonsillectomy was advised in 1913; but the patient's fear of an operation was so great that it seemed only fair to give her the benefit of further counsel. She was therefore sent first to one, and then to another of our most brilliant and renowned diagnosticians. From both I obtained the identical diagnosis, neurasthenia, and the same advice for treatment, remarriage; but she still has her tonsils; remains a widow; and, since the institution of proper dental surgery, she has not required further medical assistance.

Among children and young adults, the tonsils and the lymphoid tissues of the pharyngeal ring are more common sources of infection than the teeth. Case IV presents, however, an exception.

CASE IV.—Female, twenty-eight years of age, exhibited a temporary glycosuria in childhood. Her father had intermittent glycosuria. She has had rather obstinate facial acne, repeated attacks of urticaria, and has frequently presented a periorbital edema. In the early morning, is chloranemic; suffered from myalgia in 1912, from severe intermittent attacks of neuralgia of face in 1913, from a mild catarrhal appendicitis in 1913, and showed symptoms of fruste Basedow's disease from 1913 to 1914, including tachycardia, tremor, thyroid enlargement, and extreme nervousness. Aided by general treatment, the neuralgia of the face, and the symptoms of Basedow's disease disappeared, the former promptly and the latter gradually, but only after proper dental surgery had eradicated the "infected foci in connection with the root apices of two molar teeth." Her improvement has persisted.

In this relatively mild type of involvement of the thyroid gland, the etiology is complex, the relationship, sequence, and balance between psychic disturbance, involvement of the appendix, and oral sepsis, impossible to unravel, and consequently puzzling from the point of view of treatment. No factor should be neglected, but this patient's rapid improvement and complete recovery only after painstaking dental surgery, suggests its preponderating importance.

CASE V.—Female, thirty years of age, presented a much more serious, active, and prolonged clinical picture with a similar thyrotoxic exhibition. The history of leucorrhoea following a Neisser infection in 1911, but with negative smears from the vagina upon several occasions, and a doubtful gonococcus complement fixation test, as well as the lack of symptomatic benefit following skilled gynecological

treatment, added to its complexity. For some years a rather marked pyorrhea had existed. In 1911 a prolonged low fever puzzled her physician on the Pacific Coast, but its abatement soon after the discovery and treatment of a caries of the jaw from an infected tooth and of an accompanying infection of the adjoining antrum strongly suggested these two sources as the etiological fac-

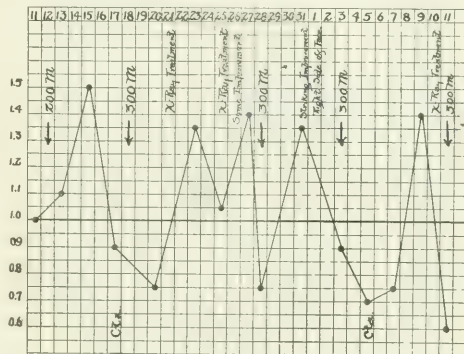


FIG. 2.—*Streptococcus* opsonic determinations in a female patient with chronic facial acne, showing depression of index at menstrual time.

tors. When referred to me for a recurrence of the fever, she also presented a mild arthritis of the spine and distinct though moderate symptoms of Basedow's disease (tachycardia, tremor, nervousness, vasomotor disturbances, and a unilateral thyroid enlargement), I felt justified in adding an autogenous vaccine from an organism (*Streptococcus viridans*) isolated from pyorrhea pockets, to the painstaking dental surgery and local gynecological measures. Radiograms at that time confirmed the dentists opinion that the oral sepsis was limited to the existing pyorrhea. Marked improvement in all symptoms followed these measures and persisted for a few weeks after their cessation. A further course of vaccines produced a similar temporary improvement in a recurrence of her symptoms. Finally despite another negative radiogram and the dentist's conviction that the teeth could not be the source of the recurrence of the symptoms, the latter was finally persuaded to extract a tooth adjoining the old location of the caries and supporting a bridge. A tiny drop of pus was found at its root furnishing a pure culture of *Streptococcus viridans*. With the addition of a new vaccine her symptoms soon vanished and at last report a couple of years ago they had not recurred.

It is not to be expected that as brilliant results will follow every case in which two such obstinate infections coexist and the prognosis should therefore be guarded, as is shown by the following case:

CASE VI.—Female, twenty-eight years of age, had been subject to tonsillitis since childhood despite an incomplete operation in 1896, and had had anemia for many years. She had an attack of chorea following measles in 1900, and endocarditis in 1907. A mild eclampsia completed her first pregnancy in 1909 and a persistent leucorrhoea followed not long after her second. When referred to me again in 1913 she had been subject for many weeks to an intermittent subacute polyarthritis with some deformity of a few of the finger joints involved. Her tonsils were boggy and red and considerable pus could be squeezed from each of the crypts. This revealed a pure culture of *Streptococcus viridans* and the vaginal smears showed the diplococcus of Neisser. Local throat treatment plus a course of an autogenous gonococcus vaccine were given. Finally the diseased tonsils were removed, more vaccines administered, and her improvement became more rapid, more decided, and more permanent. In April, 1916, she reported by letter "Now the 'stiff attacks' only return every few months; they disappear as unexpectedly as they come. I had an attack in October, 1915, and another at the end of February, 1916." For success the treatment must be conserva-

tive and prolonged; the vicious circle attacked with every means at our command, and at each focus of infection, practically disregarding which one is essentially the instigator.

The earliest, mildest, and most remediable case of arthritis from oral sepsis which I have observed, is the following:

CASE VII.—Female, aged thirty-eight years, was referred to me during the winter of 1914 for a recent subacute arthritis of both knees. For the previous two years she had been under a considerable nervous strain. Otherwise she was in perfect physical condition, the only source of infection I could find was a pyorrhea evidently of some years duration. The dentist's report follows: "Involvement in different stages, of all of her teeth. Many of them show little more than a chronic gingivitis which bleeds easily, while several have deep pockets about them from which there is a discharge of pus. There is one nonvital tooth but there is no history of trouble, nor anything to indicate infection about it. The mouth as a whole is unsanitary." Each of the first few treatments as so frequently happens were immediately followed by an exacerbation of her joint symptoms but after eight treatments the arthritis symptoms disappeared. She writes in April, 1916, "In six weeks I was absolutely cured and the trouble has never returned."

Subjects inheriting or manifesting gout, especially if well along in years, sometimes show a severe, acute, and very puzzling type of arthritis. If a focus of infection can be found, and promptly eradicated, and if the vicious circle can be properly stormed at all possible points, the result may be as striking and as satisfactory as is represented in the following case:

CASE VIII.—Female, seventy years of age, inherited and in 1885 manifested gout. In 1912 she had a severe infection of the accessory sinuses including both antra. In 1914 an acute arthritis of the right knee rapidly progressed to a crippling disability with a limitation of motion to 25° and was soon followed by a slightly less striking involvement of the left knee joint. She consulted several authoritative specialists in orthopedic surgery, all of whom recommended radiographic examination of the joints, but none of them even looked at her teeth, gums, throat, or sinuses. When referred to me, it was at once evident that she had suffered from pyorrhea for a number of years. This yielded a pure culture of *Streptococcus viridans*. The dentist's report follows: "A bad case of pyorrhea involving all her teeth with an unusual flow of pus from around them and with a marked inflammation of all the gums." Prompt and thorough treatment of the pyorrhea, the extraction of several teeth, autogenous vaccines, osteopathy, massage, and general tonic treatment soon produced a brilliant result despite her age. The left knee cleared up entirely and there remains only a slight impairment of motion and some stiffness in the right knee.

I can by no means subscribe to the statement recently made to me by one of our most renowned specialists in orthopedic surgery that all arthritis is infectious, and that attacks of so called gout are in reality due to infections; but the term chronic rheumatism has been permanently shelved, subacute rheumatism is rarely used, and acute rheumatic fever will soon require a parenthesis or quotation marks if mentioned in modern textbooks. Gouty arthritis does exist, and a differentiation between it and the infectious variety, especially in the aged and those predisposed by inheritance, may prove impossible even with an estimation of the uric acid and nonprotein nitrogen of the blood. It should be recognized, however, that these minor focal infections are of very great importance and seriousness in the gouty just as they are in those afflicted with chronic nephritis or diabetes.

The steadily progressing mental and physical de-

terioration, the crippling disability, and the patient's age, quite justified the serious prognosis given by the consulting specialist to the following case.

CASE IX.—Female, seventy-four years of age, gave the following history: Gout, diabetes, and rheumatism were frequently met with among her immediate ancestors. She had an acute nephritis in 1882, followed by repeated attacks of gout from 1883-1890, and had been subject to a so called "gouty throat" during her youth. For many years she had had repeated attacks of myalgia and nodes had gradually developed upon her fingers. Arteriosclerosis had existed for more than ten years and a good deal of disturbance with her digestion for about six years. For the past ten years nervous symptoms, neuritis, weakness, and disability combined to make her a partial invalid, but in 1912 when referred to me a subacute but slowly progressing arthritis of both knees was the striking condition. A course of treatment including massage at a European spa produced considerable improvement, but soon after her return home the arthritis began to progress again, became acute, and finally almost completely disabled her. Despite frequent attention to her teeth, she showed a marked pyorrhea evidently of some duration; and a culture from the pus pockets revealed *Streptococcus viridans*; but the complement fixation was doubtful. Slow improvement followed dental surgery and the extraction of one of the most seriously infected teeth, but frequent relapses occurred especially when the dental measures were not frequently renewed. However, persistent, thorough surgery, upon which I was obliged to insist because of the dentist's scepticism of my stubborn conviction, aided, of course, by general measures, finally accomplished a complete and thus far permanent cure. I have not seen this patient professionally for more than two years,<sup>1</sup> but the gratifying result is well expressed by a quotation from one of my assistants who recently met her on the street: "She looked ten years younger and was walking as well as I."

A still more striking susceptibility to the absorption of minute doses of these infectious products has been repeatedly noted in another patient.

CASE X.—Female, fifty-five years of age, had been treated for "gout" and "uric acid" for a number of years by several physicians of skill and prominence, both in this country and abroad. In 1904 and 1905 she had several attacks of myalgia and an obstinate sciatica for which some benefit followed a cure at Carlsbad. An excruciating facial neuralgia persisted with but temporary remissions from 1906 well into 1907 despite the extraction of several teeth and of an unerupted wisdom tooth, which was thought to be a possible cause. Some benefit followed the section of the inferior dental nerve in 1907, but a relapse followed within a few months and finally a skilled dental specialist succeeded in relieving her condition by thorough and repeated treatment of what was evidently a long existing pyorrhea including apical abscesses. One of the most interesting episodes in the history of this case is the following: Some years after all her symptoms had cleared, I was consulted on account of pain, stiffness, and slight swelling of both knees, associated with a return of what she had always named her "uric acid" symptoms; in brief, lassitude, anorexia, general discomfort, diffuse pains, headache, insomnia, and slight indigestion. I had not seen her professionally for over a year and she assured me that she had been in excellent health, that her teeth had received frequent and recent prophylactic treatment, and that the only cause of her symptoms, so far as she could determine was overwork, and possibly the strain of dancing, which she had resumed during the winter. Although the teeth had been recently treated, one of them was sensitive to pressure; and, upon further questioning, I ascertained that she had noticed that this same tooth was sensitive to heat and cold some time previous to the onset of her symptoms. After a minute examination, her skilled dental operator was quite unwilling to admit any connection be-

<sup>1</sup>Since the presentation of this communication, the patient came to my office complaining of dizziness and slight dyspepsia. She reports that neither arthritis nor myalgia have recurred; that even the stiffness disappeared many months ago; has required no medical advice since I last saw her professionally; but she has had careful prophylactic treatment of gums and teeth every six to eight weeks. Her knees are normal.



tween the symptoms and the tooth condition, but sufficiently broad minded to scrape the sensitive tooth root and treat the gums, when, to our great surprise, her symptoms, including the arthritis, promptly cleared up and that, too, without medicinal aid or other treatment.

CASE XI.—A young man of thirty-five years, who had inherited both a wine cellar and gout, gave a history of arthritis and myalgia. Debilitated as he was by a recent prolonged cure at a well known spa, his physical examination revealed important foci of infection of both teeth and tonsils. The latter since childhood had been frequent sources of illness. A prolonged malaria acquired in Italy in 1905 obstinately resisted treatment and recurred several times, rendering it sometimes difficult for his physicians to decide whether his frequent mild febrile attacks often accompanied by enlarged and tender submaxillary glands depended on one or the other infection. His frail physique, of a "status" type, had been in the past subjected to many serious illnesses, among which may be mentioned Malta fever in 1890, otitis media and acute appendicitis in 1908, double parotitis in 1911, frequent attacks of facial neuralgia, and an operation in 1914 for hemorrhoids. Until referred to me in 1915, none of his physicians had thought that an investigation of his unusually strong, sound looking teeth was necessary, yet three were infected, nine nonvital, one dead tooth showed an exposed nerve, an abscess at the root of one tooth revealed a pure culture of *Streptococcus viridans* and there was some pyorrhea. I quote several reports from his dentist, Oct. 2, 1915: "Upon removing two of the gold cap crowns, with which too many of his teeth are adorned, I found a considerable infection in both instances." Oct. 20, 1915: "Teeth are not yet entirely cleared up. Treatment seems to light up inactive foci of infection, showing a diminished resistance; although from radiographic point of view the condition of the teeth is good, there is likely to be more infection than shown in radiograms." Dec. 17, 1915: "I have been laboring with those nonvital teeth ever since my return in October with very little result. There persists periodic exacerbations which means that these teeth are offenders beyond what would be expected of them from the radiographic evidence. There are seven of them and in the aggregate, I believe there is considerable disturbance. I have hesitated at extraction, as I felt that they should not be lost until all efforts at saving them had been exhausted. Two or three of them are still giving trouble after periods of quiet. I am not sure but two of these should be extracted if there is not an appreciable improvement soon." March 14th: "The roots of the sixth infected tooth opened today; all three roots were infected." April 1st: "Upper right molar extracted without much discomfort." April 14th: "Upper left and lower right molar extracted." I also quote reports from the throat specialist, June, 1915, who advised further observation; he agreed that "teeth should be attended to first." October 22nd: "I am rather inclined to believe that such badly infected teeth are a menace to health, and I doubt very much whether the curetette treatment as given by dentists is as valuable as we should like it to be. I quite agree with you that his teeth should be put in good shape before taking out the tonsils, unless there is greater evidence of diseased tonsils than we have thus far seen." November 4th: "A more acute condition of throat and tonsils and more pus from latter." The vicious circle was immediately attacked by vigorous dental surgery, the tonsils were observed and skillfully treated by an authoritative specialist, and autogenous vaccines were also employed. Improvement was so slow, the reactions following the dental surgery, the local, or the vaccine treatment so severe, the patient's discouragement so marked, and the evidence of chronic tonsillar infection so convincing, that tonsillectomy was finally performed. Improvement became more rapid, but the patient is not yet cured, although several teeth have been sacrificed and he still requires dental surgery.

The last case I shall cite has no connection with the teeth.

CASE XII.—Male, forty-three years of age, gave a history of neurasthenia following overwork from 1891-1894, a temporary glycosuria in 1895, attacks of colitis from 1903-1904, pertussis followed by orchitis in 1909, and for some years chronic and occasional acute attacks of tonsillitis, during

which time his tonsils were frequently treated by a competent specialist. He was referred to me for attacks of indigestion with generally upper abdominal pain, at various times between 1905 and 1912. A big game hunter, small, strong, and wiry, nearly always well and very vigorous when not confined to his desk, he experienced one rather suggestive attack when in the wilds, which was responsible for an appendicectomy in 1912. The operation was justified by finding slight evidence of a previous mild inflammation, but the surgeon satisfied that his own diagnosis was so confirmed, failed to investigate the upper abdomen as had previously been decided. In 1913 he was again referred to me with a dilated heart evidently from overexertion at dancing. In view of his customary strenuous exertions as a hunter, this explanation alone did not satisfy me. Some enlarged glands from one tonsil and pure cultures of *Streptococcus viridans* from the pus squeezed from infected crypts of both, assisted me in convincing the throat specialist whom he frequently consulted, to enucleate them in January, 1914. Their extensive disease, so evident after removal, more than justified my insistence. He has been well since.

Many of this patient's past ailments, including his neurasthenia, may well be attributed to the absorption of poisons and the distribution of infection from the diseased tonsils. How far back we are justified in assuming such a causal connection would entail fruitless discussion; but I hope that this example, and some of those cited above, may stimulate many of my readers, as they have me, to a minute, painstaking search for minor focal infections in every patient upon whom we are inclined to affix the label of gout, and especially that much abused term, neurasthenia.

591 PARK AVENUE.

#### REFERENCE.

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### AFTERTREATMENT OF ANTERIOR POLIOMYELITIS.\*

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It is my purpose to present to you this evening the work on the aftercare of infantile paralysis as it is now being conducted in the City of New York, calling to your notice the various activities that have been assimilated for the purpose of developing the highest efficiency and producing the quickest and best results to the afflicted child.

This treatment is in accordance with the standardization established by the Committee of Health of the Academy of Medicine, Dr. Charles Dana, chairman, at the request of the Executive Committee on After Care of Infantile Paralysis.

We must realize that the work is dependent on the material from the 1916 epidemic, for of the 3,557 cases having residual paralysis, 2,690 or seventy-five per cent. of the cases are under four years of age. I will now attempt to describe how this treatment is conducted at the Hospital for Deformities and Joint Diseases, giving the methods in detail.

\*Read before the physicians of the Medical Association of the Greater City of New York, New York Academy of Medicine, November 20, 1916.



After the patient is presented and the diagnosis is made as to what general muscle involvement has occurred, in the extremities, and in the back and abdominal muscles particularly, he is then referred to a physician who makes a complete record of the extent of the paralysis of the muscles involved, with a record on the history blank as to the residual strength of the muscle or group of muscles involved. This is expressed in percentage; that is, ten, twenty-five, fifty, seventy-five, or ninety per cent. of its fellow muscle of the other extremity if only one extremity is involved, or some estimate of its approximate strength for future comparison, when both lower extremities are involved. After these electrical measurements and strength tests are recorded, the usual complete history is taken by another physician who instructs the nurses who administer the various electric currents, as to the amount of electricity the child is to receive, and supervises the application of the sponges to the muscles. He also observes the general condition of the patient while under treatment to prevent overtreatment.

In the administration of electricity and massage, it is essential that we bear in mind that the dose for physical therapeutics should be based upon the same standard as the administering of drug therapeutics, this being gauged for an adult weighing 150 pounds. The treatment by electricity and massage should be given in percentage to the weight on the basis of 150 pounds; a child of thirty pounds receiving one fifth, a child of 50 pounds receiving one third, etc.

With regard to the value of electricity, I should like to refer you to the literature of Vulpinus and Erb of Germany, Tubby and Jones of England, and to a recent joint meeting of the Section in Neurology and Psychiatry and of the New York Neurological Society held at the Academy of Medicine, Tuesday evening, November 14, 1916, where Dr. Frederick Tilney and Dr. M. Allen Starr spoke in the highest terms of electricity, galvanic, faradic, and sinusoidal, placing a preference on the sinusoidal current. Dr. Charles Dana, Dr. Bernard Sachs, and Dr. Edwin Fisher also endorsed the use of the electric currents as essential in the diagnosis and treatment of anterior poliomyelitis. The Hospital for Epileptics and Paralyzed of London, one of the largest English institutions, emphatically endorses electric treatment by galvanic and faradic currents.

The preceding statement places on record, beyond a question of a doubt, the fact that some of the leading authorities of our own country, as well as those of Europe, are most pronounced in favor of the value of electricity in the treatment of the paralysis of anterior poliomyelitis.

Electricity may be employed for two purposes: 1, For its unquestionable value in diagnosis determining the amount of paralysis present, and the reaction of degeneration to the galvanic and faradic currents; 2, for the treatment of these paretic muscles.

We must fully realize that when communication between the brain and the periphery is interrupted, a muscle thus affected, owing to its nonuse, will atrophy. In addition to this wasting, a replace-

ment of the muscle fibre by fibrous tissue takes place. This will remain as a permanent damage even if the communication of the nerve current is reestablished. Hence it is of great importance to keep up the tone and function of the muscle by electric treatment until it can be again taken up through voluntary activities. In the use of the electric current, the least possible amount of current that will produce a contraction should be used. This should not be continued until the muscle is exhausted. The current should not be such as to produce pain at any time. This can be avoided by raising the temperature of the skin by electric light warming or by means of a hot water pack. In exercising, it is wiser to raise a one pound dumbbell fifty times than to raise a fifty pound dumbbell once.

Muscle contraction can be produced in this way by the faradic current. It may be wiser and more efficacious to use the interrupted galvanic current eighteen times to the minute, which is synchronous with the respiration and synchronous with the heart beat of every fourth contraction.

In my judgment the current which seems to be most perfect is the slow wave sinusoidal current. This seems to be best borne by very young children, and when we realize that seventy-five per cent. of the cases of this epidemic are under four years of age, this should be worthy of consideration.

Irrespective of what current is used, about ten minutes should be given on the average child. This means from two to three minutes on each limb. The high frequency can be used to stimulate and develop muscle fibre, but as it is likely to irritate the skin and excite the child it is not adapted for very young children.

I have spoken, in previous papers, of the use of the high frequency current in the very early stages producing contraction in the cord, as a means of eliminating the blood and serum in the acute stage. Other investigators have described the efficiency of the high frequency in destroying bacteria and their toxins, and it is to be regretted that in this epidemic the high frequency, x ray, and radium have not been used for the purpose of destroying the bacteria of infantile paralysis and its toxins.

Although many differences of opinion prevail as to the application of the sponge electrodes, I am in the habit of applying them at the upper and lower third of the muscle or muscle groups involved, always laying stress on the importance of approximating the origin and insertion of the muscle as nearly as possible.

For instance, in treating the peroneal group, these muscles being most frequently involved, one sponge is placed over the middle third of the outer side of the fibula, the foot flexed as much above a right angle as possible, and the other sponge applied over the insertion of these muscles on the outer side of the foot. In this way, the bellies of the muscles are relaxed and a contraction is made more easily, effectually, and perceptibly.

I believe that much foolish stress has been laid on the reaction of degeneration and I wish to state, from a large practical experience, how deceptive it may be. It is said that a failure to obtain a muscle

contraction by a galvanic or faradic current is an evidence of degeneration of the muscle fibre, and that no improvement can be looked for in this paralyzed condition in the future. Do we fail to obtain a contraction in most cases? No! We find that the cutaneous surface will not tolerate the pain of the current, and we must desist before contraction takes place, for most of the cases occur in children under three years of age, who see no reason for enduring the electrical pain. This is even true in other cases, when the age of the patient and his cutaneous tolerance are greater; the strong current may give no reaction and still re-appearance of function may occur. Hoffa, when in doubt, always cut down on the muscle to determine its condition and efficiency.

The strength of the currents used should be the weakest that will produce a contraction, and it is never to be used after contraction of the muscle ceases, nor longer than from two to three minutes on any particular muscle group, or from six to twelve minutes on the body at one seance.

If this method is followed, the child will not cry from pain, or have its nervous system upset by too long continued electric treatment. I regret to state that the worst results seen by me have been in children of physicians who have had an excess of treatment; that is, electricity given from one half an hour to an hour daily has inhibited the recovery and eaten up, as it were, all of Nature's elements of repair.

Strychnine may be given internally or a solution used on a sponge and introduced locally, to increase the contraction of the muscle fibres.

*Massage.*—Dr. Benjamin Lee says: "In the essential paralysis of infancy, truly wonderful results are obtained by massage." Massage treatment should be used the moment the acute inflammatory symptoms have disappeared and continued daily in the face of seeming absolute ineffectiveness for weeks, months, and even years. Cases in which no improvement can be detected for long periods often suddenly begin to improve and progress with great rapidity.

The effect of massage may be classified as follows: Mechanical, reflex, thermal, and electrical.

1. The mechanical effects are by far the most important, but the others should not be overlooked or forgotten. They consist of the interchanging of cell contents under the influence of alternate pressure and relaxation; a quickened movement of the blood in the capillaries, especially in the muscular tissue; increased activity in the movement of the areolar fluid; and acceleration of the currents of both blood and lymph in their respective channels.

2. The reflex or purely nervous effects of massage are obtained by light stroking and percussion. The former produces results which can only be explained on the supposition that it acts as a stimulant to the reflex system of nerves, the force used not being sufficient to account for any change on the mechanical theory.

3. The thermal effects of massage and movements are almost too apparent to need scientific demonstration; every one is familiar with the fact that both muscular contraction in the form of ordinary exercise and simple friction develop bodily heat in

a striking degree. Dr. Weir Mitchell, in his essay on "Fat, Blood, and How to Obtain Them," notes—what has been observed by many others—that he has frequently seen the strangely cold limbs of children suffering with infantile paralysis gain from 6° to 10° F. during the massage.

4. The electric effect of massage results partly from the development of the surface heat, partly from the surface friction, partly from the attrition of the muscular fibres and cells, and partly from the nerve stimulation and chemical action.

Graham observes that muscles give a much more ready, vigorous, and agreeable response to the will and to the faradic current after massage than they did before.

The abuse of treatment is found in prolonged massage. Children who receive an hour or more of treatment daily cannot improve in the face of such a physical tax. I have seen many cases in which the overtreatment has deterred the progress of recovery. Fifteen to twenty minutes of treatment is sufficient to administer at one time on alternate days.

*Muscle Education.*—Finally I wish to call attention to a class of active and passive exercises done before a mirror, having the patient concentrate his mind on the affected muscles.

When the origin and insertion cannot be approximated by an effort of the will, the attendant aids in the effort. After a time it is found that the motion may be brought under the control of the will. It is known that when motion is guided by mental concentration the sulci in the gray convolution in the brain presiding over this motor area are increased, as well as the calibre of the nerve going from the cortex to the periphery. It has been demonstrated by Anderson of Yale and others that when a person is securely placed on a body balance and concentrates his mind on an extremity, the hyperemia thus produced tips the body balance in the direction of this limb.

A moment's thought makes clear the fact that the nerve efficiency or nervous control as displayed by the gyrations of the nautch dancer can be developed by any person in any set of muscles if a proper effort is made for development of sufficient nerve force and nerve control. The stimulus transmitted from the brain to the periphery depends on the calibre of the conducting nerves, as the diameter of copper wire regulates the volume of electric current capable of transmission. We must now realize that the concentration of the mind on the muscular effort not only initiates the movement, but also sends blood to the controlling nerve centres producing growth and development in the conducting filaments.

In this treatment of infantile paralysis, in addition to the application of massage, the treatment by the galvanic, faradic, sinusoidal, and high frequency current in children over three years of age, a course of muscle education before a mirror is added, which I regard as one of the most important in its treatment, because recovery is best brought about by the action of the will, influencing action after massage and electricity have brought the muscle under the control of the mind.

The muscles most frequently involved in infantile paralysis are the peroneal group, and the plan of

exercising one set of muscles can be utilized in other sets of muscles involved. Placing a child in a chair before a mirror in a comfortable position, I first approximate the origin insertion of this muscle group by bringing it up to a right angle with the leg, and then urge the child to aid in bringing it up to the little toe side of the foot through an arc of about thirty degrees. If the muscle contraction is such that the child cannot do this alone, the instructor places one hand on the knee to keep the leg in the position, and places the other hand under the foot, which greatly aids the efforts of the child in producing the required contraction. This should be repeated several times, but not to the point of over-tiring the weakened muscles. Each set of muscles should be contracted in a similar manner. If the motion cannot be brought about, still the mental effort should be made for the attainment of this action.

To realize how efficient this method is, I wish to state that through this, combined with other treatment, I have been able to show at medical meetings some forty-three patients practically cured, who were unable to walk for periods extending from nine months to fourteen years, having received some form of treatment during this time by other physicians and having been referred to my office and to the Hospital for Deformities and Joint Diseases by such able observers as Dr. Abraham Jacobi, Dr. Charles Gilmore Kerley, Dr. Henry Koplik, Dr. N. M. Mandl, and many others.

It has been learned from necropsy that when areas in the brain have been destroyed by tumor or cysts, the function for this area has continued, and by the decussation of the nerves other areas in the brain have taken up the function. I am of the opinion that in cases in which recovery has taken place in paralysis, after a few years, the motor conduction from the brain to the periphery has been conducted through other motor tracts in a new circuit, passing around the damaged area in the cord; as one makes a detour to avoid obstruction in the public highway, or as electric currents which pass along other strands of wire; so when one meets a defective area, pass down another strand of copper wire and then return to the direct line. Another scientific fact to be considered is that at the age of fifteen years there are twice as many nerve cells in the cervical spine as there are at the age of one year; this would be similar to an increase from 100,000 to 200,000, and this increase may also account for the new conduction tract in the spinal cord.

*Heat.*—Heat can be applied by hot water bags or any other form of warm application to increase the blood to the affected paralyzed extremity, as the temperature of the affected limb is invariably many degrees below that of the normal one.

In our practice at the hospital, electric light bakers that can cover the extremities of the body, are used to increase the temperature and circulation in the limbs, which early in the treatment also relieve the pains of their neuritis and is of great benefit to precede the massage and electric treatment.

*Hydrotherapeutics.*—The most valuable aid in retaining the muscle tone of the soft tissues and possibly stimulation to the trophic centres to prevent

pain and atrophy, is the immersion of the affected extremity in a vessel nearly filled with water at a temperature between 90° and 100° F., using that which is best tolerated by the child. A metal umbrella rack with a seat or some such vessel can be devised for the individual case, whether the affected extremity is an arm or a leg. The child's limb is immersed and remains so for twenty minutes just before retiring. It is found that the heat in the affected limb is retained for several hours afterwards. This, no doubt, is accomplished in two ways. The heat is absorbed from the water primarily, and when the limb which has sustained the water pressure of sixty-two and a half pounds to the square inch for twenty minutes is brought about into the atmospheric pressure of fifteen pounds, capillary dilatation results and continues for some time afterward.

The following case has proven to me the value of this treatment in addition to the other treatment given:

E. R., daughter of Dr. R., had been under the treatment of three orthopedic physicians in the city of New York for a period of four and a half years and still retained a dangled leg with some shortening, when she came under my observation. After a period of one and a half years' treatment by means of massage, electricity, muscle education, and nightly bathing, the latter constituting an important element in the remarkable recovery, the limb actually increased in length over a half an inch, which was based on the measurements of some of the leading physicians of this city. Another point of interest is the fact that the return of size in the function of the limb was such that at a visit of the Interurban Orthopedic Association at the hospital last fall, the physicians could not recognize which was the affected limb. I feel quite certain that the actual immersion of the limb for twenty minutes, in some way, stimulated the trophic centres to aid materially in its recovery. This case is also interesting in the fact that the patient had four and a half years' treatment with braces and some massage without any apparent great benefit.

I have had a large number of similar cases with some very satisfactory results that I have shown at the meetings of medical societies. My reason for citing this case is to discourage those who think that the only means of improvement in these cases is operative procedure.

Braces may be used to prevent deformity and to aid in locomotion, but in applying braces we must fully realize that the pressure of the collar in the brace destroys the muscle bulk and muscle strength of the affected muscles. Solid plaster splints should never be used for the prevention of drop foot, etc., as we add the pressure atrophy of the plaster cast to the damage done by the disease. Where retention splints are necessary I would suggest some light removable splint of aluminum to permit handling and bathing of the extremity, and by this means no limb that is treated every other day by massage and manipulation will have time to develop contracted muscles.

*Conclusion.*—Treatment has a more hopeful outlook when we realize that less than ten per cent. of



the muscles are totally paralyzed and more than ninety per cent. are simply paretic.

One should always carry in his mind the physiological effect of heat, hydrotherapeutics, massage, electricity, and muscle education (as herein described, performed before a mirror) in the treatment of cases of infantile paralysis.

The following salient points are worthy of repetition owing to their importance in treatment:

1. It is advisable to give all treatment early in the morning, the child being then in the best physical condition and having expended little of his recruited strength, which makes a good standard of comparison. The apparent condition of the child is to be noted as a basis to determine the amount of treatment to be given on that particular day.

2. Heating should be carried on to warm the muscle tissue but not to manifest a perspiration that would be a physical tax. The warming of the skin requires less electrical current for reaction.

3. Massage should be given as a mild stimulant to the muscle and circulation but not to exhaust the muscle tissue or to produce pain or irritation of the child.

4. In the administration of electricity, no matter what current is used it should not be strong enough to give the child pain or act as an irritant. The least possible amount of current that will produce a contraction should be used and not to a point of exhausting the muscle or until it ceases to contract.

5. In muscle education the exercises should be limited to a time that will not overtax the paretic muscle.

6. In the use of the bath, care should be taken not to have the heat of the water so high as to irritate the skin or to burn it.

7. The very best results, in my opinion, are obtained by administering treatment every other day, allowing the time intervening to recruit the muscle and the general health.

#### CLINICAL OBSERVATIONS ON THE TREATMENT OF PROSTATIC OBSTRUCTION.\*

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Probably in no other line of surgical procedure has such real and lasting advance been made during the past decade as in the treatment of prostatic obstruction.

It was to be expected that general surgical technique, which has led to the advancement in the surgical treatment of other regions of the body, when combined with our precise methods of study of the urinary tract, would bring about radical changes in local operative procedures. This has happened; and the results speak for themselves.

At all times and in all conditions where advancement has been rapid, the drift of thought is apt to be directed in a channel which tends to become

narrow unless we occasionally stop and reflect.

It is my desire to do this briefly, and my plea is the treatment of the prostatic as an individual, not as a class. Speaking of prostatic obstruction we think of a man of middle life or advanced years who is presenting some difficulty of urination, due to a change in the consistency or conformation, or both, of the prostate gland.

The cases of prostatic obstruction in the young man are inflammatory, or due to congestion, and often associated with venereal disease. This type will be seen less often as the treatment of the primary disease is being carried out in a more and more intelligent and thorough manner.

We will say, then, that a prostatic is a man of middle life or advanced years. He has reached the point where certain physiological and pathological changes are taking and have taken place. The extent of these changes vary with the individual. We must consider his heredity; his history to date, both physical and environmental; his present status of mind and body, and what his future has in store for him.

One individual shows little or no physical deterioration, but mental changes; another is at the height of mental development, at the expense of physical health; others are phlegmatic physically and mentally.

Few men reach middle life retaining physical vigor. With advancing years life becomes more confining, the body is called upon for more and more of its reserve, until this gives out and the capital is drawn upon, with tissue changes in direct proportion to the daily restoration possible, or the partial "come back" of the occasional vacation.

The accompaniments of affluence—a more sedentary life, more and richer food, alcohol as temporary stimulation to drive on the tired individual, less sleep, and greater mental requirements—give us a lack of resistance in varying degrees on the part of our private patients, while the hospital charity patient suffers from overwork, physical and mental—in proportion to his development—a lack of nutrition, improper hygienic surroundings, and a routine existence. Thus we have to deal with an impaired organism as a whole.

The man of middle life is undergoing a sexual change. He is inclined to be less active sexually and frequently to cut off intercourse, or to be too active from unnatural stimulation. Both lead to congestion. A large proportion of men have suffered from a prostatitis in early life, the accompaniment of a venereal infection, or a prolonged congestion due to irregular sexual habits, and the glandular tissue is more or less impaired.

Add to this the congestion caused by the sitting posture, increased by slight motion, as in automobile riding; poor circulation; local pressure on the prostate from fecal masses in the rectum; a stream of urine bathing the vesical and urethral surfaces of the prostate—a urine irritating from its chemical constituents, often containing bacteria in large numbers, originating in a sluggish colon—and I believe we have a real predisposition to growth formation, whether adenoma, fibroma, or carcinoma.

\*Presented before the New York Urological Society, at its stated meeting, December 6, 1916.

I would not infer that the possibility of a growth in the prostate can be eliminated by the regulation of the life of the individual any more than fibroids may be eliminated in the female. You will say that you have seen many cases in which the individuals have lived model lives. While this may be true in some cases, the most careful questioning will usually reveal some of the points mentioned. It is only part of the human organism: all parts must work in harmony and the body must be considered as a whole.

Too often the busy urologist leaves the history taking to an unskilled assistant with little knowledge of urology and none of human nature, who is neither competent nor tactful enough to obtain a history containing any more than a few facts relating to the urinary system. It may be impossible to obtain a history at one sitting; certain points will be revealed by the patient only after his confidence has been obtained.

Linked with such a history, one should obtain a complete analysis of the individual from a general physical examination. It is often unwise to make the complete examination the first time a patient is seen, and we all know how important it is to make repeated observations under changed conditions. How often the patient comes with the question on his lips: "Must I have an operation?" and, after meagre questioning and a rectal examination of the prostate—often a congested prostate, perhaps with an overdistended bladder, pushing it down, periprostatic inflammation, and a rectum partly filled with fecal masses—a cystoscopic examination is made and, with a few ounces of residual urine and a gland showing some intravesical protrusion, its removal at once is advised.

If this is done, how often is a nerve lesion overlooked, a congested prostate removed, a localized edema of the vesical neck mistaken for true prostatic obstruction? In the absence of a cystoscopic examination a stricture or vesical calculus may be mistaken for prostatic obstruction.

If the patient had been closely observed over a period of time, his general well being considered, and repeated examinations made, would this have occurred? Is it not justice to the patient to give him this chance and when he has acquired an even physical and mental keel, to pass unprejudiced judgment? I believe that very few patients will be unwilling to cooperate with us.

This may sound elementary, but the foregoing words are to my mind necessary. The poorly trained urologist does not consider his prostatic cases individually, as he is not personally equipped to do so. The expert urologist is often too busy to give sufficient time to an individual, and is only too ready to employ quick operative treatment in which he is skilled and in which his immediate mortality is small without giving sufficient consideration to two points: 1. Is the operation of prostatectomy the best method of treatment of this individual case? 2. Will the end result be the most advantageous to the patient?

It has been a revelation to me to observe, after instituting a regular mode of living, diet, and exercise, what improvement in the local prostatic con-

dition has taken place and how the patient who seemed a sure prostatectomy when first seen has gone on in comfort in his new method of living, a minor operation being substituted for a major; or has at a later time come to prostatectomy with a new reserve with which to meet the exigencies of the major procedure.

The foregoing applies more to those of sufficient intelligence to appreciate such advice and so situated that the advice can be followed. The environment of the individual must be seriously considered. Often a prostatectomy must be advised through inability to carry out satisfactorily hygienic and local measures. A man must be restored to his greatest efficiency in the shortest possible time, and must take a greater chance in doing so.

Hospital ward cases must be considered differently from private cases, but here preliminary treatment can be instituted and carried out, greatly reducing the complications of prostatectomy. This treatment is often shortened by the desire to operate on the part of the surgeon or he is hurried into it by the house surgeon, the success of whose service, in his mind, depends upon the number of operations he performs or assists in.

I believe that private cases are best studied in their own environment, if this is possible—the environment in which they are to live. To place a patient in a hospital, instituting medical measures of diet, increased elimination and local treatment, and then on improvement to turn him loose to return to his old habits of life, will give no lasting benefit, and radical measures might as well be introduced at once rather than later when a more aggravated condition will be present.

If patients realize that they are to be treated in this manner, that they are to be observed by an unprejudiced surgeon, they will come more often for inspection, and such a relationship between the specialist and the patient, as well as with the general practitioner, will, I am sure, lessen the number of cases coming to radical surgery. The predisposing factors to prostatic changes will be diminished, the causes of continued irritation eliminated, and borderline cases which are progressing would be relieved by radical surgical procedure at a time when the operation will be attended by the lowest mortality and the most complete end result.

The ideal treatment for true prostatic obstruction must be based primarily upon the pathology of the individual gland; secondarily, upon the pathology of the urinary tract of which it is a part; and thirdly, the pathology of the entire organism of which the urinary tract is a part.

If these three elements were constant, the treatment for the relief of prostatic obstruction would be comparatively simple. While the pathological changes which take place in the prostate gland leading to obstruction follow certain types and many cases fall directly into one of these classes, others present variations which make them borderline cases.

While we know from experience what complications we are to expect from the secondary changes in the urinary tract and the end function to be obtained, here again the individual pathology is the

only key to the situation, and must be continually borne in mind.

The study of large numbers of cases has led to the laying down of certain indications for and against definite lines of treatment based upon the organism as a whole, with due consideration of the individual.

The above renders the problem of the management of cases of prostatic obstruction secondary to none encountered in the human body as regards finesse of judgment.

That some ground may be established for the building of general principles of treatment based on the pathology of the prostate, we speak of: 1. The fibrous prostate, in which there is a marked increase in fibrous tissue and a diminution of glandular tissue. Here the gland becomes hard, and usually diminished in size. 2. The adenomatous prostate, in which there is a glandular hyperplasia. This may be localized to one lobe of the prostate, or may involve the entire gland. 3. Malignant degeneration of the prostate. As I have said before, there may be a combination of types.

The *small fibrous prostate*, forming a hard ring about the vesical neck, causing a constriction of the outlet or interfering with the function of the internal vesical sphincter, is one of the most difficult types of obstruction to relieve.

Dilatation of the vesical neck gives but temporary relief. The operation for the removal of this type of prostate is unsatisfactory because of the difficulty in removing the gland, the incidental damage to the vesical neck and sphincter, and the resultant cicatricial contraction.

For these reasons various types of less radical operations have been devised, the object being to increase the size of the outlet and diminish the resistance of the hard ring. The most notable of these procedures are: A division of the ring and the removal of a U shaped piece by means of an instrument introduced through the urethra (Mercier); the substitution of galvanocautery for a cutting instrument (Bottini, later modified by Frenzenberg and Young); the operation of Mercier applied through an external urethrotomy wound (Gouley); galvanocautery prostatotomy applied through an external urethrotomy wound (Chetwood); cautery applied through a cystoscope (Goldschmidt); a removal of pieces of prostatic tissue by means of a modification of Mercier's instrument, the Young punch; the destruction of tissue with the high frequency spark applied through the cystoscope (Bugbee).

The fact that there are so many methods of treatment indicates the unsatisfactoriness of all. I believe, however, that the success attendant upon the carrying out of any of these procedures bears a direct relationship to the dexterity of the surgeon and to his personal experience with that type of cases, and attention to details of the operation of which he is the originator or which he has employed most often. I will not attempt to enumerate the apparent advantages and disadvantages of each.

The statistics given by Young are the best recorded in this class of cases, but are of too recent date to permit of judgment as to the permanence of cure.

Application of the high frequency spark must be made too often and too extensively to be satisfactory in the majority of this type of cases. The local reaction caused by the frequent applications often leads to irritability and infection.

A type of cases spoken of as median bar obstruction, in which there is an elevation only of the vesical outlet—trigone—may be quite distinct from the small, fibrous prostate, and does not seem to fall into any of the three classes. This elevation of the trigone may be due to hypertrophy of the mucous membrane only, to an infiltration of the trigone with fibrous tissue, or to an elevation from very early and limited adenomatous hyperplasia of the median prostatic lobe. This type of obstruction is relieved readily and permanently by burning a furrow through the obstructing tissue. Young claims the same result with his punch. The advantage of the high frequency spark is that one is working by sight, there is no hemorrhage, no resultant cicatricial contraction, and it may be repeated as often as is necessary.

These are cases that should be kept under observation, as the result of any line of treatment is apt to be less permanent.

*Adenoma of the prostate* comprises the vast majority of cases observed, and may involve any one of the prostatic lobes, any combination of lobes, or all. The line of treatment to be instituted depends upon the type of obstruction present, taking into consideration the general condition of the patient.

In the majority of cases the earliest adenomatous hyperplasia takes place in the median lobe. This causes an elevation of the vesical outlet and trigone more pronounced than the median bar, and in very early cases this condition may be found without change in any other part of the gland. What appears at first sight to be a prostate of considerable size, the seat of general adenoma, may prove to be a congested prostate which, when reduced by general constitutional and local treatment, shows only a small intravesical median lobe enlargement.

The writer has had excellent success in this type of cases—small median lobe enlargement only—by burning through this lobe with the high frequency spark, widening the furrow sufficiently to remain open when the patient strains, as in voiding. No more tissue is destroyed than is necessary to give immediate relief, and further applications are made at infrequent intervals if the routine examination every six months reveals any necessity for this. Some of these cases were treated nearly five years ago and none of them have since come to prostatectomy.

Most patients with this type of prostate have very few urinary symptoms, and these symptoms are so trivial that they are not inclined to seek advice, perhaps in fear of an operation. Were they made to realize that any and all urinary disturbances are important, and when taken in time might be relieved by a palliative procedure, they would be more apt to consult the urologist.

Occasionally a small anterior lobe, which ordinarily disappears in fetal life, persists and becomes the seat of adenomatous enlargement. This may be found with a median lobe, and I believe this is important to recognize, as it may cause continued



obstruction after the median lobe has been partially destroyed.

When this condition is present it may be best to use the Young punch, removing at the same time sections of the anterior as well as the median lobe. Whether the punch or the spark is used, every precaution should be observed, preliminary to as well as at the time of operation, to lessen the chance of infection.

I will again emphasize the point that the success of the minor operative procedures depends upon attention to details, perfect technic, and aftercare.

An inoperable case of general adenoma has recently been brought to my attention where the prostate, by the use of radium applied to the rectal and urethral surfaces of the gland, became reduced to a hard fibrous ring about the vesical neck. The obstruction caused by the ring was relieved by multiple punches with the Young punch.

In all other forms of adenoma—lateral lobe enlargement or combined lateral and median embracing a large proportion of cases seen—a prostatectomy is advisable, unless there is a contraindication as follows: Some general nutritional disturbance; severe diabetes; extensive changes in the heart and kidneys; advanced arteriosclerosis; general chronic urepsia. Of these conditions circulatory disturbances are the most important and most likely to lead to a severe complication at or following operation.

While any one of these conditions may be an immediate contraindication to operation, a regulation of the individual as before suggested may at a later date place the patient in the operative class.

Seldom is a prostatectomy an emergency operation. A cystotomy may often be, but an emergency operation is an immediate expedient for the saving of life. Not only is a cystotomy an emergency operation, but it is often one of choice. The relief of pressure on the prostate resulting in the rapid diminution of congestion, the relief of back pressure in the kidneys, the possibility of flushing the system, and the relief of urepsia make this preliminary procedure one of choice in a majority of the cases necessitating prostatectomy. Often satisfactory results may be obtained by the use of an indwelling catheter, but here the drainage is less complete and the catheter may cause irritation of the urethra with a certain amount of septic absorption.

The preparation of the patient for operation may be summed up as follows: To simulate as closely as possible before operation the conditions we expect to obtain after operation, so that the process of transition is made with little or no shock to the system.

As to the type of operation to be employed in the removal of the prostate, I believe too much emphasis has been placed upon this point. One should be as familiar with the anatomy of the perineum as with that of the suprapubic region. The operation of perineal prostatectomy perfected by Young has many advantages if carried out as by him; if not performed in this manner, the suprapubic route should always be selected. Some cases fall at once into the suprapubic class. Rather than lay so much emphasis on the type of operation, let us use our

energies in preparing our cases, and in attention to postoperative details.

Is it fair to sentence our patients to death within so many months or years if they do not undergo a prostatectomy? How often do we hear the statement made that catheter life means one infection after another with a fatal outcome in a very few years. Often this is true, but in dealing with a class of patients who can intelligently follow out our instructions, a catheter may often be used for many years with slight deleterious effects.

It has been a surprise to me to see how comfortable inoperable cases of general adenoma of the prostate have been made by partial relief of the obstruction by burning through the median lobe with the high frequency spark.

Of many cases so treated in the past five years, only one has since come to prostatectomy. In two the treatment was discontinued because of the impossibility of manipulation, due to the size of the prostate. If the prostate is of such size that the passing of a cystoscope results in traumatism, no attempt to apply this treatment should be made.

All of these cases were placed on a regular routine of life with the most minute attention to diet, exercise, and bowels. A furrow was cut through the median lobe and widened from time to time. The case that came to operation was markedly improved. A growth on the surface of this prostate had been removed by the high frequency spark, as well as a furrow made in the median lobe. Operation was advised because of continued enlargement of the lateral lobes with increasing retention and marked improvement in the patient's general well-being. At operation all that remained of the median lobe was a band of fibrous tissue.

Another patient is comfortable on partial catheter life. Others, whose condition is so improved that operative risk is warranted, are so comfortable that they refuse radical removal of the prostate, preferring to come for inspection and occasional application of the spark when indicated.

This method of treating general adenomata is not the method of choice, but an attempt to make more comfortable those who cannot or will not have a prostatectomy. As I have said before, given an operative risk and a general enlargement or even a partial involvement of the gland of any appreciable size, prostatectomy is indicated.

Other methods of treatment must be explained as palliative, requiring a long period of time, and should possibly be followed by a radical operation if the patient's condition warrants it at some future time. It must be carried out most carefully, or should not be undertaken.

*Carcinoma of the Prostate.*—One of the strongest arguments for the removal of an adenomatous prostate is that so many become malignant. This is certainly a serious consideration, and often warrants taking certain operative risks.

The diagnosis of carcinoma of the prostate is often difficult or impossible. The adenomatous prostate is frequently seen for the first time during an acute infection when inflammatory reaction and infiltration are added to the glandular hyperplasia. This is difficult to differentiate from malignancy,

differentiation being possible only after general and local measures have been adopted to reduce the inflammation. Carcinoma generally originates in the posterior lobe and is seldom detected by palpation while in the incipient stages.

When the diagnosis of carcinoma can be made, the growth has usually extended through the prostatic capsule, and for this reason the result of the removal of the prostate is seldom satisfactory. I have seen the most favorable operative cases where the growth was not diagnosed until the removed gland was sectioned, followed by extensive recurrence within six months.

Symptoms are seldom present in carcinoma of the prostate until an infection has occurred, although the first symptoms may be due to pressure. The removal of this infection often gives complete relief for the time being, and continued care toward this end may result in comparative local comfort until metastasis takes place.

When obstruction occurs, making catheterization painful or impossible, either the obstructing portion must be removed or destroyed, or a suprapubic drainage must be made. During the past year and a half radium has been employed more and more, being applied to the vesical or rectal surfaces, or into the substance of the gland. My own experience has been too limited to draw any conclusions. Cases observed and treated by others have shown considerable toxemia following the applications, and the time is too short since the treatment to give conclusions.

It seems to me that sufficient radiation to give a decided and permanent effect in reducing the size of the growth must cause extensive tissue destruction, very little of which is cast off on the surface, and this must be taken up by the system with resultant toxemia. Does this hasten metastasis? And does not the lowering of the resistance from the reactionary period render the patient less able to withstand the original disease?

My own feeling is that the less the mechanical interference, the more slowly the malignant growth increases in size, and that if the tissue is to be destroyed, the destruction should take place no more rapidly than the body can take care of it without causing severe reaction, or we must be able to neutralize the toxemia.

One case of scirrhous carcinoma now under my care has gone three years since first seen. The patient had an extensive carcinoma of the prostate, vesicles, and base of the bladder, with complete retention. Enough of the obstructing portion of the growth was destroyed to allow relief by voiding and the passage of a soft catheter once or twice a day to draw off the five or six ounces of residual which has kept the patient free from urinary discomfort. He returned to his occupation, and only in the past few months has he failed from metastatic growths.

Perhaps in carcinoma of the prostate more than in any other prostatic cases must the man be treated as an individual, and while our means at hand are most inefficient, still we should attempt to give relief of symptoms.

#### CONCLUSIONS.

I would emphasize the following:

1. Our aim in treating cases of prostatic obstruc-

tion is to preserve the life of the individual, and to restore function.

2. The restoration of function should be brought about as rapidly as is consistent with the consideration of every point connected with the patient's welfare.

3. Prostatic obstruction of the vesical neck is mechanical and can be relieved only by removing the obstruction.

4. The complete removal of the obstructing gland is the ideal method. Other methods of treatment must be considered as palliative, may result in cure or be followed by radical operation.

5. When the ideal cannot be attained, much relief can be given by painstaking treatment and complete cooperation between patient and surgeon.

40 EAST FORTY-FIRST STREET.

### PROMPT REMOVAL OF EXUDATE FROM TRAUMA.\*

*With Recent Experiences.*

By A. B. HIRSH, M. D.,  
Philadelphia.

Failure to remove excess of blood and lymph effused about fractured bones or lacerated softer structures immediately after receipt of injury readily explains certain cases of osseous nonunion, or that interference with function in other conditions which often more or less permanently cripples the patient. Too much callus, or cicatricial interference with motion, are hackneyed terms unfortunately only too often met with in the literature. This fact has always been an opprobrium in practice, as admitted by surgical authorities, and yet, aside from massage for removal of this excess of extravasation—actually a foreign body—no real relief for this complication has been heretofore advanced. While digital manipulation could force back much of the misplaced fluid, in many patients enough would remain to cause partial permanent disability. How woefully antiquated remains the treatment of such effused material as advised in the textbooks, whether written in a past generation or produced today, is only too well realized by those adequately trained in modern electrotherapeutic methods.

It is to emphasize how deficient are the methods commonly in use and to show how far superior are the results attained by proper application of newer electrical modalities in this class of injuries that some recent experiences have been taken from my records and summarized herewith.

CASE I.—A forty-two year old man of large frame and somewhat obese was struck by a heavy runabout and hurled to the concrete driveway. When brought to the office twenty-four hours later, the right side was found to be ecchymosed from the vertex to the toes. Slight hemoptysis with cough called for first attention, although repeated physical examinations of the chest revealed no exact site of injury. There was doubtful bronchial breathing in the right anterior axillary line between the fourth and fifth ribs, that vanished with the hemoptysis after one twenty minute application of the static wave current, an inch wide four inch flexible metal electrode being retained over these two ribs. The bleeding at the same time ceased permanently. Surface abrasions of the scalp, over the malar bone, the middle of the clavicle, and the outer

\*Read at the Twenty-sixth Annual Meeting of the American Electrotherapeutic Association, New York, September 12, 1916.

malleolus were cicatrized by one application of the static effluve. Excepting for a semicircular line left at the lower orbital margin, a marked contusion (black eye) of the lower eyelid fully disappeared at the same time and by the same method. The whole range of ecchymoses over the rest of the right side of the body and lower extremity disappeared after six treatments with the static wave and the brush discharge, the glass glycerine electrode always collecting the latter from over wide areas. A more suitable case for this current could not well be desired—one that under other treatment would have lingered in pain and disfigurement, perhaps permanently.

CASE II.—A gentleman, in a Pullman car, struck the tip of his toe with some force against the rigid edge of a handbag that had rolled in front of his seat. Sharp pain soon made locomotion a misery so that, consulting the writer some ten hours later, the whole third toe of the right foot was found to be black from ecchymosis. Twenty minutes' application of the static brush discharge drove back the effused blood into the v.-ssels and, reducing edema of the soft parts and pressure upon the nerves, all pain vanished. The hematin of the blood, of course, remained where temporarily deposited due to the time elapsing after the injury before treatment started, but was of no importance because absorbed later.

CASE III.—A robust young man, physically well developed, fond of club life and partaking freely of stimulants and a constant variety of highly seasoned foods, was subject to recurrent attacks of so called gouty lumbago that, under older modes of treatment, usually implied ten days' to two weeks' convalescence. His physician, promptly recognizing the real nature of the condition and alert to progressive remedies, referred him for electrical applications. Localization of uric acid in the aching parts and its early removal would, of course, readily explain the rationale of the treatment employed. Radiant light and heat, by a 500 c. p. incandescent hooded lamp, applied for half an hour over the painful region, prior to ionization with a two per cent. sodium salicylate aqueous solution, removed all trace of the trouble after three daily repetitions.

CASE IV.—A middle aged man, of large frame and somewhat obese, came for treatment for a typical sprain of the left ankle and instep. Being a newly arrived foreigner and unaccustomed to the high steps of the Philadelphia trolley car, he had descended with sudden and severe force upon the concrete street pavement. The physician who first treated him brought him into the office a fortnight later when I found the disability and pain to depend on the presence of considerable exudate behind and below the inner malleolus and about the tarsus. The instep, unlike its uninjured fellow, was markedly flattened. In this case, radiant light and heat, by the 500 c. p. hooded incandescent lamp, swung for a half hour over the affected member, was preceded by twenty minute séances of the static wave current, metal electrodes being shaped and bandaged about the ankle and tarsus. Static sparks were then directed to the spasmodic interior and posterior tibial and peroneal muscle groups. Within six weeks all traces of exudate were gone so that motion was free in the affected articulations. A list of leg and foot exercises was ordered and successfully followed. Possibly not grasping what was intended, he failed to wear an instep support, as advised, so that when ending his visits the flatfoot had not altogether disappeared. Otherwise he had a functional cure.

CASE V.—A young professional man of the city, an educator, balanced on a rick or stack on his suburban farm and directing the placing of the hay, lost his foothold and slipped down the thirteen foot high stackside. Being of large frame and physique, he struck the hard backed ground with some force, the outer portion of the left heel landing upon a small imbedded stone. Entirely disabled, he was helped to the farmhouse and at once treated for the resulting sprain. Complete rest of the part was enjoined and a variety of solutions applied; later the parts were freely massaged and passive motion instituted, after which for awhile the foot and leg were encased in a gypsum cast. When the time arrived for him to resume teaching in his department of a large private academy, it was possible, aided by a cane, for him to hobble about with some difficulty. A number of months of this disability had passed, however, before his round of various practitioners finally brought him to the progressive who sent him for

electrotherapeutic treatment. Organized lymph and some dull pain were then found, on manipulation, about the inner half of the insertion of the left tendon of Achilles where it had been extensively lacerated. The fall must have inverted the foot, however, judging from the considerable amount of exudate found about the outer malleolus; indeed, the hollows marking the end of the fibula were quite filled out from this cause. The limited range of motion in the tarsus and metatarsus unquestionably depended on the deposit that bound them together, and localized intermittent lancing pains were also due to that material. Regarding it as an organized foreign body, thermopenetration by the D'Arsonval current from the coil transformer was then used along various lines through the ankle and foot, this always being followed by the static wave current. Flexible metal electrodes were moulded upon the surface when resorting to either modality. After three weeks of these daily applications the patient could dispense with his cane in walking, and five weeks later, when thus treated on alternate days, resulted in free use of the injured member, pain disappearing with the exudate. The irregular surface due to plastic deposits had been completely smoothed over. As for the lesson taught by this case, had the static effluve and wave currents been at once used on these injured structures, this gentleman would have been saved weeks of acute suffering and inaction and months more of altogether needless disability.

CASE VI.—A muscularly built business man of fifty-two years gave this history: While an officer in the Swiss army, thirty years previously, he was thrown from his horse and had a traumatic double lumbago for which a corset was worn for weeks. This region ever since had been tender on manipulation. While engaged at gymnastics three weeks before coming to the office, this lumbar region was again sprained. Examination showed probably acutely torn fibres of the right abdominal wall muscles about the inner third of the iliac crest at the margin of origin of the right lumbar muscle. For this acute condition the static wave current was applied for twenty minute séances daily, a three inch by four inch flexible twenty-two B. and S. gauge metal plate being bandaged over the region. Four treatments removed all traces of the injury. Then, when he asked for possible relief from the thirty year old deep seated lumbar ache, the D'Arsonval current to tolerance was passed through the involved area for twenty minutes on alternate days, always concluding with the static wave current for a like period. Later, the tissue oscillator and vibrissage, alternately, were added. After two months of this course he found himself able to go through prolonged gymnastics without hindrance, although deep compression, when the trunk is relaxed, still shows the continuance of a few, small, slightly tender spots.

CASE VII.—A young lawyer was referred by his family physician for inability to use the right arm. The previous summer there had been prolonged treatment for simple neurasthenia from too close devotion to the duties of his profession together with, possibly, too intense indulgence in athletics. Resort to carpentering at home was the successful remedy, but in January, 1915, the right elbow first began to ache, especially after persistence at some heavy job. In April, 1915, he had fallen through the joists of a building under erection, the outer surface of the right elbow catching on a joist. For this acute condition he underwent a variety of treatments at the hands of several physicians alternate resort to embrocations and fixation of the joint being much in evidence. While avoiding heavy or prolonged use of the right arm, he was told its moderate employment would preserve its function. Two weeks later, on coming to my office, the patient complained of a dull ache about the tubercle on the outer condyle of the right humerus, this pain being aggravated on lifting a heavy object, on fully supinating the forearm or on prolonged use of the arm. Moderate pressure caused tenderness to be felt at this site and over the outer flexor surface of the adjacent elbow. Here were traumas identical with those of the familiar "tennis elbow," and the treatment now adopted was a modification of that suggested by the late Lewis Jones (1).

The 500 c.p. incandescent lamp, for radiant light and heat was applied over the joint for half an hour, having increase of local nutrition in mind. Then, to remove venous



stasis, the static effluve was directed over the area for fifteen minutes. A two per cent. sodium salicylate aqueous solution was ionically sent through the part, to conclude the séance and for this purpose the active (negative) pole of the continuous current was applied over the outer side and front of the elbow joint, and the indifferent (positive) electrode over the middle of the forearm for ten to thirty minutes. Complete removal of the exudate permitted a reunion of the perichondrium or periosteum and of the lacerated supinator group of fibres at the condyle and the anterior capsular ligament.

CASE VIII.—A business man aged forty-three years and of normal physique and health stepped from a slowly moving suburban train just before it came to a full stop and stumbled forward upon the asphalt surface of the station platform. The extended right hand, holding a traveling bag, landed first so that the force of the blow was received by the flexed right thumb. He was treated by physicians at home and in a hospital, the stereotyped ointments, liniments, and fixation of the injured hand, wrist and thumb being employed, but without much relief, the right hand no longer serving for its usual duties. One month later I found present a subacute tenosynovitis of the long flexor tendon of the right thumb, most marked on the palmar surface of the middle phalanx; localized periostitis at this site, and a mild neuritis of the brachial plexus distribution over the flexor surface up to the shoulder. An inch wide two inch electrode was bandaged upon the flexor surface of the right thumb, fifteen minute daily séances of the static wave current being given for two weeks. This application would always precede the same current, given by a body vacuum electrode over the neuritic area and by an angular metal electrode upon the plexus above the right shoulder. The static effluve was also added after the first few days, for increased effect, being directed over these brachial areas. Full use of the right upper extremity has since followed.

CASE IX.—A young man, chauffeur of a large touring car, of good average physique and health and without bad habits or infection, had acquired a traumatic sciatic neuritis by sitting on the edge of a hard cushion, placed on the usual driver's seat, as the hair packing had been pressed down. This sciatic pain became acute on cranking the car and after a long day's work. Somewhat tender over the back of the mid thigh on digital pressure, this pain darted far down the lower distribution of the nerve when a glass vacuum electrode, using the static wave current and a half inch spark gap in series, was passed over its course. There were no other contributing causes. The static wave current was applied by an inch wide sixteen inch metal electrode over the back of the thigh for twenty minutes daily during three weeks, when the pain disappeared, and motion became free in all directions.

The clinical experiences here quoted are from patients referred by family medical attendants, thus showing that the general profession is at length awakening to the possibilities of physical treatment methods. The writer's purpose in quoting these cases is to urge even more aggressive propaganda among practitioners for these measures.

#### CONCLUSIONS.

1. The prevailing modes of removing exudate from the tissues after injury are altogether inefficient and antiquated, and lead to needless invalidism through nonunion or deformity after fracture, or through interference with function.

2. Prompt removal of any excess of effused blood and lymph is necessary for the union of broken bones or lacerated soft structures, leading to the resumption of normal function.

3. Mechanical modalities, largely electrical, alone can supply the deep molecular contraction of tissue required to force back the misplaced fluids into torn vessels, and where such extravasated material has

had time to become organized, to soften it sufficiently to bring about its absorption.

22 SOUTH TWENTY-FIRST STREET.

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## THE IMPROVED STOCK BINDER FOR ENTEROPTOTIC MEN AND CHILDREN.\*

By A. ERNEST GALLANT, M. D.,  
New York.

The way of the chronic enteroptotic sufferer is hard. "To him that hath not, even that he hath, shall be taken from him."

The physician takes away his appetite; the dietitian takes away all that is worth eating; the hydrotherapeutist takes away his drinking and smoking; the Christian Scientist takes away his faith in living; the neurologist takes away his mental equilibrium; the surgeon on a still hunt for cobwebs, kinks, and constrictions, takes away his appendix and colon, kidney, and gallbladder; and all with unflinching resourcefulness take away his income. "The latter days of this man are worse than the first."

Many, many tomes have been written on the great frequency of enteroptosis among women, and it remained for Levy and Kanter to prove that visceroptosis is nearly if not quite as common among men as women. In a paper on The Incidence of Visceroptosis (1) they have shown that among 1,600 patients who complained of "stomach troubles," 898 were submitted to routine x ray examination, and thereby demonstrated that marked gastropotosis was present in forty-six per cent., and some degree of ptosis in sixty-four per cent.; and was only slightly more frequent in women than in men—six to five. Gastropotosis was present in seventy-seven per cent., right nephropotosis in thirty per cent., and cardiopotosis in 2.2 per cent. They believe that etiologically visceroptosis is "intimately related to the structure of the body, and probably arises from some congenital predisposition." In this we heartily agree, for like reproduces like, the long waisted parents reproduce long waisted children who all, male and female, after reaching adolescence manifest and suffer, consciously or unconsciously, from the down drag of all their abdominothoracic viscera. In this way the long trunked individual has to pay the penalty of uprightness.

Some day, in "the sweet by and by" we shall learn, by the aid of one or more of the thirteen diagnostic methods (2) to recognize: 1. That visceroptosis affects disastrously over one half of the inhabitants of this terrestrial globe, including all long waisted persons. 2. That all organs being normally "movable"—physiologically nonfixed—cannot be "fixed and retained" and retain their normal mobility by any "fixation" operation, flattening process or faultily constructed mechanical brace, bandage, or corset. 3. That the prolapsed

\*Demonstrated before the American Therapeutic Society at the seventeenth annual meeting, Detroit, Mich., June 9-10, 1916.

viscera can be efficiently upheld and supported, the dragging on the solar plexus relieved, and even the most wretched can be restored to vigorous health.

The stock binder was first presented to the profession at the Chicago meeting of the American Medical Association in 1906 (3), and is herewith exhibited in its improved form, with the consciousness of its great value as an abdominal support for splanchnoptosis, with any of its dire manifestations, in men or children. It is also of use in postpartum and postoperative conditions as a preventive of prolapse and hernia, and as an aid to convalescence.

The stock owes its supporting power to the fact that it is designed on the principle of the old stock tie our grandfathers wore, one end being threaded through the large buttonhole (Fig. C), and when tightly drawn affords a truly cinchlike grip to the suprapubic area and twenty-five per cent. more uplift than any other design. We feel justly entitled to assert the following claims:

*Simple measurements.*—(a) Transverse measurement, from one anterior superior spine to the other;

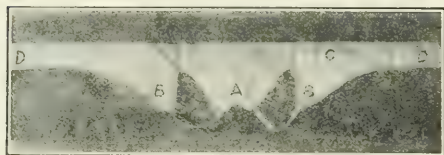


FIG.—The stock apron or binder.

(b) from the top of symphysis pubis to the umbilicus; (c) circumference of the body on a level with the spines.

*Inexpensive.*—It can be made of butchers' linen, muslin, mixed, silk, or any light or heavy washable material.

*Duplicates.*—Having secured a stock binder, any child who can follow the pattern, and sew, or run a sewing machine, can make as many duplicates as seem desirable, allowing two and a half yards of yard wide material, torn lengthwise through the middle; this gives the material for two of the binders. Fold the eighteen inch wide strip lengthwise, lay the pattern on the goods, folded edge uppermost, cut the free edge of double thickness to accord with the pattern, and run a double row of machine stitching along the free, cut edge. The other details will be self evident.

*Simple adjustment.*—Lying on the back, bend the knees to a right angle, lift up the hips, and massage the abdomen upward to replace the fallen viscera in their proper relation with the diaphragm. While still in this position, place the binder with the apron like portion covering the lower abdomen; (b) pass the ends behind the hips, threading one through the buttonhole (C), and draw the ends tightly; (c) carry the tapes attached to the tongues (BB) from behind forward between the legs and fasten with safety pins at the points of the apron, just snugly enough to be comfortable under the crotch, having adjusted the rubber tubing so as to protect the bone from chafing; (d) draw the ends of the stock very tightly around the body, and, after crossing the ends

in front, pin them, with one pin at the point of the apron marked (A). Do not lower the hips until the bandage is securely fastened. The tapes may have to be readjusted, on standing up, to a comfortable degree of snugness.

*Inelastic support.*—Owing to its inelasticity the stock binder gives continuous support and does not permit the organs to drop while it is properly adjusted; in other words, having put on the stock and snugly fastened it while the organs are in their proper place, there is no room for them to fall into.

*What the stock binder is for.*—During the past fifteen years we have adjusted the stock binder to men, women, and children from five to eighty-three years of age. It is especially adapted to men and children because they do not wear belts or tight waistbands, which make it necessary to fit women with corsets that are full size at the waist. It has been found especially useful in counteracting the severe coughs of influenza and pertussis, which frequently cause a prolapse of the right kidney and acute jaundice (4); in reducing the stomach dilatation of the "potbellied" child, and as a prophylactic against visceroptosis in adolescents and adults after abdominal incision to prevent hernia. In women it has been used for comfort and support during pregnancy, to prevent visceroptosis during the puerperium (5); to replace the corset during the night, and to avoid operation in cases of large and small ventral hernie.

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616 MADISON AVENUE.

## BIRTH CONTROL.

By EDWARD C. PODVIN, M. D.,  
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The present agitation of the subject of birth control, which is engaging the attention of the laity and to a certain extent the medical profession, although brought forth at this time by a group of notoriety seekers who would surround it with the glamour of the so called advanced ideas of a most progressive age, is in reality an old and often discredited practice which has appeared again and again.

The story of the decline and decay of any great nation has always interwoven with it this most damning of national vices. A nation may wax strong on the industry of its people, its sons clean of mind and sturdy of body, its daughters fruitful in their progeny and devoted to domesticity. Then comes the period of great wealth, luxury and so called refinement. In this age the vices subordinated in the previous one by stern necessity arise and prosper, most prominent and damaging being the pandering to the passions with a distaste for the responsibility of a family. To indulge the sexual appetite and avoid its consequences birth control is suggested. This marks the era of decay. Once given over to this practice, no nation has ever been known to fol-

low other than the road to ruin. It was so with ancient Greece and Rome, where this vice prevailed until the strength of these great nations was destroyed.

In modern times this practice has prevailed to such an alarming extent in France that for years its death rate has exceeded the number of births. During the first six months of the year 1914 before the European War the number of births in France was 4,000 less than for the same period of the preceding year. At the same time the deaths increased 20,845. Thus the population of France during the first six months of 1914 decreased 24,816. For the past thirty years the French birth rate has steadily decreased, while the death rate has increased.

Our committee on birth control would like to turn this nation into another France. As intelligent students of history, realizing its devastating influence, it is our patriotic duty to oppose it. They wish to have repealed Section 1142 of the New York Penal Code, which makes the giving of information leading to race suicide, a misdemeanor. If they succeed in having this law removed from the statute books, it is then their purpose to go about the dissemination of the so called formula for the prevention of conception. The methods which they suggest consist of douches, antiseptics, etc., and contain nothing new or novel.

Let us for a moment consider what this practice would mean to the individual, aside from its effect on the nation. Man is so constituted that there are two sides to his nature; an animal or physical side and an intellectual or spiritual part. His physical being must ever be subordinate to and dominated by the intellectual. His tendency is ever toward self-perfection, the development and refinement of his entire being under the guidance of his intellect.

Among the natural appetites given to man are those of hunger, thirst, and the sexual instinct. Each has a definite and necessary purpose and each must be under the control of the intellect. The sexual instinct necessary for procreation differs in no way from the others in that its indulgence increases and intensifies it, while repression diminishes it. Therefore any practice which would tend toward the exercise of this function otherwise than in the way and for the purpose intended by nature, namely, procreation, would stimulate and strengthen passion and thus lower the moral calibre of the individual. On the other hand, all authorities agree that the control and subjection of the sexual function is not only desirable but beneficial, and that man can reach the highest state of development, both physical and mental, without their exercise.

Since the indulgence of the sexual instinct means the strengthening of this appetite, anything that would tend to make easy and encourage this indulgence would also tend to the lowering of man to the most degrading depths. The overexercise of this function would bring about the development of all kinds of abnormalities and degeneracy in sex matters, as it is a well established fact that those who overindulge the sexual instinct eventually become perverts of one form or another.

Again, we are all aware that one of the greatest protecting agencies of female virtue is the fear of

conception. Remove this fear and you have taken away from those of not overstrong mental faculties one of the most important natural safeguards of chastity. Also, any physician is aware that the methods advocated by the disciples of birth control are far from perfect, that in order to be even tolerably efficacious they must be intelligently carried out. Now, the very class of women for whom they are intended are the ones least likely by nature and environment to observe the prescribed technic. Thus we would have the terrible results of the false security promised by those prescriptions, and the inevitable accompaniment—the abortionist or suicide.

No more unpatriotic principle could be advocated than that which would deny to the country the citizenship to which it is entitled and which it may sorely need for its development or defense.

It would directly violate and frustrate the primary object of matrimony, which is the begetting of children, and what more natural, if we do away with the purpose of matrimony, that we should do away with matrimony itself? Free love is the natural sequence of this plan. It means the lowering of man below the level of the beast, who is guided only by instinct. Man is guided by reason, yet in the practice of birth control he would overthrow reason and give himself up entirely to the gratification of his passions.

That it is a violation of God's law as expressed in Genesis, "Increase and multiply," does not seriously concern the advocates of this practice.

The first and most appealing argument advanced in behalf of birth control is poverty. That children are brought into the world by people who are unable to give them the means of livelihood, and that their presence here is undesirable.

Now aside from the religious aspect, that we as believers in a Creator hold that He alone is responsible for each individual and that we are not to decide so important a question for Him, in the physical sense alone, can this statement be proved? No class of men are more conversant with the intimate affairs of the family than physicians; now let me ask how many instances can we recall in all our experience of actual suffering being due alone to the size of the family? That we have seen suffering and want is undeniable, but in how many instances was that due alone and entirely to the excessive number of children? Was there no intemperance, was there no lack of industry on the part of the parents, or were there not industrial or financial accidents due to man's carelessness or cupidity that contributed to or caused the suffering?

What do we mean by happiness and suffering, especially in this regard? I ask anyone who has an only child, or who has ever had to deal either professionally or otherwise with an only child, what is their idea of the relative happiness of that child reared with every want anticipated, and the child of the tenement who subsists on the plainest fare, but who is able to divide not only his crusts but his joys and sorrows with brothers and sisters. Happiness, as we all know, is not a matter of environment, but is a mental state, dependent entirely on the individual, and influenced least of all by surroundings. Again, if we were to review the history of those



who have been of greatest service to humanity, or have really contributed toward the world's progress, I am sure that we would find that from the ranks of those born to poverty and hardships have come a vast majority of our great men and women of all ages. How are we to decide in advance which child in years to come will be the better cared for? We are none of us gifted with the powers of foresight—not even the apostles of this wonderful creed—and the parents who decide that because today they are in a comfortable position financially and otherwise, and therefore determine in their great wisdom that they will proceed to have a child, may be the very ones who in a short time, by some unexpected change in fortune, are reduced to penury, while their neighbors, whose large and poorly clad progeny, at the time of their decision the familiar gossip of the neighborhood, have by a similar change been swept on the crest of a wave of prosperity to affluence or high state.

The other argument advanced is that due to the severity of labor woman is reduced to a state of invalidism, that she often gives up her health, happiness, and even life itself, through parturition. That an occasional death occurs during childbirth is patent. I am not familiar with the actual mortality statistics of pregnancy, if there are such figures. Someone with a genius for statistics has recently compiled the death rate from German measles and chickenpox, and I am sure they are on a par with pregnancy. To say that a woman should avoid pregnancy because of the rare fatalities would be equivalent to stating that no one should travel on railroads because an occasional passenger is killed. And as regards the injurious effects on the health and wellbeing, just exactly the opposite is the case, as every physician knows.

We need but to review our practical experiences to realize that the class of patients that are always in our waiting rooms, with every variety of complaint, real or imaginary, are the unmarried women of advancing years or the married ones with one or no children. What more constant and sorrowful picture is there than this class of women—prematurely gray and enfeebled, soured in disposition, disappointed in ambition, disillusioned, confirmed pessimists, gossips, and busybodies, their life a burden to themselves and an annoyance to everyone with whom they come in contact? They furnish the vast majority of the subjects operated on for floating kidney, chronic appendicitis, and any other chronic and obscure conditions which can be credited with their complaints and will justify an exploratory operation. They fill and make possible the rest cures and sanitariums and are almost the sole support of the charlatan.

On the other hand, consider what is our usual experience with the mothers of large families. In the early years of their married life we see them about once every eighteen months for confinement. We see them again quite frequently when we go to the home to visit the children while they are small. If we think that the mothers should come to our office for some special purpose or examination, we usually are obliged to appeal to the husbands and make him stay home from work to bring them. Then they drop out of our sight until we may meet them

again at the climacteric period, when they come to us accompanied by daughters that look like their sisters or sons that seem like brothers. The finest physical specimens of womanhood that I have in my acquaintance at the age of forty to fifty or over are the mothers of large families. No Jackson's membrane operation in this class of patients, no tampon or no electrical treatments. Health and happiness shine in their countenance—happiness engendered by the hopes and plans and endeavors in behalf of others—their children. Sacrifice, the great force, has refined their character, and surrounded by their progeny they are truly the queens of the earth, before whom every true and honorable man has ever bowed in allegiance and respect—noble motherhood.

That there is a justification for the control of offspring in certain rare instances nobody will dispute. The husband of a tuberculous or otherwise enfeebled wife is not alone justified but is in duty bound to exercise this control. There is no objection to control for economic reasons if husband and wife are agreed in the matter and are able to safeguard the passions. To accomplish this it is not necessary to stoop to a practice that is degrading and dangerous, it is not necessary to pander to the passions or disobey Nature's laws. There is a birth control that is absolutely reliable, no whispered formula is necessary for its execution, it does not weaken man physically or morally, it violates neither the law of God or man—selfcontrol.

301 EAST FORDHAM ROAD.

## THE INJECTION METHOD OF TREATING HEMORRHOIDS.

### *The Renaissance of the Old Method.*

BY ALLTON L. SHERMAN, M. D.,  
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Some forty years ago, in Clinton, Illinois, a man by the name of Mitchell devised the method of treating hemorrhoids by the injection process, which consists simply in making an injection of phenol into the pile tumor, causing it to slough away. Not being actuated solely by altruistic motives, it seems that for a consideration Mitchell would impart the knowledge of his discovery to any or all who would pay for it, and as the treatment was easy and efficient and the fame of it spread abroad, a large number of quacks sprang up, these "pile doctors," as they were called, travelling about the country and indiscriminately injecting hemorrhoids. There could be but one result from this. The injection method, as it was known, fell into immediate and total disrepute with the reputable members of the profession, in which status it remained, and it is only comparatively recently that attention has been called to this method by the work of a few men of the first rank in rectal surgery, and its true worth recognized.

And when the results of Mitchell's work were published and out of a total of some 3,300 cases there were thirteen deaths reported, together with a few other complications such as liver abscesses, stricture of the rectum, carbolic acid poisoning, permanent impotence, etc., the more conservative men felt they were vindicated in their judgment in condemning the

method. But lately, after this decision has stood unquestioned for years except by a few men, we are beginning to realize that to treat 3,300 cases of hemorrhoids, probably with no selection of the cases, with a mortality of only thirteen cases, in spite of the fact that the work was done by men with little or no medical training, was a vindication of the treatment rather than of those who decried it. Put any other method of treating hemorrhoids to the test that the Mitchell treatment received, and this method would stand out preeminently as the best.

The trouble lay in the fact that no discrimination was used in the selection of cases, all hemorrhoids were as grist to the mill. No therapeutic measure could stand such a test. For many years Jamison, of New York, and Albright, of Philadelphia, have been using the injection method, and lately Morely, of London, has published a paper showing the advantages and limitations of the method. The treatment has become standardized and we now know what it is worth.

There are certain well defined contraindications to the method. These are, first, an irritable or tight sphincter. In the presence of this complication there must be divulsion of the sphincter at least a week preceding the injection. Second, there must be no ulcerated surface near the site of the intended injection. These spots should be cleared up previously by appropriate treatment; nitrate of silver in twenty-five per cent. solution forms a coating over the floor of the ulcer, puts it at rest, and allows nature to heal it in a short time. Third, hemorrhoids that are in a state of acute inflammation should not be injected.

Bearing in mind these contraindications, nearly all other hemorrhoids are amenable to some form of the injection method. Phenol in various strength solutions is the best drug to use; some men combining it with other drugs such as fluidextract ergot, extract hamamelis, glycerin, etc., but I prefer the oleum amygdalæ expressum, U. S. P. (sweet almond oil) to all others, in that it serves the purpose both of diluting the phenol and localizing its action equally as well as either sperm or olive oil, and possesses the additional advantage that it has less tendency to turn solid in solution with more than thirty per cent. phenol than any other oil.

Stated as briefly as possible the technic of injection that gives the best results in the largest number of cases is as follows: After a cleansing enema have the patient lie on the side opposite to that of the pile that is to be injected. Introduce a speculum, using one of those with a slide, and withdraw the slide just enough to allow the hemorrhoid to fall into the cavity of the speculum. If the hemorrhoid is a large nonsensitive one, use a strong solution, that is, fifty per cent. phenol with sweet almond oil; if it is small and sensitive use a weak solution, or about eight per cent. In either case the technic of making the injection is the same. Introduce the point of the needle into the cavity of the tumor, about two thirds of the distance from base to tip, and inject three minims of the solution. Watch carefully and if the tumor blanches, sufficient solution has been introduced; leave the needle in position for a moment and then withdraw it with a rotary motion. If the tumor does not blanch after

three minims have been injected, introduce three minims more and wait another minute, injecting twelve to fifteen minims if necessary to make it blanch. Do not use more than this amount. Make only one puncture in each tumor. Inject only one hemorrhoid at a single treatment. Have the patient lie still for ten minutes before arising. To ward off any afterpain following the injection give a few suppositories containing opium one grain and chloretone one grain, to be used when the pain starts and every four hours afterward. They are often not needed, however.

These may seem to be didactic directions, but they are the results of a large experience. I do not maintain they will fit all cases, but simply that they are the best in the vast majority, and can be used in eighty per cent. of all cases.

In the hands of efficient men who understand the limitations of this method, the results are gratifying. With the obvious advantages that no general anesthesia is necessary; there is no stay in the hospital for four or five days with the additional expense and detention from work; there is very slight or no pain or inconvenience, and the possible after-effects of the more radical surgical procedures are avoided such as incontinence of feces, spasm of the urethra, etc., it is our duty to humanity to give the injection method another and fairer trial than it has received in the past.

But, after all, hemorrhoids are not a disease in themselves, they are only the symptoms of an underlying chronic proctitis. No method that treats symptoms alone can cure, it can only relieve, and so, in order to make permanent the relief that we have afforded by the removal of the hemorrhoids, we must institute appropriate treatment to the cause and cure the proctitis. But that is another story and has no place in this article.

389 BELMONT AVENUE.

**Therapeutic Value of Parenteral Milk Injections.**—Sigismund v. Dziembowski (*Medizinische Klinik*, November 5, 1916) states that he has given intramuscular injections of milk, in doses of five mils, to more than one hundred patients. The injections were made into the gluteal muscles and the milk was heated for ten minutes in a boiling water bath before injection. The injections were followed regularly by chills and an elevation of temperature lasting up to twelve hours; weakness, depression, headache, and palpitation were common. Serious results were never observed and no abscesses were produced. From a therapeutic point of view good results were secured in cases of septic infection with purulent wounds, lymphangitis and general sepsis; in cases with furuncles, carbuncles, and phlegmonous lesions; severe erysipelas, fistulas, and cold abscesses in bones, joints, and lymph glands. In the majority of such cases three or four injections at intervals of two to three days usually sufficed. Through the effects of the injections upon the hematopoietic system they proved of value in hastening the consolidation and healing of fractures. By virtue of their effects upon the blood platelets the injections also proved valuable as means of controlling various forms of bleeding.

# Our Readers' Monthly Prize Discussions

## Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CLXXVIII.—*How do you treat acne vulgaris?* (Answers due not later than January 15, 1917.)

CLXXIX.—*How do you treat eczema in children?* (Answers due not later than February 15, 1917.)

CLXXX.—*How do you treat ringworm?* (Answers due not later than March 15, 1917.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

*The prize of \$25 for the best answer to Question CLXXVII has been awarded to Dr. John E. Lind, of Washington, D. C., whose paper appeared last week.*

### PRIZE QUESTION NO. CLXXVII.

#### THE TREATMENT OF DELIRIUM TREMENS.

(Concluded from page 210.)

*Dr. Samuel Blumenfeld, of New York, writes:*

Prior to considering the treatment of delirium tremens, it would not be amiss to state that there is no specific treatment for this affection, therefore the treatment resolves itself into abortive treatment, symptomatic treatment, and prevention of recurrence.

**Abortive Treatment.**—At onset of delirium tremens, when premonitory symptoms appear, the patient is given an hypnotic, as chloral, morphine, sulphonal, trional, or paraldehyde. The patient usually wakes up much relieved and remembers past occurrences. Occasionally an hypnotic given at this stage checks further progress of this affection.

**Symptomatic Treatment.**—At the onset I give the patient sodium phosphate, drams two. It is palatable and in effervescent form it produces a refreshing drink; or I give pulvis hydrargyri chloridi mitis, or pilulæ catharticae compositæ. The object of giving these purgatives is to help the elimination of any noxious material from the system. If the patient is strong and vigorous, without any arteriosclerosis, and has recently ingested alcohol, I usually give an emetic, as mustard in tepid water, or apomorphine hydrochloride, one tenth grain, given hypodermatically, which tend to rid the system of some of the effects of the alcohol recently ingested. The patient must be restrained in bed, if necessary, by strapping him to the bed. At the onset, alcohol should be withheld from patient. Warm baths or packs have been recommended, but, due to the resistance by the patient and the excitement produced, cause more harm than good.

Helping elimination of toxins and producing sleep tend much to cut short the delirium and relieve the motor excitement. We must, however, remember that the motor activity of the stomach is much interfered with on account of its catarrhal condition from frequent ingestion of alcohol. Produce sleep by giving paraldehyde, one half to one dram; if necessary repeated in one hour, until two or three doses are given. If this remedy is of no avail, and occasionally it does fail to produce its effect on

account of gastric torpor, administer morphine, one fourth grain, and hyoscine, 1/125 grain, hypodermatically, in young and vigorous individuals without any complication of arteriosclerosis or kidney trouble in whom motor symptoms are marked. In severe cases add to this strychnine, one thirtieth grain, which will quiet them and give them a few hours of rest. In addition this gives rest to the heart, from cessation of excitement. The danger to the patient is not delirium tremens, but a diseased condition of the heart and bloodvessels. The absorption of the stomach is slow and remedies administered are not absorbed for hours, and then suddenly absorbed, overwhelming the system by accumulative effect. All these patients have degenerated heart muscles and, therefore, the heart must be stimulated by strychnine sulphate, one thirtieth grain every four hours, or by camphor, hypodermatically. I never use digitalis, by mouth, although some authors are of the opinion that large doses of digitalis are well borne this use is not without danger from cumulative effect. I therefore use digalen tablets hypodermatically; rest and sleep follow its administration and increased flow of blood to nerve centres. The patient should take such food as is easily digestible and assimilable, as eggs, milk, and broth. While there are symptoms of delirium tremens, I avoid the use of alcoholic remedies, but during convalescence I give an eggnog three times a day for a few days. From those accustomed to drink and especially the aged where an occasional drink of alcohol acts as mother's milk to a baby, it should be withdrawn gradually.

**Prevention of Recurrence.**—Change of environment is essential, with plenty of outdoor exercise, avoiding overtaxing of the heart. The use of alcohol is gradually withdrawn from the patient. Sudden withdrawal of alcohol, where no attempt is made to replace it by proper treatment, is undoubtedly the occasional cause of delirium tremens. Avoid injuries or accidents which may be contributory causes of delirium tremens. Total abstinence from alcohol is the only hope for future health; therefore when once alcohol has been completely withdrawn all tonic treatment should be given in solid form. In conclusion I wish to say that in spite of all that is done for a delirium tremens patient, relapses occasionally occur because the patient usually drifts back to the use of alcohol.



*Dr. A. B. Pemsler, of New York, asserts:*

The treatment of delirium tremens should be divided into the prophylactic and active stages. This condition usually occurs after a severe shock, trauma, or an infectious disease, in one who has been accustomed to the continuous use of alcohol, or it may be brought on by a severe debauch. An unstable nervous system seems to act as a predisposing factor in its development.

The prophylactic treatment consists in administering to every alcoholic patient who has met with an accident a specified dose of whisky at regular intervals, gradually decreasing the dose and increasing the intervals, as the shock of the accident wears off, until the alcohol is stopped entirely. A dose of triple bromides, fifteen to thirty grains, is also given every four hours.

If symptoms have already developed the treatment pursued will depend upon the general condition of the patient. If he is young and without any cardiac or arterial changes, all alcohol is forbidden, an emetic of apomorphine, one eighth grain, and a vigorous purge are given. If motor symptoms are marked hyoscine, 1/125, with morphine, one fourth grain, hyperdermatically, will often give relief. Methods less drastic must be used if a flabby heart or arteriosclerosis complicate the condition. In these patients it is advisable to allow small doses of alcohol. Stimulants become necessary in impending cardiac failure, when hypodermic injections of strychnine or camphor should be given.

One of the chief indications in delirium tremens is to produce sleep. This is best done by paraldehyde in doses of one to two drams, repeated in an hour if necessary, in the milder cases, and by a mixture of morphine and chloral in the severer cases. A good prescription containing the combination is:

R Morphine, .....	gr. ¼;
Chloral, .....	gr. xv;
Tr. hyoscyamus, .....	5 ss;
Tr. ginger, .....	m. x;
Tr. capsicum, .....	m. iii;
Aque q. s. ad, .....	3 ss.

M. et Sig. 1 to 2 teaspoonfuls.

This prescription can be repeated in one hour if necessary. If medication cannot be administered by mouth, an enema of chloral hydrate should be given. As soon as the patient awakes food of a concentrated nature such as milk or eggs should be given. Some food should be given every two or three hours day and night if the patient is awake, but he should not be disturbed if sleeping. If the food cannot be retained by mouth nutrient enemata are indicated.

The patient must be confined to bed during the entire delirious stage, and in the wilder delirium must be restrained by sheets to prevent him from injuring himself or others.

During convalescence stomachics such as capsicum, nux vomica, and ginger are useful, in the following mixture:

R Tr. capsicum, .....	3i;
Tr. nux vomica, .....	3iii;
Tr. ginger, .....	3i;
Aque ad, .....	3iv.

M. et Sig. 3i t. i. d.

After the patient has been free from delirium for eight or ten days, he may be discharged. He

must, however, be warned to abstain totally from all alcoholic indulgence, and lead an outdoor life, with simple and wholesome food.

*Dr. H. Pieter, of San Francisco de Macoris, West Indies, states:*

In dealing with this question, we must, before proceeding further, bear in mind the clinical divisions of delirium tremens. Three states may present themselves to the physician: acute, chronic, and the phenomena awakened by systemic fevers and traumatism.

In the presence of acute alcoholic delirium, the first thing to do is to keep the patient completely quiet, isolated from relatives and friends, confined with an energetic nurse or with some other person capable of having a moral authority over him, without imposing ill treatment.

The evacuation of the stomach is next accomplished, preferably by means of the stomach tube, making at the same time a lavage of the organ with a tepid mild solution of sodium bicarbonate, three litres, more or less provided that the patient has never had hematemesis. One enema of the same composition and quantity completes the cleansing of the digestive tract.

A warm bath at 32° to 34° C. (90° to 94° F.) is always opportune and useful. It calms the convulsions, starts the sleeping tendency, and contributes to the elimination of the poison.

The patient must be limited to a severe diet. I proscribe all foods, solids or liquids, and only allow a tablespoonful of a saturated solution of lactose to be taken every hour. To prevent the growth of the buccal fungi, it is very convenient to wash the mouth with a glass of water containing some drops of peppermint alcohol. This serves also to keep the cavity in a state of freshness that is pleasant.

A litre of glucose solution by hypodermoclysis, or two litres by Murphy's method, daily, plainly improves the condition.

I have expressly left for the last the consideration of the drug treatment. Some authors use opium and its derivatives, specially morphine; others prefer nux vomica or its principal alkaloid, strychnine. I have used both. During the first years of my practice I only employed morphine. Now I do not use it for many reasons, the main one being its tendency to check or interfere with the elimination of the alcohol. I employ strychnine in very large doses, reaching sometimes up to 0.12 gram (1/12 grain), under the skin every twenty-four hours. It seems hard to conceive how such a drug as strychnine in its action can meet the indications in such a state as delirium tremens. The fact remains clear, and those who, like myself, use it, although never finding a pharmacodynamical explanation of this action, are enthusiastically proud of the results. In conjunction with the general outlines mentioned, strychnine almost never fails, giving a percentage of recovery and a safety of sequences higher than any other agent used.

Regarding the continuance or the suppression of the alcohol, it seems better to suppress the poison from the start of the treatment. The progressive discontinuance is harmful for the process of recovery.

ery and, besides, may constitute a strong argument in favor of the vice of the patient after the cessation of the alarming symptoms.

In chronic delirium and during the alcoholic convulsions under systemic fevers and traumatisms, the same basis of treatment may be followed, according to the emergencies. But these states command a watchful waiting over the cardiac muscle and its function. The syringe, armed with caffeine, strophanthin, or sparteine, ought to be ready at hand at any time for cardiac stimulation.

*Dr. William Rankin, of Keokuk, Iowa, remarks:*

Our chief aim is to calm the patient and procure sleep. I isolate the patient with a male nurse in a dark, quiet, warm room, give him a hot bath if possible, and if not, wrap him in a wet sheet, and then surround him with wool blankets. I give him a hypodermatic injection of morphine hydrobromide grain  $\frac{1}{4}$ , hyoscine hydrobromide grain  $\frac{1}{100}$ , cactin grain  $\frac{1}{64}$ , and repeat this in two hours if necessary—then in six hours. I keep him under the influence of this for twenty-four hours. I give small quantities of easily assimilable food, e. g., egg with grape juice, beef tea, or broth. After the patient becomes quiet I give two ounces of castor oil and repeat in twelve hours if necessary. Mechanical restraint is to be avoided where possible, but at times a sheet must be tied across the patient under the arms and over the blanket. Always avoid the use of alcohol as a stimulant. I use strychnine nitrate grain  $\frac{1}{30}$  hypodermically. I examine the chest thoroughly every day for signs of pneumonia, and then watch the urine for nephritis or anuria. As the patient convalesces I give him a stomachic of hydrastis, rhubarb, potassium carbonate, pepsin, and pancreatin, given with hot water before meals.

*Dr. F. I. Disbrow, of New Rochelle, asserts:*

Delirium tremens is a state of delirium and agitation, often termed the horrors, brought on by alcoholic indulgence and drug addiction. It is caused by the poisoning of the vasomotor centres by alcoholic poison, accompanied by temporary or partial paralysis of the extremities and power of speech, associated with illusions, delusions, and hallucinations.

*Etiology.*—It may come from an overindulgence in periodical drinking, or from dipsomania, or from a sudden withdrawal after a debauch. It may be retarded to some extent by a gradual replenishing, as these cases are entirely different from an habitual addict, and the tremor may be brought on from a three days' debauch in a man who has never indulged in intoxicants before. An habitual drunkard may go along year in and year out without any exterior appearances or signs showing, he being what we call a good gauger or a wonderful calculator. I have known men high up in all stations of life as well as the lowest who will drink enough to poison the ordinary man, and make a practice of it, and never lose their sense of locality, equilibrium, or speech. These unfortunates, of course, in alcoholic or drug excesses become very exalted and talk at random, but they are able to over-

come this when spoken to or when liquor is administered or withdrawn. Sometimes their digestive apparatus fails to counteract the alcoholic poisoning and death comes on from inanition, and in this stage they have a delirium, but not a true delirium tremens.

It appears that delirium tremens is brought on in the same way and manifests the same symptoms as in any acute or chronic poisoning which reduces the system to that point where the organs refuse to assimilate or throw off the poison. It leads to a destruction of nerve force which goes from bad to worse, deadening the nerves of motion, sensation, and special senses. At other times, or possibly before the stage of deadening, uncontrollable exhilaration takes place, accompanied by false muscular strength, illusions, and delirium tremens; from these manifestations it progresses to cerebral congestion, and if not overcome leads to acute mania. I have seen drinkers come into the sanitarium who have not known what a really sober moment was for periods of twenty years, and yet not have any tremor or never have had any, but poisoned so completely by alcohol that they have such illusions, delusions, and hallucinations that strict confinement and attendance is necessary; and yet after systematic treatment refuse intoxicants the third day and their senses return within ten to thirty days as good or better in some cases than they ever were. Many of these remain in the narrow path, but of course some become backsliders.

You will always find a patient more liable to delirium tremens who is poorly nourished, or drinks adulterated liquor, more than one of better quality, or again a mixer, who drinks anything and everything without choice.

*Prognosis.*—This is good in most all cases excepting those having any organic disease, Bright's, tuberculosis, arteriosclerosis, or permanent organic trouble.

*Treatment.*—Sleep is the first thing to be brought about, using as little restraint and as much gentleness as possible. Give a hypodermic injection with whatever drug you have found best from morphine or hyoscine to any hypnotic that will act quickly, together with alcoholic bathing and sponging. A good experienced nurse should be ever present until sleep is produced. Never allow padded cells or jackets, only sheet bindings and watchfulness. The era of padded cells and jackets has passed. Internally, bromides, sulphonal, or resorcinol and paraldehyde may be given, but keep an ever watchful control of the pulse and heart. Open the lower bowel by an enema as soon as possible, and start the drug treatment on the first morning after a night's sleep, with plenty of nourishment.

*Treatment of Traumatic Hysteria.*—William F. Bay (*Ohio State Medical Journal*, January, 1917) states that, contrary to general opinion, he does not regard the prognosis as good. The patients are sick for a long time and do not get well rapidly. There is no remedy, and there is no specific method of treatment. He uses ether in all cases, believing that this is an efficient agent in aiding diagnosis and perhaps also in promoting recovery.

# Dietetics, Alimentation, and Metabolism

## Food and Food Preparation, in Health and Disease

### METABOLISM, ARTERIOSCLEROSIS, AND DIET.\*

By LOUIS FAUGERES BISHOP, A. M., M. D.,  
New York,

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There is a great division of the subject of cardiovascular renal disease between primary heart disease and arteriosclerosis.

The term "arteriosclerosis" covers the degenerative disorders of the cardiovascular renal system. Involved in this consideration is the matter of the durability of the human machine—how long it is going to last under the strain of use to which we put it in the business of active living. In other words, the question of the maintenance of efficiency and the prolongation of life is involved in this disease as affecting a greater number of mature workers than any other disorder. It compels the study of the philosophy of nutrition and again of metabolism. When we have reviewed nutrition and metabolism, the next most pressing problem is that of diet.

In contemplating metabolism, arteriosclerosis, and diet, we have to get away from the conception of organic disease as the matter of fundamental importance in the great majority of those who seek counsel with regard to the restoration of their efficiency and the prolongation of their lives. We have to grasp the idea that organic disease is not primary, but is ordinarily a secondary manifestation of broadly acting causes.

Metabolism is a word much used by popular writers in the exposition of information that is very indefinite. It is necessary for us also, if we are to approach the study of metabolism in any helpful way, to admit from the outset that we have little direct knowledge about it; that the useful things that we know about it are founded upon certain ideas which we derive logically from known facts, and certain things which we find out by definite experience as we experiment with sick people with diet and observe the action of food under various circumstances.

With regard to degenerative diseases, the important matter is the metabolism of proteins. It is well known that proteins are broken up in the intestinal tract into very simple compounds which pass from the intestines to be used by the body. We know fairly definitely that waste products of protein metabolism pass off from the body in the urine.

Of what takes place between the time of the absorption of the broken down protein molecules from the intestines and the reappearance of more complex molecules in the urine, we know very little.

Faced with the question as to the nature of the processes which lead to the building up of the material commonly known as "tissue protoplasm," we are at the very outset hampered and confined in our

quest for accurate information by the imperfect knowledge as to the very nature of the material formed.

The great fact is that we take into our bodies protein molecules derived from the animal and vegetable kingdom, molecules that have been manufactured by the life processes of these other living things. After disintegration they are absorbed from our intestinal tract and are reconstructed into protein molecules which are characteristic of our particular bodies. This is brought about through the action of enzymes, through the contact influence of one kind of protein with another, through the office of the ductless glands and the internal secretions of those glands which have secretory ducts. It is very hard to understand how this occurs, but the fact remains that however dissimilar the protein molecules upon which an animal is fed, the end result of digestion metabolism is the production of flesh which is characteristic of that animal.

The curious thing is that when nitrogenous material is introduced into the body, as far as we can make out by observation, about the same amount of such material is promptly excreted from that body. So the amount and kind of protein material that is utilized and the amount that is absolutely necessary to the human machine, has been a matter of much speculation and elaborate observation.

The amount of protein material needed to maintain the human body is very small—only a very small percentage of the amount usually consumed by the average individual is necessary.

When the broad statement is made that the degenerative diseases of the cardiovascular renal system are founded primarily upon a disturbance of metabolism, we refer particularly to the disturbances of metabolism that pertain to proteins after they have been digested in the intestinal tract and while they are being digested by the individual cells. We must form a conception of a secondary digestion by which it is necessary for the flesh made up of the individual cells to take the material that has come from the intestinal tract and subject it to an infinitely more intricate process before it can be appropriated and made useful for the nutrition of the body and for the production of energy and efficiency and activity in these cells.

There are analogous processes in other departments of life. It is the difference between destructive criticism and constructive criticism. If we consider digestion by the stomach and intestines as destructive criticism—the breaking down, splitting up, and dividing of things, and consider the part of metabolism that takes place outside of the intestinal tract as constructive criticism, that is to say, the kind that builds up, rearranges, and makes useful, you see of how much more importance is the secondary than the primary digestion.

And yet this secondary digestion which we often speak of as metabolism—not including stomach digestion in metabolism—is vastly more important

\*Paper read before the Practitioners' Club, Newark, N. J., November 6, 1916.



because the processes of life and the integrity of the organs depend upon the metabolism of the food products with relation to each individual cell.

I had for some time devoted myself to the problem of arteriosclerosis, when I reached the conclusion that it was primarily a cellular disease involving the cells of the whole body and only secondarily involving the organs, as the heart, bloodvessels, and kidneys. I promulgated this theory pretty generally, but professional tradition was so strong in favor of primary organic disease that it was a long time before I got a serious hearing.

However, I am happy to say that at the present time many agree with me that the degenerative disease, of which arteriosclerosis is the type, begins as disturbances of this intricate relationship between proteins, after intestinal digestion, and the cells of the body. Following a disturbance of metabolism, occur the organic changes which progress to the hypertrophied heart, the thickened bloodvessels, contracted kidneys, and so on.

A belief which I have advanced and which has not been so generally accepted is the influence of diet on the production and cure of arteriosclerosis. It seemed to me that the metabolism failed, not with regard to the whole class of protein, but with regard to particular proteins. I found that the tradition of the human race and of the medical profession—and the popular belief of both—almost universally condemned in arteriosclerosis the cruder animal foods, like rare meat, but I found that this condemnation pertained to the quantity and not to the quality. They said, "Eat moderately of rare meat." I found that in advanced cardiovascular renal disease when the kidney was badly damaged and the disease well established, both professional and lay opinion interdicted animal foods in proportion to the severity of the case. So people with very badly damaged kidneys were often put on a purely vegetarian diet.

In all these dietaries milk is an exception. Milk is the only food in all nature that was specially designed for the nourishment of the body. Every other food was picked up at random and adopted as a matter of convenience or as it has been found to be useful, but it was not made specially for the human body. Milk—human milk—and by analogy the milk of animals, was so constructed. There are very few instances—and they are very striking on account of their fewness—in which milk is harmful; this is true in spite of the fact that it is a highly nitrogenous food. Milk is an exception, and we leave it out when we consider questions of diet.

I found that there were certain people in each generation who were particularly interested in diets; that these people were so successful in treating certain other people that they had very often a strong following. As a rule, I found that they were called cranks, and were thought to be lacking in judgment. Yet these persons who were evident cranks on account of their one sided belief in diets, were very successful with a certain class of people who swore by the diet in question. I found that anybody who believed in some particular diet and made others stick to it, helped a certain number of people.

I found that people who practised dietetics with-

out any such profound belief were not so successful and did not get results. The cranks got results, not with everybody, but with a certain number. Some, of course, they injured—but some they helped. I remember there was a man in Fifty-ninth Street named Doctor Salisbury who cured a great number of people by putting them on an exclusive diet of raw meat. To this day you can find people who remember it, and you can go to certain fashionable restaurants and order a "Salisbury beefsteak"—he so popularized raw meat as an article of diet.

I find that a great many institutions are founded on dietetic principles, usually vegetarianism, and they help many people. In the same way you find "milk cures," "grape cures," and so on in any number, which are used and which help a certain number.

I thought about this and tried to figure it out. I did not want to be a crank and yet I wanted to help people. It occurred to me that the whole question of diet in relation to disease must be founded on food idiosyncrasy; that is, some people are injured by certain foods to which they have become idiosyncratic. An idiosyncrasy can often be traced to a definite origin. Sometimes it is hereditary in families. I could take up a great amount of space giving instances of food idiosyncrasies in families. Everyone has uncles or aunts or cousins who cannot eat certain foods.

The reason Salisbury helped so many people is because there are a great many people in any community who are idiosyncratic to fish or eggs without knowing it. Whenever he got hold of a person who was idiosyncratic to fish, he ordered meat alone and that person got better. Then people said his beef helped them. It was really the exclusion of the things to which they were idiosyncratic that helped them.

The great trouble with diets is that we are apt to generalize too much. We say, "Because meat is harmful to these people, it is bad for the whole human race." That is not true. It is harmless up to the point where we become idiosyncratic to it.

It seemed to me in studying the development of arteriosclerosis that I could find its origin in a great many instances in acquired food idiosyncrasies. Up to a certain time the man's digestion and metabolism might have been in very good shape, but at some time in his life he had a great nervous strain or a severe illness, like typhoid fever, a severe surgical operation a profound food poisoning, or some accidental physical knockout. Then the trouble began.

One man became idiosyncratic to eggs. As a boy one Easter he gambled for eggs, won a great many and ate them all. He became very sick, and after that eggs made him ill even in the smallest quantity. He also later manifested arteriosclerosis. I knew two men who were captains on Long Island Sound. Every night the steamboats stopped and took on oysters, and the men formed the habit of gorging themselves with oysters. These two men became idiosyncratic to oysters from the large quantity they consumed, and acquired arteriosclerosis from which they died. So there are any number of people in whom I feel quite sure of this origin of arteriosclerosis.

Another great source of acquired food idiosyn-

crasies is in periods of strain and worry. How that comes about is not easily understood, but a person may pass through a strain and from that time he is unable to metabolize certain proteins, and this degenerative disease begins to develop.

There is this difficulty about acquired food idiosyncrasies, as pertaining to animal foods or proteins, and that is, there are no unpleasant symptoms of this form of idiosyncrasy. If a man is idiosyncratic to strawberries, he breaks out in a rash, and he stops eating them because he is too uncomfortable. But the idiosyncrasies pertaining to animal proteins are subconscious and undetectable in any way of which I know.

I hope some time that biochemistry will so far advance that we shall be able through vaccination with particular proteins to test the idiosyncrasy of a particular person to a certain protein. Such work is being done now, but up to date is very disappointing. In a few children with egg sensitiveness there is a skin reaction when they are vaccinated with white of egg.

There is a very close relationship between the question of harmful food idiosyncrasy and anaphylaxis. A person can become anaphylactic to a protein that has been introduced into his body by the intestinal tract; that is a matter that has been demonstrated in the laboratory.

Food idiosyncrasy is undoubtedly in the nature of an anaphylaxis; that is, the cells of the body have been put into a condition by some accident whereby particular proteins are irritating to them. I have repeatedly seen people with advanced arteriosclerosis while on a general diet show all the evidences of a sort of chronic anaphylaxis, if we can use that term—ocular symptoms, rhinitis, and general malaise. When you looked at them you could see that something was working against them—as if they had taken a cold. I have seen these people, when put on a strict diet, get rid of their symptoms and feel well in every way. These things are much a matter of impression. You cannot prove them.

If acquired food idiosyncrasies which lead up to degenerative diseases are in the nature of an anaphylaxis, then I am correct in saying that if diet is to be of any use, it must be an absolute diet. There is little use in moderation. If you had a guineapig which you had rendered anaphylactic to white of egg and you were going to inject that guineapig with white of egg to kill it, it would not matter whether you used 1/100th of a grain or a very large amount.

In the same way people who have the arteriosclerotic condition are idiosyncratic to certain articles of food, and unless you exclude the whole quantity of the harmful proteins you get no good results. Moderation in the use of diet in these people is of no use. If they are idiosyncratic to meat you must cut it *all* out. If they are idiosyncratic to eggs, all eggs must be excluded; and the same way with fish. If you give them a little you keep up the irritation of the cells and the disease progresses.

So the only people who get results are dietetic cranks. They withdraw all of some foods and benefit those whom the diet suits. When a man comes to you with high blood pressure, involvement of the

neys, hypertrophy of the heart, and everything that goes with advanced arteriosclerosis, then you must deprive him of all the animal proteins at once.

My system is very strict. I exclude all eggs, fish, meat and stock soups, and put my patients on vegetables, cheese, fruit, milk and bread and butter—all they want. Then I watch them and expect them to get better—and most of them do. They get rid of their cardiac pain, the blood pressure comes down to the compensatory point; they feel better and look better, being improved in every way. After they have gone on a while I experiment with those foods which I know are the least harmful. Here we are also guided by tradition. There is a prejudice that the white meat of chicken is harmless, and I find as a matter of fact that when people are tired of a strict diet they can often commence on white meat of chicken. Fat bacon is also tolerated. If I give them chicken I give them all they want of it, because the diet of arteriosclerosis is qualitative and not quantitative.

I tried the low protein diet, measuring the proteins and calories and fussing with quantities. I never got good results and worried people with little satisfaction. The diet I use now I call the "few protein" diet. It is founded on the theory that I have explained; the reason for dieting people is that they are idiosyncratic to certain foods. The few protein diet is also less annoying. You tell a man he can have all he wants of the limited foods, and he cannot accuse you of starving him to death.

A curious thing is that very stout people, who would be supposed to gain a great deal on such food, do not as a matter of fact gain very much when the stronger proteins are taken away. The body seems to make better use of the fattening foods for energy, and burns them up when it is relying on these foods exclusively. The fats are disposed of as fuel food and the gain in weight stops at about five pounds.

A very difficult class of people to handle are those with glycosurias. Many persons whose metabolism is so badly disordered that they have developed kidney trouble, heart trouble, and hardening of the arteries show glucose in the urine. They are not true diabetics, and the moderate glycosuria that is found in advanced kidney disease is not the same as diabetes. I watch them and am always a little anxious, but as a matter of fact most of them do not show symptoms in the direction of diabetes. Every little while one of them shows a tendency to true diabetes—the sugar runs up in amount and the urine increases in quantity. Then of course they have to be treated specially. For the time being we have to switch a little in our diet.

I have long since got away from the idea that a trace of glucose occasionally appearing in the urine of a person with advanced arteriosclerosis is a contraindication to a strict vegetarian diet. It is only when experiment has shown that that particular person cannot metabolize starch and a reasonable amount of sugar that I change the dietary. It is probable that the glucose in these people often comes from the metabolism of protein and not from the metabolism of carbohydrates. At least we are forced to that conclusion because the trace of glu-

case that these people have cannot be removed by cutting down their starches.

There is one point in the dietetic treatment of disease that the patient always wishes to overlook and the physician is tempted to forget, and that is the need of continuous supervision. I never prescribe a diet except between definite dates; after that my responsibility ends. I print on my diet sheets:

"Diet to be followed from (blank for date) to (blank for date)," and "The diet ordered is for you for the present time and has nothing to do with the requirements of other people, or of you, under other circumstances."

I am not a believer in any dietetic scheme for all comers, but I have been profoundly impressed with the results of the dietetic treatment of disease when it is continuously adjusted to individual needs. Dietetics is an art well worth cultivating, and no small part of it is in knowing how to persuade the patient to accept the dietary that you have selected.

54 WEST FIFTY-FIFTH STREET.

**Treatment of Gout.**—Arthur F. Chace (*N. Y. State Journal of Medicine*, November, 1916) states that the precise cause of gout is still not definitely known, but the existence in the disease of a disordered purin metabolism is so fundamental that treatment should be directed to the remedying of that factor. The treatment should be such as to prevent the formation of uric acid and to increase its elimination. Light exercise should be prescribed to keep the skin and muscles in a healthy condition and this may be aided by baths, massage, and friction rubs. The dietetic regulation should be based upon the individual patient's capacity for the elimination of the exogenous uric acid, and the uric acid forming foods should be given in amounts which will yield less than the patient's eliminative capacity. His capacity should be determined by estimations of his output on a purin free diet and on a diet containing purins. The purin free diet may be given for three days for the test and consists of the following: For breakfast: Apple, banana, cream of wheat, farina, cream and sugar one egg, cereal coffee, toast, and butter. Dinner: One egg, baked potato, string beans, rice, macaroni, baked apple, sugar, a glass of milk, and butter. Supper: Rice, cream cheese, bread and butter, stewed pears, and rice pudding. The uric acid forming capacity of various foods should be borne in mind, and the amounts of each food in the following list are such as to yield 0.014 mg. of uric acid; 100 grams of roast beef, veal, lamb, pork, mutton, and ham; 100 grams of salmon; 70 grams of beefsteak or veal cutlet; 200 grams of fish, lobster, or crab; twenty-four oysters; one spring chicken; 75 grams of lentils; 155 grams of spinach; 220 grams of beans or peas. Of the uric acid produced by these foods about fifty per cent. is excreted by the kidneys and bowels, respectively. Even better results can be secured by the estimation of the blood uric acid than that of the urinary uric acid and the technic is much simpler and more readily employed clinically. The diet

should be kept below the patient's uric acid tolerance. Even with such a restricted diet it is advisable to prescribe a purin free diet day now and then to give an opportunity for the elimination of any excess of uric acid which may have been stored. The diet, while restricted in its uric acid producing capacity, should be well balanced and adequate for the maintenance of the patient's strength. A patient weighing 150 pounds requires daily 200 grams of carbohydrate, 150 grams of fat, and 70 grams of protein, the latter being obtained largely from vegetables. Sodium chloride tends to favor the deposition of the urates and it should, therefore, be limited. Coffee, tea, and cocoa should be tabooed or used in very small amounts. Alcohol should not be given and condiments should be avoided, as they irritate the kidneys. Strawberries, oranges, bananas, cucumbers, and tomatoes should also not be given, as they intensify the symptoms of gout. Water, preferably plain, or a saline mineral water, should be given freely as the best eliminant. Certain drugs also increase the elimination of uric acid and they may be used in conjunction with the diet. The most effective of these are atophan and the salicylates. The acute pain may best be controlled by the use of colchicum.

**The Care of Nephritics.**—Robert (*Medizinische Klinik*, November 5, 1916) avers that in cases with albumin or blood in the urine the diet in the beginning should contain only forty-two grams of protein, the caloric requirements being made up with butter and carbohydrates. The daily food should provide 3,000 calories. On this diet nutrition can be maintained and the weight of the patient even increased. When the albumin or blood disappears from the urine the protein intake may be gradually increased. A second important element is that of the inorganic salts, especially sodium chloride. In the usual diet providing 3,000 calories and containing fifty-five grams of protein there are from ten to fifteen grams of sodium chloride. In cases with nephritis this should be reduced at first to six or seven grams, which still provides enough to render the food palatable, especially if lemons, tomatoes, and sour cream be allowed. Radishes, celery, parsley, mustard, and other condiments should be avoided. The free administration of water tends to increase the excretion of the products of nitrogenous metabolism and from two to two and a half litres a day should be allowed. As soon as red cells appear in the urine all meat should be cut off and meat extracts, soups, and similar preparations should also be forbidden. The diet should be mainly milk with carbohydrates, green vegetables, salads, fruits, and fruit juices. From one half to two thirds of a litre of milk should be the maximum a day. Raw eggs should not be given, but weak coffee or tea may be allowed. The urine should be tested frequently for albumin and blood, and when these are absent after the restoration to a full general diet containing the average amount of salt, the patient's ability to stand exercise without the reappearance of albumin should be determined.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

### Philadelphia Medical Journal and The Medical News

*A Weekly Review of Medicine*

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Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, FEBRUARY 10, 1917

### IF WAR COMES.

Modern warfare demands the complete mobiliza-  
tion of every resource of the countries involved. De-  
feat is the price paid for unpreparedness, and the  
conquered pays the bills for both sides. Therefore  
it pays to be prepared. Every war in which the  
United States has taken part has accentuated the  
necessity for and the deplorable lack of preliminary  
preparation. Surgeon General Lovell, in his report  
for the year 1817, says of the War of 1812: "There  
could be little doubt that where one man had died  
from improper medical treatment, ten had been de-  
stroyed from want of a knowledge of the many du-  
ties peculiar to an army surgeon." The same com-  
ment could have been made at the close of the Civil  
War and of the war with Spain.

In no direction is preparedness more important  
than in the medical departments of the Army and  
the Navy. The public and a large part of the med-  
ical profession erroneously assume that because a  
man is a qualified medical practitioner or surgeon,  
he will therefore make an efficient medical officer.  
This is not true. The military surgeon is much more  
than an efficient surgeon or a competent practitioner.  
He must also understand sanitary tactics; he must  
be familiar with the organization of the medical de-  
partment, and know how to handle men and ma-  
terial. Without this knowledge he cannot perform

the full measure of his duties. Therefore, every  
patriotic physician should at once enroll in the med-  
ical department of the Reserve Officers' Corps,  
where he can learn the essentials of military medi-  
cine by devoting a few hours a week to home study  
without interfering with his practice. Then when  
the need comes he can serve his country acceptably  
and with credit to himself and his profession. Ap-  
plications for enrollment in the corps should be ad-  
dressed to the Surgeon General of the Army, Wash-  
ington, D. C.

### THE PATHOLOGY OF GREATNESS.

Is it envy or jealousy that causes us to see in the  
great man something pathological? In life the great  
man is pronounced abnormal by lesser members of  
society, and his post mortem, carping critic often  
traces with deliberation his remarkable acts to the  
directing power of disease. The method of criti-  
cism and the pathological findings, as in the exami-  
nation of the elephant by the blind man, follow upon  
the particular habit of mind of the critic, or the  
fashions of thought of the age to which the critic  
belongs; in which habit and fashion the critic and  
his time are more likely to be pathological than the  
genius they examine. The facts of biography go  
for little in these "scientific studies," since the pet  
theory of its projector must be upheld at all costs.

The problem of greatness has been easily solved  
by certain alienists, by affirming that the man of  
genius is "insane." There is little ground for Lom-  
broso's idea, for, as the Quaker remarked, "All of us  
are queer but thee and me, and sometimes even thee  
seems a bit queer." Often, indeed, the great  
man is unusual in his behavior, but so would the  
rest of us be if we knew ourselves to be superior,  
and were permitted the license often allowed to  
those who excel.

The great man has been pronounced a degenerate.  
This was a stroke of criticism as well, or ill, found-  
ed, as the foregoing and made a great sensation,  
since it proved all the rest of us to be regenerate, or  
at least normal. But who would not like to join  
this choir of the degenerate or even of the insane?

If the genius has been a degenerate, he has not  
been so in body. For he has usually excelled his  
fellows in physical powers. Where, however, he  
has been sickly, especially where he has been at-  
tacked by tuberculosis, his productions have been  
laid at the door of the disease. Chopin and Weber,  
Keats and Lanier, must, according to the critic who  
follows this scent, have had their inspiration from  
the toxin of Koch's bacillus.

As was to be expected, in a time when we talk so fluently about the internal secretions, the doings of the great man are now interpreted as the consequence of a plus or minus quantity of one or another hormone. The career of Napoleon, for example, has been glibly explained, the rise of his star being coincident with a superactivity of the thyroid gland, its decline being brought about by a slowing down of that chemical laboratory. How exceedingly simple! As usual, the facts in the life of the great man thus explained away matter not at all. That his pulse never rose above fifty-five, that his eyes were never prominent, that he was a small eater, that there was no goitre, militates not at all against early hyperthyroidism; nor does the fact that men who are inactive, and live in luxury, tend to become obese at forty, and that Waterloo was planned with consummate skill and carried out with nearly as great energy after a period of comparative inactivity at Elba, and despite local ailments, militate in the least in the mind of this physician against the diagnosis of myxedema. Waterloo came within an ace of being a brilliant victory for the French, and had it been so, something besides a failure of internal secretion would have seemed a better explanation of its hero. Sufficient thyroid secretion is no doubt essential for success. High ambition possibly brings with it stimulation of the thyroid gland, and frustration of effort may check its activity, but neither activity nor inactivity of a ductless gland will explain Napoleon. Genius may be accompanied by a highly active thyroid, but it is seldom accompanied by Graves's disease. We recall but one instance—Christine Rossetti.

We cannot explain any man—why should not the great man prove more inexplicable? The great man in being great is supernormal, but not necessarily abnormal. The great man is a great man. Why not let it go at that, without twisting and belittling his doings to fit theories which make their author seem the smaller?

#### PROPHYLAXIS AGAINST PEDICULI.

Reports from the battlefields of Europe indicate that not the least of the foes which help to make life a burden to the soldier in the trenches are the animal parasites which feast upon him. An English physician has in fact published a monograph on the subject calling them the "Minor Horrors of War," and going into detail in regard to their habits. His work is touched here and there with humor; indeed, for some reason the subject seems to many persons to be intrinsically facetious, although the soldiers themselves usually see the comical side of it some months after they have returned from the front.

Naturally many expedients have been tried to rid armies of this pest. The rigid cleanliness which excludes it from civilians and their households is not possible, of course, at the front, and instead dependence must be placed on chemical agents to destroy the invaders or to prevent the invasion. Many of these chemicals have been found impracticable on account of unpleasant physical characteristics, but an Italian physician has lately reported one which he claims is free from these disadvantages.

Dr. Alfonso Muto, in an Italian periodical (*Annali d'Igiene*, August 31, 1916) advises a ten per cent. solution of creolin as the ideal chemical agent for this purpose. The clothing to be treated is placed in a wardrobe, the interior of which is connected by a pipe with a boiler containing the creolin solution, which is then boiled, the vapor permeates the wardrobe for about fifteen minutes and is then turned off; a quarter of an hour later the clothes are removed. They are unharmed by this process and the odor imparted is not disagreeable. The protection lasts, moreover, for some little time afterward, as the process leaves minute crystals of naphthalin on them and these have a prophylactic effect.

If the above method is really all the discoverer claims for it it is certainly an unmixed blessing, not only for the relief from the mechanical discomforts inseparable from the entertainment of the pediculus, but also for the protection from disease, especially typhus. Another lesson is learned from the Great War which will be noted by the military surgeons of America, to be applied in case of need.

#### A DANGEROUS SUGGESTION.

The statement has been made recently, presumably on good authority, that oysters from contaminated waters, if treated for a short time with a certain disinfectant, were rendered practically sterile and harmless.

It is this sort of suggestion that oyster growers in condemned localities will fix upon and make the most of for the purpose of again placing their goods on the market. Granted, however, that this or any other treatment is adequate for the purpose, it can never be known that it will be carried out in practice. The consciences of both the dealer and those who work for him are not so fine as will prevent their doing the work of sterilizing in a slipshod manner, and of course at a minimum of expense for chemicals and time. Nor can government inspectors stand over the workmen at all times and examine each lot of shell fish after treatment. Besides, it is not proven that any disinfectant is harmless to the human body. Until there is far more scarcity

of food supplies, it is unnecessary to reestablish trade in materials of such doubtful safety, which after all is simply for the satisfaction of a few never satisfied pocketbooks.

Such a suggestion is like the decision rendered by certain chemists some years ago as to the advisability of the use of benzoate of soda and other mild antiseptics as preservatives in canned goods. Because, in brief experiments on vigorous adults or on animals these antiseptics seemed to do no harm, it was not at all certain that they would not injure many of those who ate them, but the greatest evil connected with the use of these preservatives was that it allowed the packer to can material that was already in decay. This was, in fact, the chief reason for the desire of the packer for the privilege of using an antiseptic. The packing of good goods in an adequate manner would have done away with all need for preservatives.

As for contaminated shell fish, the only safe and sensible way to return them to market is to dispose of the sewage by which they are contaminated, in some other way. By doing so a double advantage will be obtained, for not only will the commerce of the vicinity be increased, but the neighborhood will be rendered more healthful and agreeable. There is no other safe way of rendering the oysters and clams from such regions fit for the market.

#### THE FATE OF VENEREAL NOTIFICATION IN ENGLAND.

It is easy enough for enthusiastic reformers to advocate legislation to do away with their pet evils. It is harder to get such legislation passed; even if this difficulty be surmounted it may be impracticable to enforce the law, and even when this has been done it is sometimes found that the situation is not at all ameliorated. Thus it is with the societies for the suppression of vice, and kindred bodies who would prohibit prostitution, make the notification of venereal diseases compulsory, punish all sexual delinquents, and by divers other legal aids place the feet of the populace in the strait and narrow way and see that they march therein.

In England there has lately been an agitation to make the notification of venereal diseases compulsory and the British Medical Association appointed a committee consisting of the chairmen of all standing committees to consider what should be the attitude of that body in the matter. It is significant that this committee, after careful consideration of the subject, arrived unanimously at the conclusion that such a system would be unfortunate. The main two objections found by the committee were that such a law would lead to concealment of venereal

diseases, and that, even if notification were made, this would not help any in the treatment of such disorders.

The British Medical Association is of the opinion that there are two indispensable preliminary steps to such a law. First, facilities should be provided by the community so that the suffering individuals may be assured of proper treatment, regardless of their financial condition. Second, that charlatans should be put out of business by directing heavy penalties against the advertising of quack nostrums and the attempt to treat venereal diseases by unqualified or incompetent persons.

These delays may seem intolerable to the headlong fanatic who would legislate all these diseases out of existence, but the thoughtful medical man will agree that some such approach to the problem presents more promise of success than mere punitive measures.

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#### THE QUESTION OF STERILIZING MILK.

One of the greatest of public health problems is how to ensure a pure or rather comparatively pure supply of milk. Pasteurization, it is true, has partially solved it, and when scientifically and properly performed it is remarkably effective.

As has been pointed out by Dr. Charles Hastings, Medical Officer of Health for Toronto, the ideal mode of pasteurizing milk is to have it done in the final containers. This method is pursued in some cities and towns in this country on a somewhat limited scale, and in the Toronto Hospital for Sick Children. In the aforesaid hospital certified milk is bought and it is then pasteurized in the bottles in which it is delivered to the baby. Obviously this process removes much possible risk of infection.

When milk is pasteurized in bulk, as is generally the case in commercial pasteurization, there is no sure guarantee against contamination. The arguments against a good deal of the commercial pasteurization which is being practised have been so frequently gone over in our editorial columns that it would be tiresome to repeat them. One or two points are nevertheless worthy of recapitulation. An infant should always be breast fed whenever possible and mothers should never be taught that cow's milk, however pure and however skillfully modified, will nourish the baby as well as human milk. Therefore, even milk pasteurized in accordance with the most scientific principles is at its best only an alternative for human milk.

Some years ago Budde, of Copenhagen, introduced a process of sterilizing milk by means of hydrogen peroxide. There is no space here to enter into the details of the process. The principle is that



the catalase enzyme of the milk split the hydrogen peroxide into oxygen and water, the nascent oxygen acting as a sterilizing agent. It seems that milk was sterilized efficiently by the process, but, owing chiefly to the fact that it was somewhat expensive, the method was never put to a practical test on a large scale.

Dr. Clifford G. Grulee read before a meeting of the American Therapeutic Society, held at Detroit, June 9, 1916, a paper on oxygenated milk which was published in the *NEW YORK MEDICAL JOURNAL*, December 2, 1916. The process of oxygenating milk described in this paper is in its essential details the same as that of Budde. As Grulee points out, it is a preserved milk, but it is a preserved milk without preservatives, because at the end of half an hour's treatment only a trace of the hydrogen peroxide can be obtained.

The conclusions reached by Grulee as the result of testing this method in the Children's Ward of the Presbyterian Hospital, Chicago, are both interesting and modest. He thinks that it offers the safest milk from all standpoints, while its cost is very much less than that of certified milk. It ensures a supply of fresh milk, and all danger of infection from pathogenic organisms in the milk is removed.

Such a process is undoubtedly well adapted for hospitals, and, it would seem, also for private homes. Whether it could be employed on a large scale is another matter, and, of course, further and more extensive experiments must be made before any definite statements as to its value or practicability can be given. In the meantime, it may be said that the investigations at the Presbyterian Hospital in Chicago are encouraging.

#### ANNUAL REPORT OF THE SURGEON GENERAL OF THE NAVY.

According to the last report of the Surgeon General the death rate for the Navy for the year ending June 30th was 4.48 per mille. The chief causes of death were drowning, tuberculosis, and pneumonia. With an average complement of 68,000, there were eight cases of typhoid fever, all over two years after inoculation. The total naval appropriation by the last Congress was \$313,384,212, an amount nearly twice as large as any previous one. Of this appropriation \$1,187,728 was apportioned for the use of the medical corps of the Navy. Provisions have been made for an increase in the personnel of the medical corps from 347 officers and 1,500 men to 600 officers and 3,000 men. For some time past the medical corps of the Navy has been compelled to operate with a reduced complement, and during the past year only eleven men out of fifty-seven candidates successfully passed the physical and professional examinations. The imperative need for young physicians of good training is obvious. It is to be

hoped that the ranks of this important part of our Navy will soon be filled.

In addition to the medical corps there is the medical reserve corps made up of 109 officers, who during the past year received full instructions for emergencies, recruiting, etc. The dental corps has been reorganized and provisions made to have a dentist for every 1,000 men. The hospital corps, which at present numbers 1,585 men divided into hospital stewards and apprentices, has also been reorganized so as to insure better chances for advancement and rating. This branch of the service is to make up 3.5 per cent. of the total in the Navy and Marine Corps. Appropriation has also been made for a new hospital ship, which is now being constructed at the Philadelphia Navy Yard.

Of the 106,392 applicants for enlistment in the Navy last year, only 32,112, or 30.18 per cent., were accepted; the principal causes of rejection being eye and ear diseases, flat feet, and circulatory disturbances.

### News Items

**Physician Fined for Issuing Fraudulent Health Certificates.**—Dr. J. Grosner, of New York, has pleaded guilty to the charge of issuing fraudulent certificates of good health to food handlers, purporting to emanate from the Health Department's clinic. He was sentenced to pay a fine of \$300 or to spend thirty days in jail.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Tuesday, February 13th, Pediatric Society; Wednesday, February 14th, Physicians' Motor Club (directors), County Medical Society; Thursday, February 15th, Sections in Ophthalmology, College of Physicians, Northeast and Southeast Branches of the County Medical Society; Friday, February 16th, Jefferson Hospital Clinical Society.

**Founders' Day at Temple University.**—The medical and other departments of Temple University, Philadelphia, will observe Founders' Day on Wednesday, February 14th. Addresses will be delivered by Dr. Thomas S. Cullen, of Johns Hopkins University; Chancellor Samuel B. McCormick, of the University of Pittsburgh; President Russell H. Conwell, of Temple University; and Mr. Ernest T. Trigg, president of the Chamber of Commerce.

**Military Surgery at the Western Front.**—At a stated meeting of the Clinical Society of the Dispensary and Hospital for Deformities and Joint Diseases, which will be held in the dispensary building of the hospital, 43 East 123d Street, New York, Tuesday evening, February 13th, Dr. Fred H. Albee will deliver an address on Military Surgery based on his personal experiences in the war zone of Europe. His talk will be illustrated by motion pictures and lantern slides.

**The County Medical Society to Discuss Health Insurance.**—The Medical Society of the County of New York will hold a meeting in Hosack Hall, New York Academy of Medicine, Wednesday evening, February 14th, for further discussion of the proposed legislation on compulsory health insurance. On account of its vital interest to the medical profession, the stated meeting of January 22d was, on motion, adjourned to February 14th in order to allow a full discussion of the subject. The papers read at the January meeting by Professor Irving Fisher, Mr. William Gale Curtis, Dr. Samuel J. Kopetzky, and Dr. Eden V. Delphey will be discussed by Dr. Alexander Lambert, Dr. Edward D. Fisher, Dr. William S. Gottheil, Dr. Louis I. Harris, Dr. Walter Lester Carr, Dr. Israel Strauss, Dr. I. M. Rubinow, and Dr. Henry W. Berg.

**Smallpox in Connecticut.**—Reports received by the United States Public Health Service in Washington, D. C., show that during the week ending January 20, 1917, 12 new cases of smallpox were reported in Connecticut, as follows: 9 cases at Waterbury, 1 case each at Fairfield, Naugatuck, and Thomaston.

**Lectures on Metabolism of Infancy and Childhood.**—The Committee on Child Hygiene of the Philadelphia Pediatric Society is arranging a post graduate course, open to members of the society, on metabolism of infancy and early childhood. Full details regarding the course may be obtained from the chairman of the committee, Dr. William N. Bradley.

**Philadelphia Genitourinary Society.**—At the recent annual meeting of this society, Dr. H. R. Loux was elected president and other officers were elected as follows: Dr. T. R. Neilson, vice-president; Dr. B. A. Thomas, secretary and treasurer; Dr. W. H. MacKinney, librarian; executive committee, Dr. Alexander Randall, chairman, Dr. C. R. Hirsch, Dr. Willard H. Kinney, Dr. W. H. MacKinney, with the president and secretary ex-officio.

**Philadelphia Neurological Society.**—The annual meeting of this society was held on Friday evening, January 26th, and the following officers were elected to serve for the ensuing year: President, Dr. W. B. Cadwalader; first vice-president, Dr. M. H. Bochrach; second vice-president, Dr. Samuel D. Ingham; secretary, Dr. Samuel Leopold; treasurer, Dr. N. S. Yawger; councillors, Dr. Charles K. Mills, Dr. Francis X. Dercum, and Dr. John H. W. Rhein.

**Ohio County, W. Va., Medical Society.**—A public meeting was held in the High School Auditorium, Wheeling, W. Va., on Friday evening, February 2nd, under the auspices of the Ohio County Medical Society cooperating with the Board of Education of Wheeling. Dr. J. R. Caldwell, president of the society, was in the chair. Dr. E. A. Peterson, director of medical inspection and physical education, of Cleveland, Ohio, delivered an address on Physical Education, which was discussed by Dr. Robert J. Reed, Dr. R. U. Drinkard, Dr. William C. Etzler, and Dr. Andrew Wilson.

**Lectures on Naval and Military Sanitation.**—Announcement is made that ninety medical schools in the United States have arranged to give a series of lectures on naval and military sanitation and the treatment of the sick in both branches of the services. These lectures, which began on February 1st, will be under the supervision of Surgeon General William C. Gorgas, United States Army, and Surgeon General William C. Braisted, United States Navy. The new curriculum, prepared by the Army and Navy Medical Schools, is the result of a movement started by Dr. Franklin H. Martin, of Chicago, a member of the Council of National Defense. Army and Navy officials have secured a number of motion pictures, it is said, which show every phase of hospital construction and the administration of a military hospital.

**Infant Mortality in New York State.**—Reduction of the infant mortality rate in the State of New York, in spite of the epidemic of infantile paralysis, is one of the notable features of the annual summary of vital statistics for the State, outside of New York city, for the year 1916. The rate for the year was 94—that is, there were 94 deaths out of every 1,000 infants born. This is a reduction of six points under 1915 and of 20 points under 1911. The infant mortality rate for New York city for 1916 was 93. Prior to 1913, the infant mortality rate for the State outside of New York city was much larger than that for New York city. Since 1914, however, the rates of the State have decreased more rapidly than in New York city, and instead of the State having a rate of 18 points higher than New York city, as in 1913, for the year 1916 the State rate was 94, and the city rate 93. These rates are computed in accordance with the number of children born, which is the fairest estimate of infant mortality. The summary also shows a marked reduction in the actual number of deaths of infants under one year, as there were 9,733 deaths in 1916, or 481 less than occurred in the year 1915.

**Physical Education in the Public Schools.**—A committee of leading educators has been formed to press for the adoption of a model State bill, which has been drafted by Dr. Dudley A. Sargent, of Harvard University, providing for the introduction of physical training, without military features, in the public schools of the United States. This committee has its headquarters in the Muncey Building, Washington, D. C. The bill is officially entitled "a bill to upbuild national vitality through the establishment of physical education and training in the public schools of the State." The bill, with suitable amendments, has been introduced in the Massachusetts General Assembly and in the legislatures of California and Indiana. Its introduction in other States will follow shortly.

**New York City's Death Rate.**—Figures compiled by the Department of Health of the City of New York show that during the week ending February 3, 1917, there were 200 more deaths than in the corresponding week of 1916. Altogether 1,754 persons died in this city last week, 239 of them from lobar pneumonia alone, an additional 121 died of bronchopneumonia, 40 from influenza, and 21 from bronchitis, making a total of 421 deaths from respiratory diseases. In addition, there were 250 deaths from heart disease. Health officials say that the pneumococcus and his allies, the streptococcus and the influenza bacillus, are still hard at it.

The death rate last week was 15.95, compared with 14.41 for the corresponding week of last year. Thus far this year, i. e., for the first five weeks of 1917, the death rate has been 17.36, compared with 16.50 during the same period a year ago.

**New Child Labor Law in Effect.**—The amended form of the Child Labor Law, known as the Wellington Act, went into effect on February 1, 1917. It provides that no employment certificates shall be issued unless the applicant shall have reached the age of fifteen years and have completed Grade 6B, or its equivalent in his studies, except that a pupil who has been graduated from public school (i. e., has completed Grade 8B) may receive an employment certificate at the age heretofore allowed, namely fourteen years. The new law makes no change in the requirements regarding physical fitness.

**American Red Cross Society Mobilizing.**—All branches of the American Red Cross Society have been ordered to organize for active war relief, in "view of present events and possible developments." The chapters have been ordered to organize first aid classes, get hospital equipment ready, have surgical supplies on hand, and enlist volunteer nurses and doctors. Base hospital units have already been organized in Manhattan by the Red Cross, and with one exception they are completely equipped for service in the field. They are at Bellevue, German, Mount Sinai, New York, Post Graduate, and Presbyterian hospitals, and have for some time been in a state of preparedness. The Chicago branch of the Red Cross Society has equipment for one base hospital and preparations for two additional hospitals have been in progress for more than two months. Plans for similar organizations in sixty of the leading cities of the ten Central Western States will be pushed vigorously.

**To Prevent Spread of Typhus Fever at Mexican Border.**—On account of the increased prevalence of typhus fever throughout Mexico and its presence in the Mexican border towns, the disinfection facilities operated by the Public Health Service at El Paso have been materially enlarged. All incoming travelers are inspected, and those that appear to be vermin infested are given treatment at the disinfection building. Their clothes and personal things are sterilized by steam and their persons freed of vermin by the application of gasoline or a mixture of vinegar and kerosene. As an additional precaution in preventing the interstate spread of the infection from El Paso, the railroad companies have been instructed not to issue transportation to Mexican laborers unless they present a certificate of disinfection from the Public Health Service officer in charge of the border quarantine.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE TREATMENT OF LEAD POISONING.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

Lead, by virtue of the surprisingly large number of trade processes in which it is employed and the extensive scale on which the smelting and paint industries are conducted, easily assumes first place among the industrial poisons. While tuberculosis is the greatest disease foe of the working classes, lead poisoning comes next. In fact, as Alice Hamilton has emphasized, these two disorders may operate hand in hand, lead favoring the development of tuberculosis by lowering the resistance of the body to infection. Among 7,500 men working in American smelters and refineries, no less than 1,769 cases of lead poisoning were brought to light in a single year—a morbidity rate of twenty-three per cent. While in some of the lead trades poisoning takes place but slowly—except in individuals unusually susceptible—exposure previous to the development of lead symptoms is generally limited to a few months or weeks in lead smelting, in the white and red lead industries, in enamelling bath tubs, in glazing tiles, and in the manufacture of storage batteries. In addition to the direct economic loss arising through temporary or permanent disability due to lead intoxication, there are other less evident harmful effects, such as the increased number of abortions, stillbirths, and early infant deaths occurring in the families of lead workers, the liability of the surviving children to various nervous affections (Constantin Paul), and, according to the experiments of Cole and Bachhuber, and of Weller in animals, a definite deleterious action on the male germ plasma, at times manifest in sterility, or a reduction of twenty per cent. in the average weight of the offspring at birth, and a retardation in their development. According to G. Wilse Robinson, many cases of general nervous debility, some insanity, and perhaps other types of paralysis, and many vague, poorly understood abdominal pains are results of lead intoxication. Charteris has recently urged the necessity, in the therapeutic use of lead acetate in controlling albuminuria and hematuria, of limiting the period of administration of the drug to two weeks, with a dose not exceeding two grains three times a day, lest symptoms of lead intoxication develop.

Prophylactic measures carried out in the practice of trades involving exposure to lead have been attended, in the last decade, with considerable but not complete success in wiping out lead poisoning. Too often carelessness on the part of the workers in applying the protective means provided for them, or, from the employer's side, the conflict between immediate economy of operation and the moderate additional expense affording maximal safety to the employees, result in neglect of procedures of decided prophylactic value. Among these measures are the shortening of the working hours, with abolition of overtime work; alternation of employment

among those engaged in the more dangerous types of lead work; medical examination of the workers at definite intervals, that the earliest signs of lead poisoning may be detected, and the exclusion of young persons and especially women from work with lead, together with all subjects suffering from such affections as tuberculosis, neurasthenia, epilepsy, alcoholism, and renal disease.

From the standpoint of mechanical protection during actual work, various more or less efficient devices are available, such as hoods or air guides placed over the points where lead laden dust is being developed or lead fumes set free, with fan suction so disposed as to draw the dust downward and away from the faces of the workers; the provision of at least fifteen cubic metres of air space to each operative in the working quarters; artificial ventilation by means of propeller or centrifugal fans, and the use of smooth, impervious, slightly sloping floors, to be cleansed daily.

Correct personal hygiene of the worker demands, in addition, the provision of ample washing conveniences, such as lavatory basins or troughs with abundant hot and cold water supply, and shower baths, of which the men should be urged to avail themselves—if not simultaneously, then in rotation, time for this being set apart during the working period. The use of a sulphur soap, the alkaline sulphides of which will convert other lead compounds into the harmless black lead sulphide (Rambousek) has been recommended. In the dressing room, lockers should be provided in which the working clothes may be kept at all times separate from other articles of clothing. Oral introduction of lead being the chief mode of entry of the metal next to the inspiration of dust or fumes, precautions directed toward overcoming any danger from this source are of importance. The workers must not bring any food or drink into the workrooms, and must eat their meals only after having taken off their overalls and carefully washed their hands and face. The teeth also should preferably be cleaned and the mouth washed out at the close of the working periods. In spite of the belief apparently prevalent among workers that tobacco chewing reduces the liability to lead intoxication, neither this practice nor smoking should be indulged in during work, as lead is very likely to be conveyed to the mouth thereby. Protection of the hands—considered a third, less important route of introduction of the poison after the mouth and nasal passages—may be secured during work involving the handling of lead or its compounds by the use of gloves of rubber or other impervious material, to be kept in good repair and cleaned whenever used. Canvas gloves, sometimes employed, or gloves of any soft material that will sooner or later be soaked through by sweating hands are, of course, practically useless for this purpose. Respirators worn over the nose and mouth are of some value to arrest lead laden dust, but are, as a rule, apt to be soon discarded by the workers ow-



ing to the discomfort, heat, and difficulty of breathing that they occasion. Like the protective gloves they should be cleansed whenever used. Careful washing of the working clothes is to be carried out weekly. Above all, intelligent cooperation of the workers in all the preventive measures is to be fostered by the distribution of explanatory sheets or pamphlets to newly engaged men, by the posting of placards in the workrooms, and, where the occasion presents, by personal instruction in the form of lectures or appropriate practical exercises.

The curative treatment of lead poisoning requires, for its proper execution, a knowledge of the behavior and distribution of lead compounds after absorption into the system. This question will be taken up in a succeeding issue.

(To be continued.)

**The Harvard Infantile Paralysis Commission and Its Work in Massachusetts.**—Robert W. Lovett (*Boston Medical and Surgical Journal*, January 11, 1917) presents the principles which should govern the modern treatment in the aftercare of paralyzed children. Infantile paralysis causes a motor impairment which in many cases limits normal activity and in others, causes serious and lasting disability. The critical time is not in the first two or three months after the attack, but in the subsequent months up to the end of the second year, during which period the question of ultimate function is determined in most cases. Certain cases are affected so lightly that they will recover no matter what treatment is pursued, others are so severely paralyzed that no treatment is of much avail, but in the majority treatment at this time has great effect on the final amount of restoration of power. Neglect or ineffectual treatment during this time means unnecessary crippling and disability to so large a number of children as to be an economic blunder.

The essentials of modern treatment in this stage are: First, an accurate diagnosis, which can be made only by a careful examination of every available muscle or muscle group in both arms, both legs, back, neck, and abdomen. Second, the aim of treatment should be the development of affected muscles to their highest ultimate efficiency. The Vermont figures show that partial paralysis is nine times as common as total, so the affection is not so often a hopeless loss of power as a muscular weakening. Third, the use of braces is conservative and protective rather than therapeutic, and the brace treatment of this stage does not exist any more than does a crutch treatment of fracture of the leg. Braces must be used in many cases to enable patients to go about, to prevent muscular stretching, and joint loosening, and to avoid deformity, but they constrict the muscles, they prevent normal use of the limb, and they are heavy. They should be worn during the first year only for walking, and removed when the small amount of walking which is safe at this time has been done. Fourth, fatigue is detrimental, easily induced, and delays muscular recovery. The power of weak muscles may be permanently destroyed by overuse, and unprotected overuse may result in muscular stretching and deformity. The overuse of massage and therapeutic exercise may in-

duce harmful degrees of fatigue. Fifth, massage is useful in proper doses in preserving muscular tone, promoting circulation, and preventing muscular atrophy, but its overuse is dangerous. Sixth, electricity given with mild currents does no harm and perhaps good, but it is not a powerful remedy. It has done much harm by being used over long periods of time, often none too carefully, while no other treatment was pursued. Seventh, muscle development by muscle training is the most important part of the modern treatment. Loosely given it is harmful, because a child will inevitably use strong rather than weak muscles in a loosely formulated movement, and the person prescribing such exercises must have sufficient knowledge of functional anatomy to formulate exercises calling only on the weak muscles. This knowledge is not as a rule possessed by the ordinary masseuse. The chief obstacle to the general use of this method is the scarcity of persons sufficiently trained to prescribe proper exercises, and the formulation of such exercises by persons not trained to give them effectively.

**Vaccines in Diseases of the Ear, Nose, and Throat.**—George Morrison Coates (*Journal A. M. A.*, January 20, 1917) draws almost wholly from his own clinical experiences for the following opinions as to the value of vaccines in the treatment of diseases of the nose, throat, and ear. In the first place, it should be kept constantly in mind that adequate surgical measures must never be neglected for the use of vaccines, but that the latter should be employed rather as adjuncts to the former, where these are applicable. Perhaps the widest field for the use of vaccines in this realm has been in the prophylaxis of acute rhinitis. Very satisfactory results have been secured in a fair proportion of cases, but there are many failures. Some of the failures are probably due to the fact that the vaccine does not contain the chief offending organism. This is particularly likely to be true of the commercial mixed vaccines, which are the ones which must of necessity be the most commonly employed. In such an event cultures should be made from the nasal secretions during an attack of acute rhinitis and an autogenous vaccine prepared from them for future immunization. Even under such conditions failures will not infrequently be encountered. The use of vaccines made from the bacillus *ozaena* foetida or from sensitized cultures of Friedländer's bacillus have given good results in the treatment of *ozaena*. The use of the mixed vaccines prepared for the prevention of acute rhinitis, even if they do not prevent the occurrence of further attacks, is of value in reducing the danger of secondary infection of the ear or accessory sinuses and in hastening the process of repair after operation, if such has been necessary. Furunculosis of the external ear, when chronic and recurrent, is often benefited by the use of vaccines of staphylococci. Acute catarrhal and suppurative otitis media, especially if recurrent in form, are also somewhat limited and may even be prevented by the use of an autogenous vaccine prepared from cultures from the ear or from the nasopharynx. On the other hand, chronic catarrhal otitis media is not amenable to vaccine treatment, although the chronic suppurative form is somewhat

so and should be given a fair trial. Mastoiditis and its complications should never be allowed to wait for vaccine treatment if acute, but where a beginning mastoiditis seems to be present the administration of an appropriate vaccine may serve to check its development and even lead to its resolution without operation. If the vaccine does not accomplish this its use will have placed the patient in a better position for recovery from the infection after surgery has done its part. While stock vaccines, in general, should give precedence to autogenous ones, in a considerable proportion of cases in the regions of the nose, throat, or ear resort will be necessary to the stock preparations and very satisfactory results will often follow their proper use.

**Actinotherapy in Gynecology.**—G. Klein (*Münchener Medizinische Wochenschrift*, December 26, 1916) reports thirty-two cases of carcinoma of the uterus operated on—five of the corpus and twenty-seven of the cervix—which were subsequently treated with actinic rays. Of these sixteen, or fifty per cent., remained free of recurrence, four had a recurrence, and twelve died. Of twenty-two cases of carcinoma of the breast operated on and subsequently treated with actinic rays, seven remained free of recurrence, four had a recurrence, and eleven died. Of ninety-two cases of inoperable carcinoma of the cervix, seventeen were arrested, forty showed signs of progression, and thirty-five died. Of ten inoperable carcinomata of the corpus uteri five were arrested, one died, two have been under treatment only a short time and could not be reported upon, and two have gone astray, so that nothing could be learned about them. The shortest period of observation of all the cases reported was six months, the longest eight years and four months.

**Result of Simple and Combined Treatments of Syphilis.**—Goubeau (*Presse médicale*, November 20, 1916) reports on results obtained in 796 cases. In the primary stage, the mixed treatment consisted in simultaneous administration of arsenobenzol, benzoate of mercury, and potassium iodide; in the secondary stage, arsenobenzol and mercury benzoate, and in the tertiary stage, arsenobenzol and mercury at first, but later, potassium iodide alone. Upon admission, 315 of the 796 cases presented recurrences following previous treatment. Among these recurrences, 65.39 per cent. had occurred after mercurial treatment alone; 17.46 per cent. after arsenobenzol treatment alone, and only 0.94 per cent. in cases receiving mixed treatment. Of 129 soldiers examined in the absence of syphilitic manifestations and presenting a negative Wassermann, nearly all had received mixed treatment elsewhere. Comparison of the results in three tables presented by Goubeau is held to show marked advantages of the combined over the simple treatment. The combined treatment was, in general, very well borne by the patients. In only nineteen cases, the arsenical treatment was discontinued before the fourth injection—ten times for probable intolerance and nine times because of concomitant disease. Combined treatment is held to be superior to simple treatment both as regards power of action and tolerance of the remedies employed.

**Ultraviolet Light in Medicine and Surgery.**—F. Swanson Hawks (*Practitioner*, January, 1917) writes that ultraviolet light possesses direct bactericidal action which is independent of temperature; possesses decided oxidation effects, generating  $H_2O_2$ , ozone, and nascent oxygen in tissues exposed to it; definitely increases metabolism, both local and general, and promotes growth and repair of tissues; and produces immediate physiological effects not so easily explained, but which suggest profound reflex action, probably by stimulation of peripheral nerves. Many forms of skin disease react readily, particularly lupus, syccosis, alopecia areata, acne vulgaris, and rosacea, and certain forms of rodent ulcer, naevus, eczema, and psoriasis. Chilblains are very amenable. It promotes healing of ulcerated surfaces, such as varicose ulcers, and sloughy buboes, and is most useful in dealing with lacerated wounds which are hard to clean and to keep clean, as well as in maintaining the health of a skin graft. It helps to clear up scar tissue, particularly if resorted to early. Locally it relieves gouty, rheumatic, and other muscular pains, and is useful in obscure abdominal and pelvic pains.

**Treatment of Chronic Nephritis.**—J. H. Barach (*Archives of Diagnosis*, July, 1916) points out that in cases in which the patient eliminates nitrogen well, meat need not be omitted from the diet; similarly, if the elimination of salt is not impaired, a salt-free diet need not be insisted upon. Such glandular foods as liver, kidney, and sweetbreads, and such vegetables as asparagus, mushrooms, peppers, and the meat condiments and spices, should be forbidden. Liquids may be allowed in proportion to the ability of the patient to eliminate water, and in the diet, a total caloric value commensurate with the individual's needs prescribed. Reduction in body weight is practically always accompanied by a fall in blood pressure, but from repeated observations he has concluded that one may reduce weight only to a certain point, with benefit to the patient; beyond that point, many patients begin to fail rapidly. It seems advisable not to reduce the weight after the blood pressure has reached its lowest level. Edema may be relieved by restriction of the water intake or by increasing the output through diuresis, diaphoresis, and hydragogue cathartics. Digitalis is frequently administered, not so much for its diuretic as for its cardiovascular effect. While in the majority of cases edema disappears upon removal of salt from the diet, Barach has carried out the Fischer treatment, consisting in the use of hypertonic salt, glucose, and soda solutions, in a few cases of extreme edema of the legs, abdomen, and scrotum, with striking results. He is unable to discern, however, in which cases this procedure is specially indicated. For uremia with cerebral symptoms, hypertension, dyspnea, and irregular heart action, phlebotomy to the extent of twelve to eighteen ounces should be tried. For the troublesome tracheitis of uremia he has found one gram doses of sodium bicarbonate to act better than morphine, codeine, or the inhalations frequently used; the tracheitis seems to be due to acidosis. For insomnia he is often forced to use morphine; in some cases, nitroglycerin at bedtime is effective.



**The Carrel Method.**—H. H. M. Lyle (*Journal A. M. A.*, January 13, 1917) states that this method of disinfection of septic wounds is not one of continuous irrigation, is not dependent upon the miraculous power of an antiseptic, and does not rest upon any one feature. It is rather a method of delivering mechanically a definite amount of a given antiseptic to all portions of a surgically prepared wound over a long period of time. Dakin's solution of 0.5 per cent. sodium hypochlorite is used as an ideal isotonic antiseptic of high bactericidal activity. It dissolves pus, blood clots, dead tissue, etc., but is resisted by the living tissues. The initial surgical cleansing of the wound should be thorough and should include the removal of all dead tissue and foreign bodies, the opening up of all recesses, and the ligation of all severed vessels. The antiseptic solution is then introduced into the wound by some suitable mechanical modification of an irrigation tube of rubber with multiple lateral openings, and the solution is applied in an interrupted manner, just enough being introduced at a time to fill the wound. The surrounding skin should be protected from the action of the hypochlorite by the application of gauze impregnated with yellow petrolatum. Finally, the progress of disinfection should be controlled by regular determinations of the number of organisms in the wound by the use of daily smears. In some wounds the solution may be applied best by wrapping the end of the irrigation tube lightly in wide meshed gauze to prevent the occlusion of the openings. After the wound has become sterile for three successive days it can be closed, either by successive layers of sutures or by other suitable mechanical means, as adhesive plaster strips, etc. The results of this method of treatment have been most excellent, as recorded by several different surgeons.

**The Present Status of the Sclerocorneal Trephine Operation for the Relief of Glaucoma.**—Walter R. Parker (*Archives of Ophthalmology*, January, 1917), one of the most active advocates of Elliott's operation, tabulates the results he has obtained from a consecutive series of 118 operations for the relief of glaucoma. All blind eyes, and all eyes with useful vision when the fields were not extremely contracted, were subjected to an iridectomy if the anterior chamber was of sufficient depth to permit of its easy performance. In all other cases, except the hemorrhagic type, which with one exception was not operated in, a trephine operation was performed. The classification of results is based wholly on the resulting condition of the tension of the eyeball. The results are said to be good when the tension was reduced to between five and twenty-five mm., and the structures left in such a condition that vision were possible if the eye was functioning; poor when the tension was reduced materially, but not to normal, and when complications arose which resulted in changes that would have impaired vision; nil when the tension was not reduced materially, or was reduced below five mm., and when complications developed which would have prevented the restoration or preservation of vision. His table of comparative results shows that good results were produced by iridectomy in seventy-two per cent. and by the trephine in seventy-

five per cent. of the cases of simple glaucoma; by iridectomy in seventy-five per cent. and by the trephine in forty-three per cent. of the cases of chronic inflammatory glaucoma; by iridectomy in sixty-five per cent., and by the trephine in thirty-two per cent. of all other types. Five good results were obtained by the trephine in six cases after iridectomy had failed. This seems to him to indicate an important advance in the treatment of glaucoma. He concludes that it is better to select the procedure best suited to the individual case rather than to subject all stages of all types of the disease to the same operation. If further investigation confirms his results, the deep iridectomy will be the operation of choice not only in the inflamed cases, but in selected cases of the simple type, reserving the trephine operation for those in which it is contraindicated, or has failed.

**Bismuth Poisoning.**—Ellis B. Freilich (*Journal A. M. A.*, January 13, 1917) reports a case of rather severe bismuth poisoning occurring from the injection of about forty-five mils of Beck's paste into a discharging sinus. Eight days after the injection the patient began to complain of soreness of his gums and tongue. He showed a bluish black pigmentation of the borders of the gums, on the under surface of the tongue, and on the buccal mucosa. The tongue was swollen and salivation was most intense. The symptoms increased and diarrhea and weakness developed, with some albuminuria and casts. Irrigation of the sinus with warm olive oil removed the bismuth and patient soon made a good recovery, except that some pigmentation of the gums and tongue persisted.

**Treatment of Diphtheria Bacillus Carriers.**—M. Labbé and G. Canat (*Bulletins et mémoires de la Société médicale des Hôpitaux de Paris*, July 13, 1916) state that while the ordinary antiseptic irrigations of the nose and throat, antiseptic ointments in the nasal fossæ, and inhalations of iodine and guaiacol undoubtedly hasten the disappearance of the bacilli after diphtheria, their effect is often very slow, over three months being required for complete riddance. Twenty-nine patients were treated daily with two copious irrigations of the throat with a three per cent. mixture of Labarraque's solution in water; introduction of a ten per cent. resorcinol ointment into the nasal fossæ morning and evening, and, in some instances, application of one in thirty iodine-glycerin to the throat. In twenty-four of these cases the bacilli disappeared in from fifteen to forty-eight days, one still showed bacilli on the seventy-fifth day when dismissed, and four on the ninetieth day. The average period of persistence was thus over forty days. In another series comprising thirty-five cases, a serum prepared by Louis Martin was substituted for the antiseptics. The powdered dry serum was blown into both nostrils four times daily by means of a powder blower with rubber tubing and glass tip. At first the measure was applied only after complete recovery from the diphtheritic sore throat; later, in the first few days of the disease, as soon as the patient's general condition permitted. In this series, disappearance of the bacilli occurred in from nine to sixty days, except in one case, in which it occurred after ninety-



nive days. The average was twenty-four days, showing a marked improvement over the antiseptic method. In several subjects treated for some time with antiseptics without results, the serum caused the bacilli to disappear in three to six days. In some others, disappearance of the bacilli after an initial serum treatment was followed by return upon cessation of the serum and disappearance upon resumption of the serum. This is evidence of a specific action by the serum, such intermissions not having been noted under the antiseptic treatment.

**Present Status of the Operation for the Extraction of Cataract in the Capsule.**—Arnold Knapp (*Archives of Ophthalmology*, January, 1917) states his opinion concerning the employment of the Smith-Indian operation, which has excited some controversy. "Are we justified for the purpose of obtaining better vision in some additional cases to increase the number of poor results and failures directly referable to the method of operating? I think not. At the same time the extraction of cataract in the capsule is so ideal that our endeavors and the progress in ophthalmic surgery must be along the lines of the intracapsular extraction, devising a method which is easier to perform and less dangerous to the eye than the Smith-Indian operation."

**Soluble Extract of Corpus Luteum.**—Grandison D. Royston (*Interstate Medical Journal*, December, 1916) finds that many conditions are benefited by the intravenous use of this extract, namely, nausea and vomiting of pregnancy, sexual anesthesia, nervous dysmenorrhea, metrorrhagia, and artificial menopause. Administration may be intravenous, intramuscular, or subcutaneous. One to two c. c. may be given every other day intravenously until improvement is seen and then the intervals may be lengthened.

**Subcutaneous Injection of Magnesium Sulphate in Chorea.**—G. G. Urdiates (*Revista de Medicina y Cirugia Practicas*, December 14, 1916) describes a most violent and intractable case of chorea which yielded slowly but surely to one injection subcutaneously of fifteen c. c. of a ten per cent. solution of magnesium sulphate. Antipyrin, Fowler's solution, and other remedial agents had proved of no avail and Urdiates had planned to give a second injection intraspinally if the hypodermic method failed. However, this was not necessary, as there was marked improvement after two weeks and the patient was able to leave the house within a month, although she had been confined therein for four months.

**Homologous Serum and Venesection.**—Bodo Spiethoff (*Medizinische Klinik*, November 19, 1916) states that each of these therapeutic agents is more valuable than the use of whole blood, although the mechanism of their actions is not well understood. For the serum treatment he employs amounts from twelve to twenty mils, repeated every third day or more often if required. The injections are always given intravenously, and the serum is used fresh, as soon as it is separated from the red cells. The injections are likely to produce reactions such as fever and focal responses in the form of increases in the lesions in cases of skin disease, and occasionally mild anaphylactic symptoms. The focal reac-

tions may be of two types, the one rapidly subsiding and being followed by an improvement in the skin condition, the other subsiding slowly, and not leading to improvement. Simple venesection also gives good results in many cases in which the use of homologous serum is equally effective. In both the acute and chronic forms of urticaria such therapy may yield good results in many cases, but in many others the administration of calcium chloride is so effective as to render these other methods unnecessary. In other cases the injection of whole blood gives the best results. Hebra's prurigo often responds favorably, but permanent cure does not result. Eczema in general does not respond except in those instances in which external remedies have failed. In these a short period of serum treatment may be followed by a good response to external applications. Pruritus yields strikingly to the use of serum or to venesection. Temporary benefit may be looked for in psoriasis, but relapse is common; little more than the relief of itching can be expected from either serum or venesection in lichen planus. On the other hand, chronic pemphigus and dermatitis herpetiformis respond quite well. Favorable results can also be expected in a fair proportion of cases of infectious skin diseases such as trichophytosis, impetigo contagiosa, erysipelas, lupus vulgaris, gangrenous soft chancre, and syphilitic gummata and papules.

**New Method of Aseptic Enterectomy and Enteroanastomosis.**—Gudin (*Paris médical*, December 16, 1916) describes a procedure based on crushing of the visceral layers of the parts operated on and immediate restoration of communication between these parts. The crushing has the same effect on the bowel as it has on arteries. The mucous and muscular coats are shriveled up, forming a plug, and the serous coat resists. The crushing not only obviates opening of the viscera, but also insures hemostasis of the tissues. In end to end anastomosis, Kocher forceps are placed at the margins of the previously crushed sections of bowel, and the piece of bowel to be taken out removed by passing the scalpel along the closed forceps. The two forceps are then placed side by side, and two continuous sero-serous sutures carried successively through the adjoining bowel tissues along one side of the forceps, next round their tips, and finally back again along the other side. The forceps are then removed—the bowel ends having already been united all around except at one point, the point of entrance of the forceps—and a grooved director is passed in and moved from side to side, thus detaching the previously adherent margins of the serous coats, unfolding the mucous and muscular coats, and restoring communication between the two bowel ends. The director now being withdrawn, the suture ends hanging out at that point are tied, thus closing the opening. In laterolateral anastomosis, as in gastroenterostomy, the two linear portions of visceral wall to be joined are first crushed; two continuous sutures are then passed completely round these portions except at one point, through which scissors are introduced to cut through the serous coats before the sutures are tied. The perfect results obtained with this aseptic type of anastomosis were manifest in postmortem examinations of the viscera operated on.

# Miscellany from Home and Foreign Journals

**Pathology and Pathogenesis of Eczema and Dermatitis.**—Walter James Heimann (*Journal A. M. A.*, January 13, 1917) discusses eczema and dermatitis with reference to the subjects of pathology and pathogenesis and reaches the conclusion that microscopically the two conditions are identical, both being acute, subacute, or catarrhal inflammations. The identity of the two conditions extends further and includes their pathogenesis, which lies in the action of local irritants and the existence of certain general factors which render the skin susceptible to these irritants. Clinically, too, the two conditions are closely alike and the therapy of the two is the same. As our knowledge progresses, more and more of the specific causes or precipitating factors of eczema are becoming known, and this is reducing the class of cases usually termed eczema by bringing such as are due to recognized factors under the denomination of dermatitis. It would be by far the most logical thing, either to abandon the term eczema and speak merely of dermatitis, or else to apply the term to a certain typical manifestation of dermatitis of unknown origin. Certainly eczema should no longer be regarded as a disease entity, *sui generis*.

**Attenuated or Latent Forms of Myocarditis in Cervicospastic Rheumatism.**—Nobécourt and Peyre (*Paris médical*, December 23, 1916) refer to the prevailing view that acute rheumatism causes a myocarditic syndrome in adults chiefly when febrile and polyarticular, and in children often when a febrile and oligoarticular. While agreeing with the latter statement, they dissent from the former, having noted in soldiers at the front a clinical condition characterized by associated cervical rheumatism, sciatic neuralgia, and meningeal reactions detected on lumbar puncture, often complicated by a latent myocarditis manifest typically in cardiac dilatation. This dilatation may occur alone or in conjunction with acute endocarditis and pericarditis. The cardiac apex is lowered and more or less displaced toward the axilla, not infrequently being found four or five centimetres beyond the nipple line, while the right auricle extends beyond the sternum to the right two or three centimetres or more. The dilatation may exist when the case is admitted or may not come on until several days later. The second pulmonic sound is rather often accentuated, and there may even occur a suggestion of gallop rhythm. The endocarditis and pericarditis usually coexisting yield the customary signs of these conditions. Subsequent return of the heart to its normal size seldom takes place unless it has been uncomplicated, or associated with pericarditis only. In many cases the enlargement continues to increase for a number of weeks. No symptoms are complained of, though occasionally there is slight tenderness of the phrenics in the absence of appreciable pericarditis. Sometimes there is an evanescent hepatic enlargement. The pulse at first shows febrile acceleration, then becomes normal or subnormal; though a few patients, two or three weeks after the termination of fever, show an afebrile

tachycardia, sometimes paroxysmal, especially the cases with endocardial complication. These patients, as a class, are usually received in the ambulance hospital as cases of febricula or cerebrospinal meningitis suspects; hence the necessity of precise diagnostic attention. Lumbar puncture gives immediate relief, and with sodium salicylate or aspirin and rest in bed, generally leads to rapid defervescence. While the affection is apparently a mild one, careful repeated examination of the heart is necessary. The patient should be kept under observation for thirty or forty days, and if the heart volume and sounds return to normal, a furlough of a month or two before return to active duty is in order. If the heart remains enlarged, further observation and treatment are required.

**The Physiological Postures of the Spine and Their Relations to Scoliosis.**—E. G. Abbott (*American Journal of Orthopedic Surgery*, January, 1917) gives a clear and concise demonstration of the many physiological positions, both single and compound, that the spine may assume. He points out that the physiological position may become a permanent one when the patient cannot correct himself and place himself in the opposite posture. The eighty-seven photographs, diagrams, and radiograms graphically portray the usual physiological postures of the spine and, as well, the fixed scoliotic positions. The importance of tracing the deformity through the stages of development to its complete establishment is emphasized, and then, in the same systematic manner, the distortion should be followed step by step through its reduction.

In his report the research work is supplemented by practical experience of an extensive character. The earnest hope is expressed by Abbott that a thorough understanding of the experimental part shall precede any attempt to apply treatment to cases, as effects denote that lack of familiarity with the laws governing the deformity precludes the proper application. Thus in a vivid sentence Abbott affords an explanation of the unsatisfactory results that have been recorded by other orthopedic surgeons who have attempted the application of the Abbott method but lack the requisite fundamental physiological knowledge of the subject or who viewed it from a different standpoint. Everyone who has watched Abbott apply his corrective work has experienced extreme difficulty in satisfactorily comprehending the various procedures and at the same time recognized that Abbott had thoroughly mastered the difficult and heretofore unsolved problem of the correction of fixed scoliosis. Two elementary principles are enunciated which govern the reduction of the deformity. First, the deformity must be overcorrected. Second, it must be held in this position for a sufficient time to allow the parts to return to their normal shape or contour. Abbott's recognized scientific ability, extensive experience, and practical training enable him to present the subject of scoliosis in a masterly manner.



**Postdiphtheritic Cerebellar Ataxia.**—Serog (*Medizinische Klinik*, November 26, 1916) reports a case of this rare complication which occurred in a previously normal adult following upon a very severe attack of diphtheria. The diphtheria was controlled with difficulty by the administration of large doses of antitoxin. In the course of the disease there were marked psychic disturbance and bilateral paralysis of the palate. After recovery from the acute manifestations a temporary stiffness of the back of the neck remained, associated with occipital pain. These signs disappeared, leaving paralysis of accommodation, muscular hypotonus, absence of tendon reflexes in the legs, extremely marked ataxia, and definite bulbar speech. Subsequently the paralysis of the palate disappeared and a moderate grade of lateral nystagmus developed. Careful neurologic examination excluded all seats of disturbance except the cerebellum, and the picture was so definitely that of a cerebellar ataxia that this diagnosis was warranted. The rarity of this condition is indicated by the fact that a search of the literature revealed only one other reported case. Under prolonged treatment the patient made an incomplete recovery.

**Diagnosis of Glossopharyngeal Paralysis.**—Maurice Vernet (*Paris médical*, December 23, 1916) points out that glossopharyngeal paralysis is but rarely investigated or considered, even in cases of associated paralysis of the lower cranial nerves. Taste disturbances of the posterior portion of the tongue are at times referred to their true source, but motor disturbances dependent on the glossopharyngeal remain unrecognized or not thought of in relation to the sensory disorders, of which they are, none the less, forerunners. From a study of some cases of paralysis of the lower cranial nerves met with in military practice Vernet is led definitely to maintain that difficulty in swallowing solid food is mainly the result of paralysis of the superior constrictor muscle of the pharynx. This muscle is innervated by the glossopharyngeal, and paralysis of it is clear evidence of involvement of the nerve. Vagus or spinal accessory paralysis can in no way lead to such difficulties in deglutition. Paralysis of the superior constrictor muscle can be detected by what Vernet terms the "curtain sign," the posterior wall of the pharynx moving from the affected to the normal side and slightly upward when nausea is provoked by deep insertion of the tongue depressor or the patient is requested to make the "ah" or "a" sound. This abnormal displacement of the pharyngeal wall takes place rapidly, but is very characteristic, recalling the well known hemiparetic deviation of the soft palate, with which it may be associated. Taste disturbances in the posterior portion of the tongue always accompany the motor paralysis when the nerve is entirely severed or badly diseased; they may be wanting in cases of superficial nerve change or light compression of the nerve, and in this event the motor paralysis is sufficient to show glossopharyngeal involvement. The test referred to should be made in all cases of difficulty in swallowing solids. A diagnosis of glossopharyngeal paralysis may be of great utility in determining the seat and extent of lesions causing associated paralyses.

**Investigation of the Water Test Meal of Austin.**—Bernhard Brendle (*Medizinische Klinik*, November 26, 1916) states that he made a series of comparative gastric examinations in 150 cases, using both the Ewald-Boas and the Austin test meals. His results were favorable to the latter simple method, which he found gave the most accurate results when modified by increasing the volume of water to 100 mls, adding two tablespoonfuls of raspberry juice, and giving a ten gram malt caramel for the patient to chew. These two additions to the water of Austin's original meal provided the stimuli for gastric secretion which are due to taste and the act of chewing. When this modification of the Austin meal was used in comparison with the Ewald-Boas meal eighty per cent. of the cases gave similar values for acid, twelve per cent. showed higher results with the modified Austin meal, and eight per cent. with the Ewald-Boas meal. The Austin meal had the great advantages over the older one of providing a clear fluid in which remains of undigested food from previous meals could be detected readily; of enabling one to examine for cellular and bacterial elements without difficulty; of providing a fluid upon which all ordinary examinations could be made with ease and one which was suitable for the application of more complex tests, such as Solomon's albumin test.

**Cytological Examination of Joint Fluid in Prognosis.**—W. S. Lazarus-Barlow (*British Medical Journal*, December 30, 1916) states it as a fundamental pathological principle that an injury to a joint is followed by the passage into the synovial fluid of leucocytes, which are of the mononuclear variety in aseptic inflammation and of the polymorphonuclear where there is septic infection. Until negative chemotaxis develops, the greater the infection, the greater the migration of polymorphonuclears. He has applied these facts for the purpose of prognosis and guidance in treatment in cases of penetrating gunshot wounds of the knee by making cytological examinations of the joint contents. Where there is exudation of blood the initial count will show a picture closely similar to that found in blood, but in its absence, or later in the course of the injury, the picture will be more or less characteristic. No absolute figures can be stated, but it was found that a good prognosis was indicated when there was less than eighty per cent. of polymorphonuclears and a bad prognosis when these cells were present in greater proportion. Similarly the dividing line between good and bad outlook was indicated by a ratio of red to white cells of twenty to one, in the presence of considerable numbers of cells. In addition to the cell count, films and cultures should be made and examined for organisms. Absence of organisms was found to be of little weight in prognosis, but the presence of a few chains of streptococci or a few staphylococci, associated with a copious growth of these in culture proved an indication of a heavy and active infection. These methods of study were applied to eighty-nine cases and the prognosis given on their results was compared with the actual ultimate course of the injury and its outcome. The method was found to give a very close approximation to the actual results obtained.



# Proceedings of National and Local Societies

## THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Stated Meeting, Held October 16, 1916.*

The President, Dr. THOMAS S. SOUTHWORTH, in the Chair.

**War Surgery in France.**—DOCTOR ALBEE described his experiences and observations in several military hospitals of France, as well as visits made to several points of the French front, including inspection of trenches, first aid dressing depots, distributing stations, tent base hospitals, motor ambulances, ambulance trains, and a flight in a French military aeroplane.

He found that a large percentage of the war surgery in France had to do with fractures and various bone and joint conditions. The compound comminuted fractures with large lacerated wounds of the soft parts seemed to be better controlled and better results were attained by means of weight traction furnished in all necessary directions by universally adaptable wooden frames erected over individual beds. Doctor Blake at Ris-Orangis, Doctor de Martigue at the Canadian Hospital of St. Cloud, and Dr. Lyle at Chateau d'Annel were using these adjustable frames in a most efficient manner and the results obtained in the most severely comminuted, lacerated limbs seemed to be most satisfactory.

Doctor Albee stated that in 1898 he had published in the June issue of *The Post Graduate* a paper on the importance of the position of neutral muscle pull in anterior elevated position in epiphyseal fractures and surgical neck fractures at the upper end of the humerus. The importance of this position had been repeatedly emphasized since then, as being a fundamental principle in the splint fixation of all fractures near joints. It was gratifying to see this same principle carried out so satisfactorily by means of the above mentioned adjustable wooden frames and weight pulley. This method of managing these cases had been adopted by necessity, because the popular plaster of Paris dressing or coaptation splints are unsatisfactory and difficult of application on account of the profuse discharge and extensive laceration of the superimposed soft tissues. The plaster of Paris dressing is used extensively, however, by the French surgeons as a transportation splint. By means of bridging and strengthening bands of metal, these plaster of Paris splints are very well adapted as a temporary dressing for even the most extensively lacerated cases.

A striking feature of the bone surgery at the front is the large amount of bone that is resected in cases of comminution about joints. A very large number of cases were seen where a considerable portion of the upper extremity of the humeral shaft had been resected. Many cases of penetrating wounds of the knee had the patellæ enucleated prior to their arrival at the base hospitals. From his observations, he concluded that enucleation of the patella was not a favorable means of draining the knee, as in most of these cases that arrived at the base hospitals dependent drainage had to be established later. Doctor Blake's practice at Ris-

Orangis was to drain the posterior culdesac of the knee joint by lateral incision on each side of the hamstring. This seems to be the preferable method in cases of suppurating knee joints.

Through the interests of the French War Office, many cases of pseudoarthritis, with loss of bone substance, were seen and operated upon by him at military hospitals in different parts of France. These cases comprised injuries of the humerus, ulna, radius, tibia, fibula, and, most frequently of all, the lower jaw. He found his motor outfit practically indispensable in moulding the gutter bed and in shaping his inlay bone grafts for repairing these bone injuries, particularly those of the lower jaw. The bone graft offers the only possible means of restoring these extensive bone defects. The bone graft material used was almost invariably taken from the patient's own tibia; but in this terrible war abundant material can be obtained if desired from amputated limbs. It must always be remembered, however, that the autogenous graft is the most favorable one.

Doctor Albee illustrated his talk by means of moving picture films which he brought from France. The subjects illustrated were: The Carrel-Dakin method of sterilization of wounds, which he has found to be most efficacious, and a forward step in the treatment of wounds. One film showed numerous cases of extensively lacerated wounds of the face, with and without losses of portions of the upper and lower jaw; it also showed the results obtained in these cases by means of plastic surgery. Other films showed Doctor Albee's operative bone mill in use in the operation of restoring four inches of loss of substance in the central portion of the shaft of the humerus, in his inlay bone graft for pseudoarthrosis of the tibia, and in making and inserting a dowel peg graft in the case of an ununited fracture of the neck of the femur.

DR. CLARENCE MCWILLIAMS showed some pictures taken while he was in France, where he acted as medical chief at a hospital base two hours south-east of Paris, containing 200 beds.

DR. FOSTER KENNEDY said that there was nothing that he could add to the very interesting address and demonstration given by Doctor Albee. His own experiences in France had been those that were common to a great many, and as he was not a surgeon by profession he did not feel capable of discussing Doctor Albee's work. He wished, however, to touch upon one point, from the neurological standpoint. As Doctor Albee had shown, an enormous number of neuroses had been developed as the result of trauma in war. Men in the war suffer from terrific catastrophes, as compared with the usual causative factors of injury occurring in the course of civil employment. These cases go back from the trenches, as had been shown, with all kinds of functional stigmata, viz., amblyopia, aphonia, various forms of functional paralysis, or labeled hysteria and neurasthenia. They are sent from both the French and the British armies to rest camps where they are out of the sound of the guns

and in freedom from the association of the trauma with which they have been inflicted. At least eighty-five per cent. of these men go back to the front in a comparatively short time.

In civil life we constantly see individuals who six months, a year, two years, or three years ago sustained more or less minor injuries in the course of their work and still complain of various symptoms of entirely subjective character; they maintain their inability to follow their former employment or to take up any other. Not all of these people are malingerers, as one might be led to think in contrast to the same type of men suffering from the functional disorders incident to war; but they are suffering not so much from the traumatic neuroses as from the litigation neuroses and the results of the anxiety as to whether or not they will be compensated. That plays the greatest part in their condition. Therefore it seems probable that out of the neuroses of war we may learn a great deal regarding the proper prognosis and proper attitude to assume toward the neuroses following trauma occurring at home.

DR. A. A. CRANE regretted that on account of a delayed train he had not been able to get to the meeting until Doctor Albee was nearly through speaking, but said that since he had had the good fortune to accompany Doctor Albee on this trip he would like to say a few words about the strong impression made upon them both by the openmindedness and receptivity of the army surgeons whom they met. There were many traits of the French, medical and lay, military and otherwise, which they had learned to admire and love, but this feature was especially striking. The French surgeons want to be shown; but they did not stop there. They provided facilities whereby they could be shown, and then they warmed up to the procedure.

The French pictures which had been shown tonight were taken by and under the auspices of the French Government. Every picture taken anywhere in France has to pass under a very rigorous censorship, and these pictures were all censored and approved by the French Censorship Bureau, before they were allowed to go into general circulation. After it became known that Doctor Albee had pictures of his own and would like to show them, he received many cordial invitations to do so, and a high grade of French surgeons were present to view them.

As everyone knows, it is very difficult to obtain permission to go to the front. At first it took ten or twelve days to get through all the red tape required, and it was necessary to wait on the stone stairways of the Minister of War until it became very tiresome; but after a time we did not have to wait, for the members of the War Department sent for Doctor Albee. There was a man who had a son who was under observation, and they wished to consult him. After that there was no trouble at all. The last person we saw, when we took the train for Bordeaux, was Mr. Butler, the Chief of the American Clearinghouse, who wanted to catch Doctor Albee in order to obtain two of his outfits.

As an illustration of the difference between the British and French temperaments, he stated that the British at first were very easygoing in

the matter of censorship, but have now gone to the other extreme. Doctor Corwin brought this same series of pictures, all supplied by the French Government; but instead of returning by Bordeaux he came back through England, and when he reached Southampton they were all confiscated, notwithstanding the fact that they had been furnished by the French Government, for they thought it inadvisable that the American people should see them. The French, on the other hand, thought they were good pictures for arousing interest, but the British said they were improper, and confiscated \$150.00 worth of pictures.

DR. WILLIAM SEAMAN BAINBRIDGE congratulated Doctor Albee upon his excellent paper and splendid pictures. America had been fortunate in being represented at the front by Doctor Blake and his coworkers, Doctor Hays and Doctor Davenport, by Doctor Carrel, Doctor Albee, and the many others who have done such admirable work in Paris and elsewhere. The wonderful plastic surgery and other surgery which they had done and were doing was certainly a credit to the American medical profession.

Inasmuch as Doctor Albee, Doctor Kennedy, Doctor McWilliams, and other speakers, had confined their experience to the side of the Allies, Doctor Bainbridge limited his remarks largely to observations on the side of the Central Powers. Having had the opportunity last year of making a sanitary, Red Cross, and hospital survey on both sides of the front, going through Holland, Germany, Poland, France, Switzerland, Belgium, and England, he had had an excellent opportunity to make a comparative study of equipment and methods. The differences which he had observed, from the medical and sanitary points of view in the conditions noted in the Greco-Turkish war in the late nineties, and in the present conflict were very marked. He had been specially interested to note the high degree of specialism as applied to the hospitals of both the Allies and the Central Powers, all cases being sent, as nearly as was possible, to the hospital caring for the particular type of injury. Thus, neurological cases were sent to one hospital, respiratory cases to another, and fractured femurs, for example, to still another. At the great La Chapelle station, the great rendezvous for the wounded in Paris, as each train load of the injured was brought in, an attempt was made to sort out the material, to card catalogue the cases, and to send them on to the hospitals especially equipped for the respective class of injuries. On the German side was noted wonderful efficiency and magnificent system, everywhere displayed, and most impressive, on both the east and the west fronts. The promptness of the trains, the extensive use of vaccines, and the utilization of other means of treatment in the care of the wounded, were everywhere manifest. The utilization of gymnasiums in an effort to limber up joint and limbs, the application of artificial limbs, the utmost care in the minute details of treatment, all bespoke efficiency and skill. In one hospital visited there was an aquatic ward, in which patients were kept in bathtubs, as was formerly the practice with typhoid fever patients, in an effort to prevent bedsores in cases with injuries to the soft parts of the back, and especially in neuro-



logical cases with injuries to the spine and back. One patient had been in this ward for seven months—an illustration of the extent to which efforts at physical rehabilitation were being carried.

Any final conclusions with regard to the comparative merits of the treatment employed in this war could not possibly be drawn at the present time. It would probably be years before the medical and surgical history—as it would certainly be many years before the military history—of the great conflict could be justly written. As might be expected, opinions varied greatly among the workers concerning the value of different methods. In the matter of the sterilization of wounds, for example, some, with Carrel, believed the Dakin solution to be the best; a few miles away, perhaps, simple sterile water was employed; while still further along one would find strong antiseptic solutions being used. So it was with other controversial points. In Berlin, for instance, it was the consensus that, so far as Germany was concerned, the use of vaccines for ordinary infections had been very disappointing. Cholera first, smallpox second, typhoid third, and tetanus fourth, was the sequence of importance attached to the preventive power of vaccines. In tetanus it was held that if the antitoxin were given immediately after the receipt of the wound it was valuable; after tetanus had fully developed, however, it was of very little use.

#### NEW YORK ACADEMY OF MEDICINE.

*Stated Meeting, Held in Conjunction with the Section on Neurology and Psychiatry, January 4, 1917.*

The President, Dr. WALTER B. JAMES, in the Chair.

**Efficiency and Inefficiency.**—An abstract of this paper by Dr. Pearce Bailey appeared on page 72 of the issue of January 13, 1917.

Dr. CHARLES L. DANA said that Doctor Bailey had presented his subject so clearly and wisely that he could not in discussing it do more than comment upon certain phases and speak of it from a slightly different angle.

The speaker understood that Doctor Bailey wished to show and had shown that the mental examination of people was really more fundamental and important than the physical, and also if one spent all his time in trying to make the efficient more efficient, harm might be done by neglecting the inefficient and their helplessness might be increased, so that it was really this class that needed most attention. This view was so evidently a wise one that it needed no additional emphasis.

There was a large class of the inefficient who were absolutely in need of support and surveillance. These were the feeble-minded and included all adults whose intelligence was only equal to, or was less than, that of a child of twelve. This large class, equalling approximately that of the insane and numbering about one to 300 of the population, was receiving very wide attention, and its problems were being worked out and had been worked out already in some States.

There was the group known as the criminal class, which was not a scientific or biological but a legal group, and was made up largely of defectives, psychopaths, and the insane. But there was another

much larger class who were not feeble-minded but who were not strong minded. Many were of the intelligence of perhaps a little over twelve reinforced by education and were steady but simple minded. Others had normal intelligence, in its technical sense, and responded well to ordinary tests, but had an instability of purpose and of morals that made them need guidance and support to fit them to an environment where they could be self-supporting and could do some good in the world. Neither group can initiate or carry out their work alone. In nearly every large family there were one or two belonging to these groups who were sent out into the world and expected to meet its problems, whatever they were, like a normal individual, yet they failed, or only half succeeded, and had to be helped by the family. These were the people who might really be called unripe or tender minded.

Their problem, if they were women, was often solved by an early marriage, because men loved to marry these soft, childish, clinging, doll like types, and if the man was not very bright himself it was with him a reaction of defense; these two simple minds mated and bred their kind. If marriage brought the woman into a protected life she got along very well. If she married into trying conditions she went to pieces and became a chronic invalid, hysterical, neurasthenic, a *præcox*, etc. These simpler types of men got on also if they happened to fall into places of regular routine with absence of responsibility; if, in fact, they became subordinate wage earners.

But among these social or biological groups, physicians had to and often were able to select certain cases which required especial thought and care. One of these groups was that of the constitutional inferiorities, qualitative or quantitative. Here there were no deep lying mental states to analyze, nor was there enough mental material to be educated. They were simply lacking in mind stuff, or it was too unstable to be made use of. They had to be institutionalized in some way, directly or indirectly.

There was another group which physicians could recognize and which had in it the possibility of breakup and explosions. They were the possible cases of dementia *præcox*.

There was a third group which consisted of the obsessives; these were the persons who failed or made trouble because of bad mental habits, defects of training, and environment. They had fears, doubts, obsessions, fancies, and hysteria.

There was a group with delinquent and criminal tendencies who often were also feeble-minded or unstable—the psychopathically constitutionally inferior. If children were carefully studied during school life, not by psychologists or teachers alone, but by physicians trained in psychiatry and psychic measures, they could often detect those qualities which showed that the child would become delinquent, *præcox*, psychopathic, or criminal. Here was where the inefficient could be first recognized. The function of psychiatry was no longer that of treating mad people; it was in preventing the madness and failures of life, in determining capacities and defects, and in enabling human beings to live the lives and follow the careers best adapted to them. In order to fill these functions physicians and psy-



chiatrists had, among other things, to know and to apply what was termed psychology and psychiatry in a wider and more effective way. Students of medicine and physicians ought to study and learn the most modern and accurate methods of observing and measuring the workings and control of the human mind and apply this knowledge wisely to the problems of human life and conduct, and especially to detect early the feeble-minded, the unstable, the delinquent, the psychopathic and the insane, all but the first of which classes sprang from that group called the "tender minded" class.

Mr. LEE K. FRANKEL, third vice-president of a well known insurance company, said that as a layman he would not attempt to discuss this subject from a medical standpoint, but would attempt to do so from the social side, or perhaps the medicosocial side. It was difficult to discuss Doctor Bailey's admirable paper because therein the subject was elucidated so thoroughly from the standpoint of efficiency and inefficiency. But he was sure Doctor Bailey did not mean to infer that the mere rejection of an applicant for an industrial position on medical or physical tests necessarily spelt inefficiency. Wherever tests of this kind had been introduced by large industrial concerns they had been prepared specifically for that particular industry, and while the applicant might be rejected it did not follow that he or she might not be competent in some other walk of life. The psychological tests used by the company the speaker represented were prepared by Professor Thorndike of Columbia University especially for their needs. The same was true of the medical tests. The mere rejection of an applicant to this company by the examining physician meant he had certain impairments which according to the rules established for the company made this rejection necessary, whereas some other industry might find him competent.

However, there was developing a definite number of men and women who were incompetent and inefficient from one standpoint or another. This was true, not only as regarded those who applied for work in industries, but was likewise true of those now employed in industries. Doctor Bailey had not the time, perhaps, to go into that phase of the subject, but there were industries today which made periodic examinations of their employees, for there were a percentage of these who year by year developed impairments which threatened to affect their general efficiency. This did not include imperfect heart action, bad conditions of the teeth or mouth, the constant number of gynecological conditions such as dysmenorrhea, etc., but the more serious conditions such as sugar, high albuminuria, nervous and mental diseases, organic heart disease, goitre and other conditions which indicated, if not discovered and treated, later impairment of the general condition and subsequent inefficiency. The industry had to be guarded and that meant efficiency in its employees.

The question was, what was to become of the rejected? Industry must reject them, for it could not consider those who were inefficient and be fair to the efficient. Society must answer this question and it had always faced this problem; it had done so for centuries and probably would have to do so for dec-

ades. Provision must be made for the inefficient; institutions must be established.

The social problem of greatest importance was how to prevent inefficiency in those who were to come in future generations, for it was not a question alone of the present moment, but of changing conditions so as to reduce the number of those who would otherwise later on be rejected. In this medicine was interested, and in addition the system of education would have to be changed so that less stress would be laid on decimal fractions and more on handiwork, less on the location of rivers in South America and more on home economics and motherhood. It was not alone a question of adult men and women applying for work; it was a question of fitting the child properly for life and the conditions he must meet there.

If the proper method of medical supervision of the child were to be considered, the present ones would have to be revolutionized. The proper method was not new and had long been known in China. The present way of waiting for an examination until one applied for work would have to be abandoned; the importance of the medical examination would have to be realized and applied outside of industry. In the same efficient way that business was carried on, sociomedical work should be carried on. No business would be considered efficient that did not from day to day know what its assets and liabilities were; at any time or hour the industry knew its financial status. Society must adopt the same principles. Medical examination as now conducted in the public schools was inefficient; it ought to be continuous and protective. Medical examinations should be made not only when the individual was ill, but when he was well to prevent him from becoming ill. The time was coming when periodic examinations would be the rule; it would be the custom to be examined periodically. The time was coming when children would be required, not as now only on registering entrance into the school, to produce medical certificates, but periodically; and all would be required to go at certain intervals to a physician and have the whole condition examined. Whether the tests to be used would be psychiatric or psychologic was for the physicians to decide, but the school system would have to be so adjusted that the children would grow into men and women efficient both mentally and physically so that these rejections to which Doctor Bailey called attention would no longer occur.

Dr. JOSEPH COLLINS said that he found himself in entire agreement with what Doctor Bailey had said regarding the factors that made for efficiency and for the imperative necessity on the part both of State and individual to detect the causes of inefficiency and to overcome them, or at least to controvert them as far as it was possible to do so. Some of the factors that made for efficiency, or inefficiency, were beyond the reach of the State or of the individual. One might hope and even reasonably expect that the time would come when the principles of what was called the science of eugenics would be applied to the human race, but if this were awaited before an attempt was made to thwart inefficiency, and particularly before attempting to detect it while it might still be transmuted into ef-

iciency, great opportunity would be lost. Efficiency and inefficiency, in so far as they had relationship to education and environment, were subject to a certain degree of control. The degree of such control was undoubtedly becoming greater, not only in this country, where education had for many generations been a part of the State and regulated by law, but in European countries, England, for example, where it had only very recently been fostered by the State. Now that boards of health had limitless power, which some of them were beginning to exercise, it might be confidently anticipated that environment of an individual, or of masses, that might be prejudicial to mental and physical health, would be transformed.

The speaker was very glad to hear Doctor Bailey put the matter of detecting inefficiency on an economical, or dollars and cents, basis. It would be hazardous to attempt to estimate the amount of money that would be saved to a community or State were the inefficient who were serving it to be substituted by the efficient. The amount of money and pain and humiliation that could be saved individuals and families by the early detection of such inefficiency as made the individual who was willingly or forcedly attempting to accomplish that which he was somatically and mentally ill adapted to do were incalculable. In so far as incompetency stood in relation to inadequate endowment, physically and mentally, and to defective health, physically and mentally, it should be demonstrable by suitable examination; but it was one thing to make this statement or to accept it, and another thing to get the examination. It seemed to the speaker idle to say that the physician should make such examination. In reality he was no more competent to make it, unless he had had special training, and rather extensive training as well, than an intelligent layman or pedagogue. Naturally, this did not mean that he was not competent to examine the condition of the chest or abdomen or the configuration of the extremities, but to make a complete physiological and psychological examination of an individual required expert training.

After fully realizing and giving proper valuation to the factors that made for efficiency and inefficiency; after devising suitable means for distinguishing the inefficient from the efficient and advising and guiding the latter into avenues of activity where they would be properly productive, what was to be done with that large class of the inefficient who could not safely travel any avenue and be productive, or be of benefit to State, community, or posterity? What should be done with the satrels, the adults whose most conspicuous possession was infantilism, those allied to dementia præcox, the high grade imbeciles, the morally dissolute and often personally attractive; with the class that could not be made to feel or appreciate their responsibilities, civic or moral? What was to be done with them after they were detected? Were they to be segregated? Should the State take care of them? Who could say that such and such elicitations of an examination constituted an inefficient? Who could undertake to segregate and educate them and possibly even control the expression of their liberty, equality, and freedom?

Although it might look at the present time as if

this country was on the highway to centralization of national power or State power, there was little danger that it would ever reach such a degree as to come in absolute conflict with personal liberty. State commissions of lunacy and State commissions of health had very great power now. They might be compared to a moral, righteous giant who, exercising his strength wholesomely, was applauded. Should their activities infringe upon personal freedom, their powers would have to be defined and interpreted by the highest court.

Doctor Collins said that personally he felt that the matter of overcoming inefficiency and converting it into efficiency must be left largely to the procreators of the inefficient individual, save in those instances where the procreators were not able to take care of him and to direct and supervise his transformation. The duty of the physician consisted in disseminating propaganda: 1, in pointing out, as Doctor Bailey said, that the inefficient could be detected; 2, that the individual who was inefficient in one walk of life might be very efficient in another, or, in other words, that there were such things as adaptability, mouldability, and educability; 3, in showing that some of the factors that made for inefficiency might be detected early, corrected and eradicated, and, 4, that the detection of them was one of the most legitimate fields of preventive medicine. There was in the sphere of preventive medicine a much more fertile field to cultivate than the treatment of disease. It seemed that the treatment of disease had resolved itself into the education of human beings to subscribe and adhere to the laws of hygiene; to eradicate and overcome the cause of disease, i. e., to utilize specific measures to kill pathogenic organisms, and to play detective for the surgeon. After this was done, it could be prophesied that the future work of the physician would be confined largely to the field of preventive medicine.

Dr. ABRAHAM JACOBI said that he believed everyone would like to be a little more efficient and the subject of the evening was therefore particularly interesting. He thought that Doctor Collins's remarks were a little less philosophical and socialistic than usual and he also thought that Doctor Frankel had been a little modest in giving his opinions of the outlook in relation to dealing with present existing people. But nothing could be done to make more efficient the present offspring of criminals, epileptics, and semifeeble-minded people. The problems resulting from inefficiency could not be solved so long as such offspring were allowed to come into existence, for which they had no justification. These descendants from epileptics and criminals ought never to have been conceived. No individual should ever come into existence with an epileptic father or mother, or a father or mother who was tuberculous or who had any one of a number of diseases that should long ago have been eradicated. It was not a question of infanticide, but of the prevention of conception; unfortunately there were those who insisted upon mistaking the two. This had been the speaker's opinion for fifty years and was just as much so at the present time. It would be better for persons not fitted to live or to support themselves to be prevented from being born. Society would be better off if better people were brought into the



world instead of a larger number of people. He felt that anyone who had ever seen epileptic children, born epileptic because their parents were epileptics, ought to have voted for what had been called, in a rather misfit way, "birth control," if they had given the matter much thought. There was every advantage to be gained by having a better population, even if a smaller one; so much was known of the tragic results of mental and physical impairment, of inefficiency, that the need for a change to better things should be recognized by all thinking minds.

Dr. FOSTER KENNEDY said that there were those of the Section on Neurology and Psychiatry who had thought for some time that their programs and discussions seemed to be filled with metriculous technicalities and obscure sophistries and that these things might perhaps be better fitted for the Alexandrian Academy 300 years before Christ than to a modern medical society. With this thought in mind the section, with the kind assistance of Doctor James, had sought for someone to address the present meeting on one of the vital problems of today and they felt they had found the man; Doctor Bailey had pointed out to the whole medical profession, particularly the neurologists and psychiatrists, the wisdom of directing their attention to the care of the individual, particularly in his social relationship. It would probably come about, in spite of what Doctor Collins said, that they would be called upon eventually to act as agents for the State in the classification and registering of each unit of the community. One of the great surprises of the present time was the fact that each community, intensely individualistic and just as anxious as ever for the freedom of the individual, was imposing upon itself rigid measures and, under the whip of necessity, was taking an inventory of its possessions. The whole trend of government today was for the State to care for the individual, not necessarily for the sake of the individual but for the sake of the State. That would be done, and was being done, under necessity, by people 3,000 miles away, and it was for the medical profession to recognize that the problem of efficiency should be applied to the individual and they might be called upon to weed out those individuals who failed to measure up to the standard. Doctor Bailey had certainly pointed out the way to the solution of this problem in great measure.

Dr. SAMUEL J. MELTZER said that he had two points he wished to bring out. The first one was that the chief evil of death was the knowledge of its occurrence and the worry about it; a dog might be said never to die because as long as it lived it never knew that it would ever die and when it was dead it certainly did not know that it had died. People would be made miserable by frequent medical examinations. A man might have a slight heart murmur, or a little albumin in his urine and be able to attend to his business and feel perfectly well until a physician, possibly an insurance examiner, told him that something was the matter with him. From that time on until he died that man was never well.

In the speaker's opinion it was a wrong policy to examine healthy people too often. The function of the physician was to treat the sick and leave the well alone. The cry for the frequent medical ex-

amination of healthy men did not come from the physicians but from laymen, often for reasons of their own.

The second point referred to a statement by a former speaker, that there was in the sphere of preventive medicine a much more fertile field to cultivate than the treatment of disease. Preventive medicine had indeed been marvelously developed in recent years by the activities of the science allied to medicine but outside of it. These sciences, however, should not be permitted to dictate the procedures within the domain of medicine. Here the medical men themselves must awake to a greater scientific activity and bring about the desirable progress. That end could be attained only by the optimistic view that diseases would be earlier or later amenable to efficient treatment and cure. The sciences dealing with the functions of life must prepare the way; but the actual work must be accomplished by the medical men themselves. Anatomy prepared the way for surgery, and the surgeon developed efficient methods of treatment in his line. The surgeon did not worry so much about how to prevent fractures or wounds, but concentrated his energy upon the treatment of them. The State might look out for prevention, but the doctor should look out for his patients.

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*The Animal Parasites of Man.* By H. B. FANTHAM, M. A. Cantab, D. Sc. (Lond.), Lecturer of Parasitology, Liverpool School of Tropical Medicine, Sectional Editor in Protozoology, *Tropical Diseases Bulletin*, London, etc.; J. W. STEPHENS, M. D. Cantab, D. P. H.; SIR ALFRED JONES, Professor of Tropical Medicine, Liverpool University, etc.; F. V. THEOBALD, M. A. Cantab, F. E. S., Hon. F. R. H. S., Professor of Agricultural Zoology, London University, Vice-Principal and Zoologist of the Southeastern Agricultural College, May Kingsley Medalist, etc. Partly adapted from Dr. Max Braun's *Die Tierischen Parasiten des Menschen*. (Fourth Edition, 1908), and an Appendix by Dr. Otto Seifert. New York: William Wood & Co., 1916. Pp. 900. (Price, \$12.00 net.)

This work on animal parasitology is based on the translation of Braun's fourth German edition, which appeared in 1908, and to which had been added an appendix by Dr. Otto Seifert on Treatment. However, the book now put out by the English authors contains virtually new matter, and to all intents and purposes, the work of Braun has disappeared, with the exception of early historical references. So far as the Protozoa Section is concerned such is especially the case and this section may be considered new. Dr. Fantham is responsible for the chapters dealing with the Protozoa. That part of the book in which the subject of Worms is considered has been remodeled by Professor Stephens. Mr. Theobald, who writes on the Arthropoda has added a great deal of new matter to that which appeared in the last English edition, and some fresh material by Braun has been included. The first section of the Appendix by Doctor Seifert has been remodeled, while the sections on the Helminthes and the Arthropoda are practically translations of the original.

The work as a whole, although somewhat lacking in homogeneity, presents the subject of animal parasitology in a clear and comprehensive manner. It is a subject of which the scientific knowledge is increasing rapidly, so much so indeed that it is difficult to keep pace with the



new facts constantly being discovered. The work of Fantham, Stephens, and Theobald gives an excellent presentation of all that is known of animal parasitology at the present time and may be warmly recommended as a book of reference to medical men and students. The figures illustrative of the text are good.

*Principles of Medical Treatment.* By GEORGE CHEEVER SHATTUCK, M.D., Assistant Physician to the Massachusetts General Hospital. Third Edition, Revised and Enlarged. Boston: W. M. Leonard, 1916. Pp. 225.

This handy little book contains useful and practical notes on the medical treatment of common diseases. The subject matter is arranged in outlines embracing the principles and the particular methods of treatment for each disease. The title of the book has been changed from the original name of *A Synopsis of Medical Treatment to The Principles of Medical Treatment*, and emphasis placed upon the principles rather than the methods of treatment. The style is necessarily condensed, but arranged topographically in such a way as to add to its value and clearness. At the end there is a list of useful and important drugs. The general practitioner will find in it many helpful suggestions for daily use. It is an especially convenient aid for the beginner and a ready manual for the office desk.

*Transactions of the American Surgical Association.* Volume XXXIV. Edited by JOHN F. BINNIE, M.D., Recorder of the Association.

Beautifully bound and really a valuable work on surgery by many of America's foremost surgeons, this volume is much more than a mere record of the association's meeting in May, 1916. Several of the articles describe conditions present and operative measures performed in the European War zones, and are not only interesting but of value in the treatment of traumatic surgical cases in this or any other country during times of peace. Many illustrations, both diagrammatic and photographic, add greatly to the value of the work.

## After Office Hours

The *February Century* contains a good sketch, "An Episode," by Roger Wray.

"Idols and Images," in *Harper's* for February, is a clever little satire on the Imagists. And men who ridicule the female bargain hunter should read "The Psychology of Shopping."

*Leslie's* for January 25th contains many excellent pictures—and a little text. The "Motorists' Column" will aid the physician who runs his own car.

The physician who is also a Nimrod will find plenty to interest him in *Recreation*. The January number has a truly remarkable photograph of blacktail deer.

Our picturesque ex-President has an article in the *February Scribner's*, "Where the Steady Trade Winds Blow." "After All," in the same magazine, aims high, but falls short.

The *Ladies' Home Journal* for February has much that will appeal to the doctor's wife. A mere man might think the magazine a bit unwieldy. An article by Thomas Mott Osborne will appeal to the masculine mind.

Checkers, Edgar Allan Poe once said, taxes the higher powers of the intellect more than chess. Whether we agree with this or not, there is an interesting little sketch in the *Independent-Harper's Weekly* for January 29th, "The Exhaustion of Checkers," by Winthrop D. Lane.

May Carolyn Davies contributes a real poem, "The Singer," to the *Survey* for January 27th. If it were not for one weak line we would paste this in our scrapbook. In the same number Elizabeth Tilton concludes her diatribe against alcohol, that fallen angel who has had so much mutiny among his hosts of late. The book reviews in the *Survey* are particularly good.

Those who are interested in the subject of the communications of the dead with the living will find a story on this theme in *Munsey* for February. "The Return," by Zelda Sears, is also interesting in that the story is supposed to be told by a trained nurse. The only false touch is where the nurse says she doesn't care for the theatre for, "We nurses see so much of the dramatic side of real life . . . that it seems silly to me to put in my spare time watching . . . some playwright's imagination."

*Harper's* for February is up to the usual standard. There is a "popular medical" article, "The War Against Pneumonia." We confess that we are prejudiced against the pseudoscientific article in the popular magazine. Too often it is either the effort of a facile journalist who has "crammed up" on the subject in hand, or the production of a physician who has failed in legitimate practice. The present article is an example of the former class, but contains nothing *per se* which would condemn it. The best thing in the magazine is W. L. George's "Interlude."

A lurid Sunday feature story which appeared in several well known newspapers during January stated that statistics showed that "an overwhelmingly large number of superintendents of hospitals for the insane go insane themselves." The article was illustrated with fanciful portraits of Vandyke bearded and spectacled men cutting the throats of screaming females. This is an example of gross misstatement by lay publications and might possibly have the effect of prejudicing the people still further against the hospitals for the mentally disordered, which have a sufficiently bad reputation already.

From Columbine on the cover to the tiger lurking in the rear *Vanity Fair* for January is full of entertainment. Food for our frivolous moments, this magazine might be called. A clever bit of advertising is, "A Great Triumph for Psychoanalysis." We are sorry to see a warmed over page by George Jean Nathan, his Smart Set stuff redressed for the market—and he can be so original! The best thing in the January number is, "A Visit to Mr. Hearst's Health Farm," a sparkling satire on the kind of magazine literature that dallies with the prurient through countless weary pages adorned with the same old pictures.

## Meetings of Local Medical Societies

MONDAY, February 12th.—New York Ophthalmological Society; Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo; Association of Alumni of St. Mary's Hospital, Brooklyn; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society; Yorkville Medical Society.

TUESDAY, February 13th.—New York Academy of Medicine (Section in Neurology and Psychiatry); Medical Society of the County of Wyoming; Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); New York Obstetrical Society; Onondaga Medical Society.

WEDNESDAY, February 14th.—New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Rochester Academy of Medicine; Medical Society of the County of Montgomery; Brooklyn Medical Association.

THURSDAY, February 15th.—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn; Æsculapian Club of Buffalo; New York Celtic Medical Society.

FRIDAY, February 16th.—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society; Alumni Association of Roosevelt Hospital; Saratoga Springs Medical Society.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending January 3, 1917:*

- ASHFORD, F. A., Passed Assistant Surgeon. Relieved from duty at Ellis Island, N. Y., and ordered to proceed to Chicago, Ill., Marine Hospital; granted one month's leave of absence from January 18, 1917.
- CARTER, H. R., Assistant Surgeon General. Detailed to deliver lectures on malaria and yellow fever February 1, 2, and 3, 1917, before the student class of officers at the Hygienic Laboratory, Washington, D. C.
- FREEMAN, A. W., Epidemiologist. Ordered to attend and address the meeting of the Indiana Sanitary and Water Supply Association at Indianapolis, Ind., February 14-15, 1917.
- GALLOWAY, T. C., Assistant Surgeon. Directed to proceed to El Paso, Texas, and Columbus, N. M., for duty in the prevention of the introduction of typhus fever.
- GASSAWAY, J. M., Senior Surgeon. Granted three months and fifteen days' leave of absence from January 31, 1917, and placed on waiting orders, May 15, 1917.
- GLOVER, M. W., Surgeon. Granted one month's leave of absence on account of sickness from January 1, 1917, and a further leave of one month from February 1, 1917.
- KEARNY, R. A., Passed Assistant Surgeon. Granted one month and four days' leave of absence from March 1, 1917.
- MILLER, K. E., Assistant Surgeon. Directed to make a preliminary survey of county health administration in Edgecombe County, N. C.; upon the completion of this survey, relieved from duty at St. Louis, Mo., and will establish headquarters at Tarboro, N. C.
- TANNER, W. F., Assistant Surgeon. Relieved from duty at Spartanburg, S. C.; will proceed to Milledgeville, Ga., for duty in studies of pellagra.
- TREADWAY, W. L., Assistant Surgeon. Ordered to proceed to Wilmington, Del., for duty in studies of school and mental hygiene in New Castle County.
- WARING, C. H., Assistant Surgeon. Relieved from duty at the Hygienic Laboratory, Washington, D. C., and ordered to proceed to the pellagra hospital, Spartanburg, S. C.
- WATKINS, J. A., Passed Assistant Surgeon. Ordered to proceed to Chicago, Ill., for duty in connection with investigations of health hazards incident to the manufacture and distribution of artificial illuminating gas.

### United States Navy Intelligence:

*Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Navy for the three weeks ending January 27, 1917:*

- BACON, SANKEY, Passed Assistant Surgeon. Ordered to Naval Hospital, Great Lakes, Ill., for duty.
- DUHIGG, T. F., Assistant Surgeon. Ordered to Naval Recruiting Station, Des Moines, Iowa, for duty.
- FISKE, C. N., Surgeon. Detached from Navy Yard, Mare Island, Cal., and ordered to the St. Louis for duty.
- GILL, J. E., Surgeon. Detached from the New York Hospital January 25th, and ordered to the Asiatic Station via February transport.
- HOEN, W. S., Surgeon. Detached from the St. Louis and ordered to Mare Island Navy Yard for duty.
- JOHNSON, M. K., Surgeon. Detached from the Naval Recruiting Station, Milwaukee, Wis., and ordered to Navy Yard, Mare Island, Cal., for duty.
- KAUFMAN, J. B., Passed Assistant Surgeon. Detached from the Newport Training Station, and ordered to the Great Lakes, Ill., Training Station for duty.
- MALKIN, G. M., Acting Assistant Surgeon. Detached from the Naval Recruiting Station, Des Moines, Ia., and ordered to the Navy Recruiting Station, Little Rock, Ark., for duty.
- OWENS, W. D., Passed Assistant Surgeon. Detached from the Naval Training Station, Newport, R. I., and ordered to the War College, Newport, R. I., for duty.

- PAYNE, J. H., Acting Assistant Surgeon. Detached from the Naval Recruiting Station, Worcester, Mass., and ordered to Naval Recruiting Station, Raleigh, N. C., for duty.
- PORTER, F. E., Passed Assistant Surgeon. Detached from the Naval Recruiting Station, Portland, Me., and ordered to the Naval Hospital, Portsmouth, N. H., for duty.
- TRIBLE, G. B., Passed Assistant Surgeon. Detached from the Naval Academy, Annapolis, Md., and ordered to the Naval Medical School, Washington, D. C., for duty.
- WHITE, E. C., Passed Assistant Surgeon. Detached from the Missouri and ordered to the Marine Expeditionary Forces, Santo Domingo, for duty.

The following assistant surgeons, Marine Reserve Corps, have been detached from duty at the place opposite their names and ordered to Naval Medical School, Washington, D. C., February 12, 1917: E. C. Carr, Naval Recruiting Station, Nashville, Tenn.; E. K. Koebe, Naval Recruiting Station, Albany, N. Y.; K. E. Lowman, Naval Recruiting Station, Scranton, Pa.; S. P. Taylor, Naval Recruiting Station, New Haven, Conn.; A. E. Brown, Naval Hospital, Norfolk, Va.; J. H. Durrett, Naval Recruiting Station, New Orleans, La.; J. L. Manion, Marine Recruiting Station, Portland, Ore.; P. F. McMurdo, Marine Recruiting Station, Portland, Ore.; A. C. Smith, Naval Hospital, New York, N. Y.; E. J. Stein, A. Robinson, C. C. Shannon, R. D. Joldersma, W. F. Peates, B. L. Cunningham.

The following have been commissioned as assistant surgeons in the Medical Reserve Corps of the Navy: E. E. Koebe, E. C. Carr, J. H. Durrett, L. H. Clerf, A. C. Smith, E. J. Stein, I. W. Jacobs, F. T. Bowers, J. C. Brantley, A. H. Cocha, P. F. Priolea, C. D. Shannon, W. F. Pearce, B. L. Cunningham, A. Robinson, E. A. Brown, A. J. Sullivan, E. C. Lee, R. D. Joldersma, S. H. Petty, R. W. McNealey, S. P. Taylor, Jr., K. E. Lowman.

## Births, Marriages, and Deaths

### Died.

- ALLEN.—In Spartanburg, S. C., on Wednesday, January 24th, Dr. Julian Howard Allen, aged forty-seven years.
- BILLINGSLEA.—In Westminster, Md., on Monday, January 29th, Dr. James Howell Billingslea, aged seventy-four years.
- COUCH.—In Fredonia, N. Y., on Thursday, February 1st, Dr. Asa Itone Couch, aged eighty-four years.
- DAVIS.—In Brooklyn, N. Y., on Sunday, January 28th, Dr. George Henson Davis, aged forty-four years.
- DEVORE.—In Sewanee, Ga., on Wednesday, January 24th, Dr. John R. DeVore, aged forty-five years.
- GIBBS.—In Charlotte Courthouse, Va., on Saturday, January 20th, Dr. Charles Henry Gibbs, aged sixty-seven years.
- HAM.—In Providence, R. I., on Wednesday, January 24th, Dr. Albert Eugene Ham, aged seventy-four years.
- HOFFMEYER.—In Buffalo, N. Y., on Thursday, January 25th, Dr. John A. Hoffmeyer, aged sixty-three years.
- KINTZING.—In Baltimore, Md., on Tuesday January 30th, Dr. Pearce Kintzing, aged fifty-six years.
- LANDON.—In Remington, Ind., on Saturday, January 6th, Dr. Hannibal H. Landon, aged seventy-five years.
- LATHAM.—In Spokane, Wis., on Saturday, January 20th, Dr. Mary A. Latham, aged seventy-two years.
- MUSGROVE.—In Sultan, Wash., on Tuesday, January 23rd, Dr. Thomas W. Musgrove, aged seventy-four years.
- NOBLE.—In Bloomingdale, N. Y., on Friday, January 19th, Dr. Fortis Monroe Noble, aged fifty-two years.
- PORTEUS.—In Scranton, Pa., on Friday, January 26th, Dr. James S. Porteus, aged seventy-six years.
- RUTTER.—In Bloomsburg, Pa., on Wednesday, January 31st, Dr. John C. Rutter, aged ninety-one years.
- RYAN.—In East St. Louis, Ill., on Saturday, January 20th, Dr. John J. Ryan, aged seventy-two years.
- SEWARD.—In Orange, N. J., on Monday, January 29th, Dr. John Ledell Seward, aged seventy-three years.
- TOWLE.—In Newark, N. J., on Monday, January 29th, Dr. Henry Aloysius Towle, aged fifty-seven years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal <sup>and</sup> the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 7.

NEW YORK, SATURDAY, FEBRUARY 17, 1917.

WHOLE No. 1994.

## Original Communications

### THE ACTION OF PITUITRIN UPON THE GASTROINTESTINAL TRACT OF MAN.\*

By H. K. PANCOAST, M. D.,  
Philadelphia,

AND A. H. HOPKINS, M. D.,  
Philadelphia.

Through animal experimentation much has been accomplished in the study of the action of pituitary extract, its influence upon blood pressure, renal vessels, uterus, bladder, stomach, and intestines having been studied by this means. Less is given us of the studies directly upon man, and especially is this true of the studies on the gastrointestinal tract. The information gained in animal work revealed by a review of the recent literature, tends rather to confuse than to enlighten one interested in the subject. Clinically, the results of the use of the drug in post-operative surgical cases, in obstetrics, and gynecology would seem to justify further and more accurate study in view of its possible application in internal medicine.

In 1906 Schäfer and Herring (1) noted a stimulating effect upon the muscles of the bladder, uterus, and intestines. In 1909, Dale (2), after experiments upon dogs, concluded that the action of the extract is a direct stimulation of involuntary muscle without relation to innervation, and that the plain muscle coats of the intestine are much less sensitive when compared to some other organs. In the same year Foderá and Pittau (3) noted that injections produced defecation, and Bell (4) presented an admirable article, both clinical and experimental, upon the subject. In pithed rabbits he observed violent peristalsis at times leading to expulsion of feces. These studies suggested a specific reaction upon the paralyzed and distended intestines of man, a troublesome and serious surgical complication; and when applying the extract clinically he was rewarded with striking results, instances of which are cited from his own cases as well as from those of his colleagues in the Royal Infirmary. In 1911, Bayer and Peter (5), using a pituitrin preparation upon the isolated small intestine of rabbits, noticed an immediate lessening of rhythmic contractions and a lessening of tonicity of the intestine. In the same year Ott and Scott (6) noted the increased extent of the contractions, while very recently Hoskins (7) observed a

clean cut depression of tonus and peristalsis after pituitrin in anesthetized dogs. Schäfer and Vincent (8) suggested the presence of two substances, one soluble, the other insoluble in alcohol; the former stimulating, the latter inhibiting the muscle.

In the present year one of the most thorough investigations in this field has appeared in an article by Shamoff (9), which deals with the action of the various pituitary preparations upon the isolated intestinal loop. He notes the action of adrenalin in relaxing the unstriated muscle of the intestine and the power of the posterior pituitary lobe extract to contract these fibres, as well as those of the bladder and uterus. The most striking feature in this work is the wide variability in the action of the different preparations which in itself may prove to be the explanation of the diverse results noted among the earlier workers. He not infrequently noted that the reactions supposed to be characteristic of adrenalin were found, hypophysis giving immediate inhibition of rhythmic movements and sharp relaxation of the isolated loop. Next to this in similarity of action came a commercial extract of the posterior lobe, and then the freshly prepared posterior lobe extracts made by grinding the glandular substance with sand. Pituitrin A usually gave suggestive response, though incomplete and without definite relaxation. In the reverse direction, i. e., in increased tonicity and activity of peristalsis, two commercial extracts gave more outspoken reactions.

It may thus be concluded from the literature that there is a wide variability in the physiological activity of various commercial pituitary extracts, and Shamoff suggests that there is in the posterior lobe some substance which has an action on the isolated intestinal loop of animals resembling the action of adrenalin, a substance, moreover, which may be other than that which raises the blood pressure and causes diuresis.

In our studies we have used the same preparation throughout, namely, pituitrin. The subjects of these investigations were patients from the medical wards of the Hospital of the University of Pennsylvania in whom there were no marked gastrointestinal symptoms aside from the cases which will be mentioned later. The opportunity for the study of patients with postoperative atony and paresis of the intestine was not afforded, but the clinical results as attested by surgeons and obstetricians is quite sufficient evidence of the action in these cases.

\*Read before the section on General Medicine of the College of Physicians of Philadelphia, November 27, 1916.



Our study of the action of pituitrin upon the gastrointestinal tract of man as revealed by the Röntgen ray has followed along the same lines instituted about two years ago, when we began our similar investigations with morphine, reported in 1915 (10). The effects of morphine were so striking in many instances as to suggest that a further study of other frequently employed drugs might be of general interest, and also further show how drug administration during Röntgen investigations of the gastrointestinal tract might interfere with the examinations or give rise to erroneous interpretations. A year ago we began the study of various carminatives. Starting with Hoffman's anodyne, we subsequently investigated oil of peppermint and then pituitrin. As the latter was a comparatively new therapeutic agent and its effects upon the digestive tract had received comparatively little attention, it was decided to devote more time to the study of this drug and to incorporate our findings in a separate report.

This report is based upon the careful study of the eleven patients selected from the medical wards of the University Hospital. In only two of these patients was there any likelihood that a gastrointestinal examination would have been thought necessary (cases I and VI), and in neither was the presence of any organic lesion demonstrated during the control examination. Five subjects were entirely free from any gastrointestinal symptoms whatever. The other six complained of constipation, and four of these (cases I, VI, VIII, and IX) presented gastric symptoms, due to functional or reflex disturbances. So far as we were able to observe the effects of the pituitrin did not differ materially in these cases from those in the other cases.

The study of drug action by the Röntgen method must be carried out by those familiar with the clinical aspects of each case and with every detail of the technic of Röntgen studies of the gastrointestinal tract. The Röntgen studies must be made when time permits in the midst of a general routine of the laboratory. Moreover, the time required for the complete study of a single individual is more than double that usually given to the routine Röntgen examination of a gastrointestinal case. In the study of these eleven cases, 104 röntgenoscopic examinations and 114 röntgenograms were made. The patients were examined more frequently and the röntgenoscopic studies were more prolonged than is usually the case in ordinary Röntgen investigations of the digestive tract. These facts are presented in apology for the comparatively few cases included in this report.

In each instance a control examination was made previous to the study of the effect of the drug. In case any medication had been employed, this was omitted during the control and drug investigations. Following a bismuth or barium meal, the case was studied röntgenoscopically for twenty to thirty minutes in order to determine the nature of the peristalsis and to establish a mental picture of this and other factors included in the make up of the action of the stomach. Subsequently the case was studied at intervals of one to two hours, until the stomach was empty and the food column well advanced into the

large bowel. As soon as the intestinal tract was found free of opaque contents the drug study was begun. A dose of one c. c. of pituitrin was given hypodermically from a minute or two up to twenty minutes before the administration of the second opaque meal. In some instances this dose was repeated once or twice at intervals of two to four hours. The studies were then made at exactly the same intervals as the controls. Only one case was under examination at a time to avoid confusion, and in order that the röntgenoscopic mental picture of the control might as nearly as possible be compared accurately with the observations of the drug series. Accurate notes were taken at each examination and röntgenograms were made at stated intervals. The latter were reduced and the control series studied side by side with the drug series, together with the notes, and our conclusions thus deduced. These facts should dispel all doubt as to the care exercised in our studies. We preferred to study a few cases well rather than many cases in a rapid careless manner.

We fully realize that gastrointestinal phenomena may vary to a certain extent in the same individual in two or more control examinations, and that the differences supposedly due to drug action might occur anyway. But when no differences were found in a number of instances on the one hand, or definite variations were observed repeatedly on the other, we have felt justified in ascribing the latter to the effect of the drug and the former to the lack of any drug influence.

#### RESULTS OF STUDY.

An abstract of the results of study in each case follows:

CASE I. Clinical condition of patient: Gastric neurosis and constipation. Condition of gastrointestinal tract by control examination: Negative as far as examination was carried. Administration of drug: Hypodermic injections of one c. c. of pituitrin fifteen minutes before opaque meal and four hours later. Effect on stomach: Marked increase in intensity of peristalsis; proportionate increase in motility. Effect on small intestine: None apparent. Effect on large bowel: Movement followed soon after first dose and opaque column was ahead of the control after the second dose.

CASE II. Clinical condition of patient: Pulmonary tuberculosis and syphilis. Condition of gastrointestinal tract by control examination: Negative as far as examination was carried. Administration of drug: Hypodermic injections of one c. c. of pituitrin five minutes before opaque meal and four hours later. Effect on stomach: Definite increase in intensity of peristalsis and proportionate increase in motility. Effect on small intestine: None apparent. Effect on large bowel: None apparent.

CASE III. Clinical condition of patient: Aortic aneurysm; no gastrointestinal symptoms. Condition of gastrointestinal tract by control examination: Negative as far as examination was carried. Administration of drug: Hypodermic injection of one c. c. of pituitrin twenty minutes before opaque meal. Effect on stomach: Preliminary depressing effect on peristalsis for about one half hour, followed by increased intensity greater than control, and accentuation of a slight pyloric spasm that was noted during the control. Because of these factors, emptying was slower up to four hours, when it equalled the control. Effect on small intestine: Possibly slight increase in motility. Effect on large bowel: Column considerably ahead of control.

CASE IV. Clinical condition of patient: Emphysema, multiple epitheliomata, and constipation. Condition of gastrointestinal tract by control examination: Slight visceroprosis and colonic stasis. Administration of drug:

Hypodermic injections of one c. c. of pituitrin fifteen minutes before opaque meal and two hours later. Effect on stomach: Primary depressing effect upon peristalsis and motility, followed in a short time by a marked increase in peristalsis and motility over the control, although the emptying time was about the same, being unusually short in each instance. Effect on small intestine: Motility decidedly less than the control. Effect on large bowel: Column decidedly behind control while effect of drug could be regarded as active.

CASE V. Clinical condition of patient: Bronchial asthma, emphysema, and constipation. Condition of gastrointestinal tract by control examination: Negative; no colonic stasis. Administration of drug: Hypodermic injections of one c. c. of pituitrin ten minutes before opaque meal, one and a half hours and three and a half hours later. Effect on stomach: Primary depressing effect upon peristalsis and motility, followed in a short time by a marked increase in peristalsis and a commensurate increase in motility over the control. This was found to occur following the second dose also. Emptying time was about the same in each instance. Effect on small intestine: Motility decidedly less than the control. Effect on large bowel: Difficult to estimate while drug was active, owing to slowed motility in the small intestine. At end of twenty-four hours the column was decidedly behind the control.

CASE VI. Clinical condition of patient: Suspected duodenal ulcer or cholecystitis; epigastric pain, vomiting, and distention after meals. Condition of gastrointestinal tract by control examination: Negative as to ulcer; marked visceroposis; slight gastric atony and retention, colonic stasis. Administration of drug: Hypodermic injections of one c. c. of pituitrin ten minutes before opaque meal and two hours and four hours later. Effect on stomach: Primary depressing effect upon peristalsis and motility followed in a short time by an increase to an excessive peristalsis of the same or slightly greater intensity than the control and accompanied by a commensurate hypermotility. The depressing effect followed each dose. Peristalsis was twenty to thirty minutes in recovering its intensity. The emptying time was considerably prolonged. After the third dose there seemed to be a tendency to pyloric spasm. Effect on small intestine: Motility very decidedly less than control. Effect on large bowel: Difficult to estimate because of the slowed motility of the small intestine while the drug was active. At the end of twenty-four hours the column was at about the same point as during the control.

CASE VII. Female. Clinical condition of patient: Epilepsy. Condition of gastrointestinal tract by control examination: Visceroposis; gastric atony and retention; intermittent pyloric spasm; probably adhesions right iliac fossa (appendicectomy) colonic stasis. Administration of drug: Hypodermic injection of one c. c. of pituitrin five minutes before opaque meal. Effect on stomach: For ten minutes a decided depressing effect upon peristalsis followed by hyperperistalsis, and evidence of pyloric spasm as during the control. After this relaxed peristalsis was of somewhat greater intensity and motility slightly greater than during the control. The effect of the drug had disappeared in two hours. Effect on small intestine: Motility was slightly decayed. Effect on large bowel: No effect noted.

CASE VIII. Clinical condition of patient: Epilepsy, myocardial weakness; complained of sour stomach and lump in epigastrium. Condition of gastrointestinal tract by control examination: Negative; no colonic stasis. Administration of drug: Hypodermic injection of one c. c. of pituitrin ten minutes before opaque meal. Effect on stomach: Absence of initial pyloric spasm observed during control. Decrease in intensity of peristalsis over control, at first, and later, a decided depressing effect on peristalsis and motility, so that the emptying time was prolonged three or four hours. Effect on small intestine: Very decided depressing effect upon motility throughout the entire small bowel. Effect on large bowel: No appreciable effect.

CASE IX. Clinical condition of patient: Chronic gastritis and constipation. Condition of gastrointestinal tract by control examination: Stomach negative; marked colonic stasis. Administration of drug: Hypodermic injection of one c. c. of pituitrin just before opaque meal.

Effect on stomach: For at least twenty minutes there was a definite but slight depressing effect upon peristalsis and motility as compared to the control. After this, there was no appreciable effect and the emptying time was about the same. Effect on small intestine: No appreciable effect. Effect on large bowel: No appreciable effect.

CASE X. Clinical condition of patient: Chronic arthritis. Condition of gastrointestinal tract by control examination: Visceroposis. Not carried beyond stomach. Administration of drug: Hypodermic injection of one c. c. of pituitrin twenty minutes before opaque meal. Effect on stomach: No appreciable effect. Effect on small intestine: No appreciable effect. Effect on large bowel: Not studied.

CASE XI. Clinical condition of patient: Atrophic arthritis. Condition of gastrointestinal tract by control examination: Negative except colonic stasis. Administration of drug: Hypodermic injection of one c. c. pituitrin fifteen minutes before opaque meal. Effect on stomach: No appreciable effect. Effect on small intestine: No appreciable effect. Effect on large bowel: Unreliable, as patient was given castor oil by mistake the evening before.

In order to appreciate the exact value of this work it should be borne in mind that the Röntgen examination is a means of studying only a single phase of drug action. It is the only means, however, of observing certain phenomena in man *in vivo*. To be of any real value to medicine, aside from the röntgenologist, the facts thus established must be added to the general knowledge of drug effects obtained by other methods. Motor phenomena alone can be studied in this way, and then only in so far as they are manifest in gastric peristalsis, pyloric tonicity, and gastrointestinal motility.

In each instance pituitrin was administered in the therapeutic dose ordinarily employed. The studies were made upon patients to whom it would not ordinarily be given. Further investigations must follow with individuals presenting indications for its administration, provided such patients can be found who are fit subjects for prolonged gastrointestinal studies.

*Effect upon the stomach.*—In the first two cases examined there was a definite increase in the intensity of peristalsis and a proportionate increase in motility from the start. In the last two cases there was no appreciable effect upon the stomach. In all the others there was a primary depressing effect lasting for a variable time, usually from fifteen or twenty minutes to nearly an hour, and in one instance for several hours. This depressing effect, which was the most noticeable and constant one observed, is subject to a further analysis. In six of the seven cases there was a depression of both peristalsis and motility. In four of these, depression was followed after a variable period of twenty minutes to nearly an hour by an increased intensity of peristalsis and increased motility over the control; in one, peristalsis and motility became about the same as the control; in the remaining case depression continued throughout the examination. In one of the seven cases there was a primary depression of peristalsis followed by an increase in intensity, but motility was prolonged because of the apparent accentuation of a pyloric spasm observed during the control. When more than one dose was administered before the stomach had emptied too much for study, the same phenomena were noted after the second as after the first dose. Any influence over tonicity of the pylorus could be observed



in a measure in four instances and was very variable. In one case a pyloric spasm was accentuated; in another it was apparently induced after a third dose; in a third it continued for a short time as in the control; in the fourth there was an initial pyloric spasm during the control not observed during the drug series, and in this case the depressing effect lasted throughout.

*Effect on small intestine.*—In five cases there was no appreciable effect upon small intestine motility. In one there was possibly a slight increase over the control, while in four it was decidedly less, and in another possibly slightly less than the control. In the case showing the most marked depressing effect upon the stomach, small intestinal motility was the most delayed, and there seemed to be a stasis throughout the entire small bowel. As a rule, small intestine motility was most delayed in those cases in which gastric peristalsis and motility showed the most marked depressing effect. Delayed intestinal motility seemed to bear no direct relation to the number of doses.

*Effect on large bowel.*—Some positive influence upon motility seemed to be manifest in two cases, although it was not marked. This bore no relation to the effect on the stomach. There was no apparent effect in five cases; the column was behind the control in two; and the large bowel was not examined in two. While the drug seems to have had little or no appreciable influence over motility in the large bowel, our experience has shown that our technic has not been such as would give the most accurate data. It is probable that a colonic investigation would have to be carried out entirely independent of that of the stomach and small intestine. It is to be noted, however, that bowel movements were induced in but one patient, even after repeated doses. It is fairly safe to assume, therefore, that the drug had little or no influence upon large intestine motility in the class of patients examined. It would be difficult to compare the effect upon patients suffering from constipation and those who are supposedly not constipated. Many individuals give a history of constipation, but, on the other hand, many of those who do not are found by the Röntgen examination to present decided colonic stasis. Most hospital patients will show colonic stasis because they are kept quiet and away from their usual daily routine and occupation.

#### CONCLUSIONS.

The Röntgen examination is an accurate and valuable means of studying certain phases of drug action upon the gastrointestinal tract of man.

Our observations were made from a careful study of eleven patients to whom pituitrin was administered. While the effects were very variable, there was sufficient uniformity in the effects produced to enable us to draw definite conclusions.

In the stomach, there was usually a primary depressing influence upon peristalsis or motility or both, followed by an increase in both. The same effect followed repeated doses. The pylorus was influenced very little, and when any effect was noted, it was variable.

In the small intestine motility was as a rule either not affected or was slightly delayed.

In the large bowel, the drug produced little or no appreciable effect on motility in the class of patients examined.

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### CLINICAL OBSERVATIONS ON SO CALLED GRIPPE.\*

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The present generation of the inhabitants of the eastern portion of the United States became painfully familiar with the word "grippe" in connection with the widespread epidemic that invaded the country in the early nineties of the last century. Since then the word has been used promiscuously to describe seasonal epidemics that have visited us with more or less regularity in the succeeding winters. Without considering the tendency of certain people, to whom the word "cold" seems inadequate to describe their sufferings, to call the smallest disturbance of their respiratory passages by this name, we may say that the clinical concept conveyed by the word grippe is that of a malady of sudden onset, characterized by fever, muscular and neuralgic pain, depression, and usually by exudative inflammation of some portion of the respiratory tract. That this clinical conception has long been familiar is shown by the following quotation found in Bright and Addison's *Elements of the Practice of Medicine*, published in 1839 under the title of Influenza or Epidemic Catarrh:

"It [the epidemic of 1802] was almost universally attended with a distressing pain and severe sense of constriction in the forehead, temples, and sometimes in the whole face, accompanied by a sense of soreness about the cheek bones and under the muscles, whilst the epidemic of 1762 was characterized by a most intense sense of heat extending in every instance down the whole course of the trachea, and occasionally by remarkable and sudden lassitude, violent fever, and most distressing pain in the head and limbs, without the latter being followed by any considerable pulmonary affection. The epidemic of the present year [1837] has been chiefly remarkable for its general severity; the great number of persons of all ranks and conditions attacked by it; its rapid fatality in the aged, and in those who had previously suffered from pulmonary disease, or from organic lesions of the heart; a remarkable loss of strength and intolerance of depletion in uncomplicated cases; and its frequent association with pneumonia, pleurisy, oppression of the brain, and, in some instances, pericarditis."

In 1892 Pfeiffer found in the blood and purulent

\*Read before the Medical Society of the District of Columbia, October 25, 1916.



secretions a bacillus to which he assigned the etiological role in the production of epidemic influenza. While the test of this discovery has never been as rigid as might be desired, Pfeiffer's bacillus has been generally accepted by the medical world as being the cause of influenza or grippé. There is no question that Pfeiffer's bacillus is exceedingly pathogenic to susceptible animals. There seems little reason to doubt that it is capable of producing the symptom complex so well described by Addison in man. The majority of medical men of today in the presence of this symptom complex infer that they are dealing with infection by this organism.

The clinical criteria by which true epidemic influenza, that is infection by Pfeiffer's bacillus, is established are not sufficiently definite. Observant physicians have for a long time realized that much that is called influenza or grippé is probably not a true Pfeiffer's bacillus infection, in spite of the epidemic nature of the malady, and have hesitated to designate it as such in the specific meaning of the term. This feeling is illustrated by the following quotation from Frederick Lord's article in Osler and McCrae's *System of Medicine*:

"The specific relation of Pfeiffer's bacillus to influenza still needs confirmation. . . . Until the etiology of the disease is finally determined, it seems best to use the term influenza to designate a complex of symptoms without regard to the apparent bacterial cause."

It is obviously unsatisfactory to use the term grippé in any such fashion as that indicated by Lord. In the opinion of the writer it is the duty of clinicians to endeavor to ascertain the nature of the infection in all diseases of the respiratory apparatus of an infective nature. It will be found that the knowledge of the nature of the infection is of great value in prophylaxis, in treatment, and especially in prognosis. During the winter of 1915-1916, an opportunity to observe the factors associated with so called grippé was afforded by the widespread prevalence of this malady, and especially by the occurrence of an epidemic among the nurses in the George Washington University Hospital. In conjunction with Dr. W. M. Lyon, professor of bacteriology and pathology in the George Washington Medical School, cultural studies were made from the exudates obtained from these cases, as well as from some others occurring in private practice. Owing to the lack of assistance and the arduousness of the duties entailed at this time of the year by the teaching in the medical school, a complete investigation of the organisms encountered could not be undertaken. It is interesting to note that the admissions among the nurses all occurred between January 1st and 22nd, all but three being between January 9th and 17th. This corresponded, according to my observation, to the greatest activity of the epidemic that prevailed throughout the city of Washington.

The technic followed by Doctor Lyon in identifying these organisms was as follows: "Three agar tubes were melted, and while held at a temperature of 45° C. were reinforced by four or five drops either of blood from the finger or of the fifty per cent. solution of sheep's cells used in the Wassermann tests. In case of sputum, one loopful was

placed in tube 1, and mixed; then a loopful from 1 was similarly mixed with 2, and a loopful from 2 similarly added to 3. Each was then poured into a Petri dish and incubated eighteen hours. Where the material was obtained from the throat, it was obtained by smear with sterile swabs, and the swab was stirred into tube 1, and from then on as before. We failed to keep a record of which were sputum and which swab cases, but the results were similar whichever was the case. In the above series the *Streptococcus hemolyticus* was always the predominating organism. Other germs developed of course, but were not conspicuous except in the case 21169."

I especially wish to direct attention to the fact that although a culture medium was used especially favorable to the growth of Pfeiffer's bacillus, in no case was this organism found, either in this series nor in any other case examined during the winter.

CASE I. A. C. (21139). Onset with severe headache, chills, fever, and severe aching in bones. Insomnia, anorexia. Sore throat and violent cough. Temperature reached 102.4°, pulse 122. Temperature reached normal on fourth day. Cough was slow in getting well, and there was marked prostration following which persisted for two weeks. Culture from sputum showed hemolytic streptococcus.

CASE II. I. J. (21157). Onset with severe headache and pains in back of neck, followed by chills and fever. Severe cold in head and chest with general weakness. Had nausea, frequent cough and profuse nasal secretion. Temperature reached 101.8°, and became normal on fourth day. Headache persisted several days after discharge. Leucocytes 10,100. Culture showed hemolytic streptococcus.

CASE III. M. L. (21166). Had sore throat and cold in chest four days before admission. Headache began two days after, and this was followed by chills and fever, with diffuse muscular pain and insomnia. Temperature reached 104.6°, and became normal on tenth day. Leucocytes 16,650. Culture showed hemolytic streptococcus.

CASE IV. J. W. (21169). Dry, deep cough. Hot flushes, followed by chilly sensations. General soreness of muscles. Loss of taste and smell; sore throat. Temperature reached 101°, and became permanently normal on seventh day. Leucocytes 6,300. Culture showed hemolytic streptococcus, together with Gram negative diplococcus (*Micrococcus catarrhalis*?).

CASE V. G. L. (21170). Sudden onset with headache and severe pains through the eyes. Pain in muscles of back and lower limbs. Insomnia, nervousness and prostration. Cough and impairment of senses of taste and smell. Leucocytes 5,660. Culture showed hemolytic streptococcus. Temperature reached 104°, and became normal on the fifth day.

CASE VI. S. B. (21176). Severe pain in head and eyes two days before admission. On following day severe muscular pains with sore throat and violent cough. Marked prostration. Temperature reached 102.8°, and became normal on sixth day after admission. Leucocytes 13,900. Culture showed hemolytic streptococcus.

CASE VII. E. B. (21177). Onset with severe headache at night, continuing next day. This was followed by sensations of weakness in joints, and the next day by anorexia and extreme nervousness. On day of admission had throbbing in head and ears and sore throat, coryza and lachrymation. Temperature reached 101.2°, and became normal the eighth day from admission. Leucocytes 7,500. Culture showed hemolytic streptococcus.

CASE VIII. C. S. (21189). Had backache two days before admission. Onset with severe throbbing headache, chills, nausea, and vertigo. Dry irritation in throat causing difficulty in swallowing. Some increase of nasal secretion. Temperature rose to 102°, and became normal on fourth day from admission. Leucocytes 9,400. Culture showed hemolytic streptococcus.

CASE IX. M. G. (21194). For two days before admission had headache and rhinitis followed by severe cough, pains in back and chest and abdomen. Slight chills and

fever. Marked prostration. On attempting to get out of bed before ordered to do so, fainted. Temperature reached  $102^{\circ}$ , and became normal on the fifth day. Leucocytes 4,200. Culture showed hemolytic streptococcus.

CASE X. E. D. (21200). Five days before admission began to have frontal headache and general weakness. Sudden onset of congestion of nasal mucosa, backache, repeated chills followed by fever and diffuse muscular pain. Sore throat, cough and marked prostration. Pain most severe over right eye. Temperature reached  $102^{\circ}$ , and became normal on the sixth day. Leucocytes 4,700. Culture showed hemolytic streptococcus.

CASE XI. M. K. (21201). Slow onset, beginning with slight headache, and a tired sleepy feeling. This was followed in three days by a severe dry cough. Frontal headache, backache, general weakness and chilly sensations. Severe sore throat and bronchitis. Temperature reached  $101.4^{\circ}$ , and became normal on the eighth day from admission. Leucocytes 7,200. Culture showed hemolytic streptococcus.

CASE XII. C. S. (21189). Onset with severe throbbing headache. Had backache two days before admission. Followed by chills, nausea, dizziness with a dry, irritated sensation in throat, dysphagia and increased nasal secretion. Temperature reached  $102^{\circ}$ . Leucocytes 9,400. Prompt recovery in three days.

CASE XIII. A. B. (21229). Admitted January 1, 1916. Severe frontal headache, dizziness, burning of eyes, swollen nose. Diffuse muscular weakness and pain. Chilly sensations, hot flushes, sweating, nausea. Followed by sore throat and bronchitis. Temperature to  $100.6^{\circ}$ . Had felt prostrated for two weeks previously. Culture from secretions showed streptococcus hemolyticus.

CASE XIV. M. Admitted January 9, 1916. Slight chilliness first day, followed on second day by two hard chills and fever. Severe headache and insomnia. Diffuse muscular pain and increased headache. Patient was very ill, being delirious for several days. Maximum temperature  $103^{\circ}$ . Leucocytes 8,100. Culture showed hemolytic streptococcus. Later developed acute mastoiditis requiring operation, which was performed by Doctor Huntingdon. Recovery. With mastoid infection leucocytes reached 14,500. In April this patient developed an acute appendicitis which required operation. In September she had clinical picture of renal colic, with pus in urine. Left ureter did not admit passage of urethral catheter. Operation failed to disclose stone. Some adhesions in the neighborhood were released. Apparent recovery.

CASE XV. Miss B, nurse in another hospital. Presented clinical picture like the preceding. A mild case at first, and apparently made a prompt recovery. A double middle ear infection followed, and on one side suppurative mastoiditis. Operated on by Doctor Huntingdon with recovery. Culture from mastoid pus gave a pure culture of a hemolytic streptococcus.

The following cases are from private practice, occurring in various parts of the city, and had no relation or contact with each other:

CASE XVI. H., a boy of twelve, seen in consultation with Doctor Whitson. A case of what was generally termed grippé, followed by pneumonia. This ran an atypical course, and gradually made an apparent recovery. Subsequently developed an empyema which required rib resection, which was performed by Dr. Charles White. Pleural pus gave a pure culture of hemolytic streptococcus.

CASE XVII. Mr. C. S., seen in consultation with Doctor Trimble. Began with what is commonly called grippé, and complicated by double pneumonia and acute cholangitis with jaundice. Fatal issue. Leucocytes 36,000. Culture from bile stained sputum gave a pure culture of hemolytic streptococcus.

CASE XVIII. Mrs. W., suffered from the prevailing epidemic, symptoms being the same as those described above. Fever lasted three days. Culture from sputum showed hemolytic streptococcus.

CASE XIX. Mrs. G., aged eighty-two. Grippé followed by pneumonic consolidation of small extent. Prolonged illness followed by recovery. Streptococcus hemolyticus the only pathogenic organism recovered from sputum.

CASE XX. Mr. J., seen in consultation with Doctor Trimble. So called grippé followed by fatal pneumonia.

Sputum showed no pneumococcus nor influenza bacillus, but hemolytic streptococcus was present.

CASE XXI. Mrs. L. E., aged fifty-six. Typical attack of so called grippé, which apparently cleared up in three days. Followed by middle ear abscess which ruptured spontaneously. Culture from ear pus showed Staphylococcus pyogenes aureus, but the culture medium used was starch agar, and did not contain any blood. Ear discharged intermittently for a week or more. There were never any symptoms of mastoid involvement. While the ear was discharging freely, meningitis suddenly developed, from which she died in four days from the onset. Microorganism obtained from spinal puncture showed an atypical streptococcus, tending to occur in smear as a diplococcus with a capsule, somewhat resembling a pneumococcus. Neither its morphology, pathogenicity, or cultural characters permitted its diagnosis as pneumococcus, and it was shown to belong to the streptococcus group and to cause hemolysis.

CASE XXII. Mrs. M., seen in consultation with Dr. Thomas Miller. Case of unresolved pneumonia following so called grippé. Leucocytosis moderate. Culture from sputum showed a hemolytic streptococcus. Recovery.

The conclusion reached from these observations is that the epidemic of so called grippé which affected the population of Washington during the winter of 1915-1916 was not due to Pfeiffer's bacillus of influenza but was a streptococcus infection.

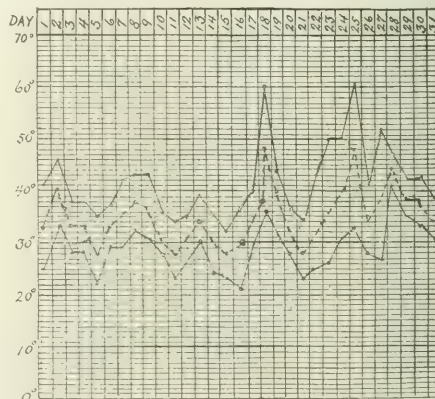


FIG. 1.—Chart showing weather conditions in Washington, D. C., during December, 1915, made from information furnished in the reports of the U. S. Weather Bureau, Washington, D. C. Upper line, maximum temperature; broken line, mean temperature; lower line, minimum temperature. Average daily mean,  $35.2^{\circ}$ ; normal daily mean,  $36.1^{\circ}$ ; daily deficiency,  $.9^{\circ}$ . Possible sunshine, 50 per cent.

Furthermore, the epidemiological factors characterizing this and other epidemics here and elsewhere seem to require some other explanation of the spread of the infection than the commonly accepted one of case contact. As we look back upon the history of medicine, we find that there has never been any great difficulty in the recognition of the contagious nature of acute diseases spread by contact. Measles, scarlet fever, and whooping cough were so regarded from the earliest times. Yet the students of epidemic catarrh, during and before the time of Addison could furnish no other explanation than that its prevalence was due to "an inexplicable disturbance in the bowels of the earth."

With infections known to arise from case to case contact, the period of incubation together with the physical requirements for dissemination give rise to a more or less sequential spread of the disease, which can be traced when the facts are known. It



infiltrates a community in a fashion analogous to the infiltration of tissue by an adjacent cancer, with here and there the deposit of a distant focus through the metastasis of travel. On the other hand, grippé epidemics occur simultaneously in many widely separated localities, and have approximately the same

conditions, especially abrupt changes in temperature, humidity, and wind conditions.

The last named seems to me to have the greatest influence in determining the influenzal epidemics. There is an old saying that a green winter makes a full graveyard. A study of the weather of the winter of 1915-1916 gives no little support to this proverb. In the accompanying charts I have represented graphically some of the weather conditions observed in Washington during December, 1915, and in January and February, 1916. Analogous conditions prevailed throughout the States of the Middle Atlantic and Middle Western groups.

December began with cold, crisp, clear weather, the temperature slightly below the normal for the month. This prevailed until the 18th, when there was a sharp rise to 60°, followed by a fall to freezing. A week later saw another rise to 62°, with a gradual fall to normal. January was ushered in with 70°, followed by a drop, and then a secondary rise to 64° on the 5th. Cold wave 7th to 9th, a rise to 50° on the 13th; a second cold wave on the 19th, followed by three distinct warm spells in the last ten days of the month, on which the temperature reached 66°, 69°, and 71°, respectively. The daily average of temperature during January was nearly seven degrees above the normal for the month. In February the average mean temperature was slightly below the normal, but a glance at the chart will show that there were great fluctuations in temperature, both at different periods of the month, and between maximum and minimum temperatures on individual days.

It will be seen, therefore, that the time when this epidemic prevailed was warm; that it was characterized by rapid and extreme fluctuations in temperature; that, in spite of the mild weather, nearly sixty

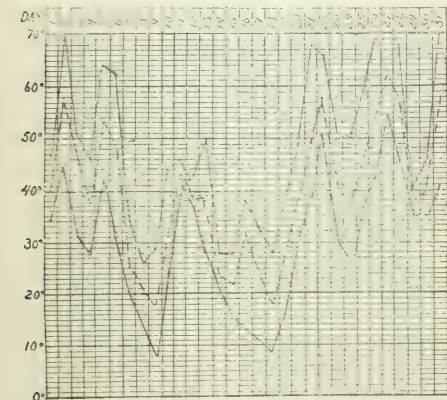


FIG. 2.—Chart showing weather conditions in Washington, D. C., during January, 1916, made from information furnished in the reports of the U. S. Weather Bureau, Washington, D. C. Upper line, maximum temperature; broken line, mean temperature; lower line, minimum temperature. Average daily mean, 39.8°; normal daily mean, 33.9°; daily excess, 6.9°. Possible sunshine, 41 per cent.

time of onset and of subsidence. These characters do not conform to the thesis of contact spread.

The realization that the commonest cause of what we call epidemic grippé is a streptococcus, together with recent advances in our knowledge of the pathogenic behavior of this group of bacteria, suggests an hypothesis that seems to accord with the clinical facts in a more satisfactory manner than does the one commonly accepted.

Streptococci are universally prevalent, and under ordinary conditions of health, do not appear to be virulent. Healthy skin and mucous membrane tolerate their presence well. Under certain conditions they give rise to virulent acute conditions, and to most persistent chronic ones. Whether this is due to some acquired property of the bacterium, or to sensitization on the part of the host, is not yet determined. Probably both factors take part. It is entirely possible, and seems not improbable, that the seasonal epidemics of what we call grippé, are due to sensitization of the human organism to bacteria that are always present, but usually innocuous.

If this is the case it becomes necessary to discover what are the conditions which cause the sensitization and the acquisition of virulence, giving rise to such strained relations between the bacterium and the host. Clinical observation and experience would suggest for consideration the following: 1. Overheated houses, especially by indirect (radiator) heat, which removes moisture from the air besides heating it. 2. Large reduction in ventilation with the onset of colder weather, especially in crowded places, as public conveyances. 3. Indiscretion and irregularity in diet, especially those associated with the Christmas holiday season. 4. Irregular rest and fatigue associated with social effort. 5. Climatic con-

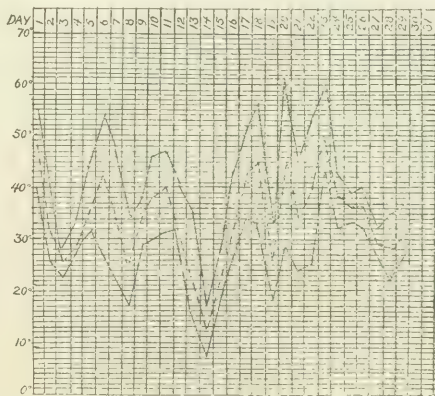


FIG. 3.—Chart showing weather conditions in Washington, D. C., during February, 1916, made from information furnished in the reports of the U. S. Weather Bureau, Washington, D. C. Upper line, maximum temperature; broken line, mean temperature; lower line, minimum temperature. Average daily mean, 34.2°; normal daily mean, 34.5°; daily deficiency, .3°. Possible sunshine, 43 per cent.

per cent. of the time between sunrise and sunset was cloudy, with the usual accompaniment of chilling winds. Such are the conditions that predispose to taking cold. The furnace that is no more than adequate on one day becomes insufferable overnight. Clothing, comfortable when we go out in the morn-



ing, induces a relaxing sweat at noon. Before we can cool off, the chill wind pricks through, and we have caught cold. Repetitions of the same experience prevent proper recovery, and the rhinitis, tonsillitis, and tracheitis of the first week become the sinusitis, mastoiditis, meningitis, pneumonia, and empyema of the weeks that follow.

Such things do not happen in winters characterized by severe and sustained cold. Compare the winter of 1912, the coldest and healthiest winter of the past twelve years. Reference to my own accounts shows that I had exactly half as much more practice during the first four months of 1911 than in the corresponding months of 1912.

What has been set forth is nothing more than an hypothesis, but it seems to accord with the facts as they exist better than the explanation of the occurrence of epidemic catarrh by contact infection with Pfeiffer's bacillus. If such an hypothesis did nothing more than stimulate a reconsideration of our attitude toward the subject of colds, it might well die, and not have lived in vain.

2002 P STREET, NORTHWEST.

## MALE IMPOTENCE AND STERILITY IN MARRIAGE.

By B. S. TALMEY, M. D.,  
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The ancient belief in woman's responsibility for childlessness is not dead. The entire burden of barrenness is still laid upon the wife. It may be stated without exaggeration that of one hundred childless marriages in ninety-nine cases not only the husbands, but also the wives themselves will attribute their sterility to the barren womb. It will be the wife, as a rule, who will consult her physician for some remedial agent against her sterility.

Even medical writers, who have insight enough to recognize that it is not always the woman who is anticonceptive, still start their articles on sterility, as a rule, with the statement that nonfertility in marriage is due to the woman, to the man, and to incompatibility between the two. They put woman in the first place as responsible for sterility.

Voluntary sterility is exceedingly rare. Modern man practises limitation of offspring, but there is scarcely a man or a woman, unless he or she be a degenerate, who wishes to remain childless. Race suicide is a very painful experience to the most egotistic individual. The "*Wille*" of Schopenhauer, the "*élan vital*" of Bergson, or the "libido" of Freud, which mean one and the same thing, is imperious enough to obviate the personal egotism of childlessness.

It may be stated as a truism that involuntary sterility is almost always due to some anomaly in the husband. Idiopathic or congenital sterility is exceedingly rare in either mate and is an entirely negligible quantity in a treatise on sterility. The twenty odd cases of female sterility, enumerated in the writer's article on Sterility in Women (1) form scarcely one small fraction of the causes of the sterile marriage. All the enumerated causes, taken together, become insignificant in comparison

with male gonorrhea as the cause of female sterility. The male gonorrhea either destroys or changes outright some of the female procreative organs and thus renders the wife sterile, or the gonococci remain dormant in the female genital tract and become active during the lying in period with the first child. Under the grave symptom of puerperal fever they then set up severe inflammations of uterus and adnexa and sterilize the woman for the rest of her life. Hence the frequency of one child marriages which is not always due to voluntary birth control.

Thus the only female sterility of practical importance is caused by male gonorrhea. But even this gonorrheal sterility is not so frequent in comparison with the husband's sterility or his impotence of procreation, caused by a previous gonorrheal orchitis or epididymitis. Male gonorrhea is thus the main cause of the involuntary sterile marriages, and about one in ten marriages is said to be childless. In the other cases—and their number is quite considerable—it is one or another of the male impotencies that is responsible for the childless marriage.

Impotence of voluptas, or idiopathic male frigidity, i. e., the absence of sexual desire, except in early youth and old age, is exceedingly rare. As a rule, such impotence is always a symptom of some other more serious anomaly, such as castration, grave neurasthenia, idiocy, or homosexuality. Moreover, if the secretion of spermatozoa is otherwise normal, the mere absence of desire, if there be only the will, would not cause barrenness.

Similarly the impotence of libido, or the absence of the ability to experience pleasure at the moment of emission, has very little influence upon sterility in marriage. Idiopathic impotence of libido in the male is also very rare. It is mostly found as a symptom of some other anomaly, such as would cause impotence of voluptas, as the exhaustion of the overtaxed brain and in extreme narrowness of prepuce. Hence these two impotencies of voluptas and libido are only mentioned here for completeness sake.

The only causes for male sterility are the remaining two impotencies of propagation and of copulation. Impotence of procreation is manifested by azoospermia, or absence of the fecundating spermatozoa in the discharged semen. Azoospermia is recognized by everybody, not only by the medical man but also by the layman, and even by the tyro, as the cause *par excellence* of male sterility. Scarcely a week passes without some woman consulting the writer for sterility. Upon the examination of the cervical contents of the male semen, the secretions are found devoid of spermatozoa in over sixty per cent. This discovery often causes a great shock to the woman. In spite of the noise of the radicals about birth control and of the conservatives about race suicide, a normal woman abhors childlessness and she will go to any extremes to have a child. Only recently the author was asked by a young lady not to tell her husband about his azoospermia so that in case she should have a child he should not know that it is not his child.

Azoospermia is very little known among the laymen as a cause of certain impotence. Even the medical man is loath to call it by the right name.

When a patient with such an anomaly, at rare occasions, receives the correct diagnosis under the right name, impotence, he smiles over his doctor's supposed ignorance. In the lay mind impotence means failure of erection and hence inability to transgress the feminine portals. The man suffering from azoospermia has normal erection and is able to perform his marital duties like any other man. The voluptas, or the desire, is normal; the libido, or the experienced delight, is normal; the congress is normal, and the discharge is apparently normal; hence he considers himself normal. Very few men will, therefore, accept the diagnosis of impotence of procreation through azoospermia without some protest. Still, impotence of procreation is of great influence upon the falling off of the birth rate in almost all civilized countries, and this fact is known to medical men as well as to economists.

But what is little known to either is the fact that impotence of copulation in all its different ramifications has also a great influence upon the birth rate. In paralytic impotence, where erection is entirely absent, where the genitals are withered and flaccid, the penis in a state of atrophy, its skin cold and shriveled, and the testicles in a state of shrinkage, even the most ignorant will see that impregnation is impossible. The greater ignorance is on the subject of psychic and atonic impotencies. Here the impotencies are not complete. Copulation is in a certain degree still possible. Yet the diminished potency has a great influence upon the fecundity of the couple.

Psychic impotence is the disease of the cultured classes. It is mostly found in men with vocations requiring great mental strain—literary men, bookworms, mathematicians, engineers, bankers, etc. Sigmund Freud (2) states that psychic impotence is far more frequent than generally surmised even by medical men. Spencer's statement (3) that the fertility of the race diminishes with its intellectual and moral development is founded upon accurate observations. But the diminished fecundity among the modern progressive nations is not biological, as the philosopher seems to think, but either volitional or pathological. A certain degree of this anomaly characterizes almost every man of culture, in every nation, at the present height of civilization. This may account for the strange phenomenon, not seldom observed in sensual women in their choice of mates. The most refined, cultured woman will leave her cultured, learned husband and run away with an uneducated, even unlettered, rude man, whose only quality appealing to her is his possession of brutal physical force. This also explains the strange runaway marriage between the delicate, refined, cultured heiress and her rustic, ignorant, uncouth coachman.

Psychic impotence is, as its name indicates, purely nervous in its origin. When the patient is lying in bed alone he may have vigorous erections, but at the critical moment the erections become feeble or entirely wanting. The patient is impotent from sheer nervousness. Psychic impotence is not seldom found in healthy persons when in a state of agitation. It is then called transitory impotence. The more agitated the patient is the more the penis shrinks and grows smaller in a wormlike manner.

Psychic impotence, known under the name of relative impotence, will have little influence upon sterility in marriage. Relative impotence, i. e., the inability of congress with one woman, as a rule, one's own wife, while erections are normal with another, especially the meretricious woman, is generally found in patients who have reached the critical age of fifty to sixty. The wife has then, as a rule, also reached the climacteric age and is hence beyond the child bearing age.

While psychic impotence, being of a transitory character only, will have very little influence upon sterility, still if neglected it may lead to permanent impotence through the anaphrodisiac of fear after the first failure. For the imagination, having once been impressed with groundless fears, may retain them with extreme tenacity and a psychic trauma is created through the subconscious effects of cryptogamic nerve currents.

The copulative impotence that produces the greatest number of involuntary sterile marriages is the atonic impotence. In this form of sexual weakness conditions of absolute impotence are quite rare. In the majority of cases the anomaly is manifested by partial impotence, such as premature ejaculation. The original vigorous erection ceases suddenly and the penis becomes completely flaccid and shrivels to half its normal size before the entrance into the vagina. The ejaculation occurs without erection or sensation outside of the vagina. Naturally such an intercourse will rarely serve impregnation.

But even in the less serious cases, where entrance into the vagina is effected with fairly good erection, but immediately upon the entrance of the organ, ejaculation takes place and the penis wilts, the weak congress will be of little service to fecundation. Although the discharge takes place within the vagina, still the ejaculation does not come in jets, and the sperms are seldom deposited at the mouth of the cervix. The premature flaccidity of the male organ is the cause of the absence of the female orgasm, and the aspiration of the sperms into the uterine cavity does not take place. The spermatozoa, hence, have to rely upon their own motility to reach the uterus and very often they fail. The result is sterility. Although the dictum of the Talmud (Niddah 43a), "*Kol shichvas zera sheano vorah kachez mezreas*," "A spermatic emission which does not shoot forth like an arrow cannot fructify," must be taken *cum grano salis*, yet in a certain respect the assertion is quite right. Spermatozoa deposited near the vaginal entrance inside or outside of the vagina may, under very favorable conditions, effect impregnation, but this will always be a very rare occurrence.

The main reason for this result is not the fact that atonic impotence at this stage of the disease is not amenable to treatment. It is. Hydrotherapeutics, electricity, especially the sinusoidal form, massage of the prostate, and tonics celebrate their greatest triumphs in psychic and atonic impotencies. The bad reputation, in regard to recovery, impotence generally enjoys among the laity and even among the profession is due to the fashion of throwing the case of the incurable paralytic in the same pot with the other curable forms of impotence. The report was then spread abroad of the incurability of any kind of impotence which is true only of para-



lytic impotence. Atonic impotence is amenable to treatment. But what makes the prospect of a cure of atonic impotence so doubtful is the fact that at this early stage the sexual disturbance is seldom or never treated. The patient is entirely unaware of his anomaly, or rather considers his condition perfectly normal. Some men even think the premature ejaculation to be a sign of great sexual power and are proud of it. Only recently a patient boasted in the writer's office of his great power because his ejaculations occur immediately upon the entrance into the vagina. The result of this misunderstanding is the failure of the patient to consult the proper authority at the stage of the disease when treatment promises a speedy recovery. Later on, in the second stage, when the premature ejaculation takes place *ante portas*, recovery is rather doubtful. Moreover, the wife, as a rule, has by this time passed the child bearing age. Hence, even if the patient recovers the former power, the normal congress will now seldom influence the sterile marriage. The patient's mistaken confidence in his potency is hence fatal to his fertility. While in impotence of procreation, or azoospermia, the patient's lack of knowledge of his condition is of no moment because this disturbance is, as a rule, incurable in any case; the patient's ignorance about his atonic impotence, at a time when the anomaly is still amenable to treatment, is baleful to his fecundity.

The number of patients suffering from atonic impotence of copulation and of premature ejaculation is legion, and in all these cases female orgasm fails to appear. The prematurity of ejaculation has only a relative meaning. It can only be so termed in relation to the female orgasm. If the wife suffers from orgasmus præcox, the male premature ejaculation will be synchronous with that of the female and is not premature any longer. Hence when a couple, sterile through the husband's premature ejaculation, is divorced, and the woman marries a normal man, while the man marries a woman afflicted with the anomaly of orgasmus præcox, both new couples may be quite prolific. This phenomenon often astonishes the uninitiated and has given rise to the belief in some mysterious incompatibility of certain mates. The diagnosis incompatibility of mates is only a veil for the ignorance of conditions. There is no proof of its existence. Even in normal male potency the female orgasm is seldom synchronous with that of the male (4). As a rule, the female orgasm takes place a few seconds after the male ejaculation, before the penis has entirely wilted and before it has been withdrawn. The male sperma, at that very moment deposited at the mouth of the cervix, is sucked up and drawn into the uterus by the aspirating movements of the mouth of the cervix, which take place at the height of the female orgasm. In this way the spermatozoa are immediately removed from the damaging acid contents of the vagina. If, however, the male ejaculation is precipitated and the penis wilts immediately, the female orgasm will naturally never be reached. The sperma remains much longer within the vagina and is somewhat damaged by the acid contents. Besides, in atonic impotence the male ejaculation does not come in jets, and the sperma remains near the entrance of the vagina. The spermatozoa are forced to make

for themselves a pathway to the mouth of the cervix through the vagina, which has only a virtual lumen (5) as soon as the penis is withdrawn. Hence when the spermatozoa ever reach the uterine cavity and the canal of the Fallopian duct they are in a weakened state and are seldom capable of impregnating the ovum. Hence the anomaly, as a rule, leads to sterility and is to a great extent to be blamed for the falling off of the birth rate among the cultured people in all civilized nations.

In the recapitulation of the previous arguments the following points stand out prominently:

1. Voluntary sterility in marriage is very rare. Modern man may and often does practice birth control. But there is no man or woman in existence, unless he or she be a degenerate, who does not wish to have at least one child. This wish emanates from the instinct of the preservation of the individual.
2. Idiopathic or congenital sterility is exceedingly rare in men and in women, hence is of little influence upon the falling off of the birth rate in all civilized communities.
3. Involuntary sterility is almost always, directly or indirectly, due to the husband.
4. In the majority of cases of involuntary sterility in marriage the male gonorrhea has either rendered the male himself impotent of procreation by damaging the epididymis and spermatic vas deferens, or, by injuring the genital organs of the female, has sterilized her for life.
5. A considerable part of sterile marriages, not due either directly or indirectly to male gonorrhea, is caused by one or the other male copulative impotencies, especially by psychic and atonic impotencies.
6. These two types of impotence are both amenable to treatment. The reputation of the incurability of impotence is due to the rare incurable paralytic impotence.
7. If the treatment of the curable psychic and atonic impotencies were not neglected, a vast percentage of sterility in marriage would be wiped out and a better progeny procured, because these impotencies are found mostly among the cultured classes, who would naturally transmit their superior qualities to their offspring. The result would be a certain improvement of the human race.

12 WEST 123D STREET.

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**Hemorrhage from the Stomach Treated with Coagulen.**—E. v. Meyer (*Münchener Medizinische Wochenschrift*, December 26, 1916) reports a case of hemorrhage from the stomach successfully treated with coagulen. He had performed a gastroenterostomy with a lateral anastomosis in order to prevent a vicious circle. Six hours later the patient vomited a pus basin full of pure blood. The ice-bag was applied locally, ice was given by mouth, and morphine hypodermatically. After some time the patient again vomited a considerable quantity of fresh blood; he was then given a tube of coagulen to drink. This caused the cessation of the hematemesis and the patient improved.



## BENZOL IN THE TREATMENT OF LEUCEMIA,

*With the Report of a Case.*

By HARRIS WEINSTEIN, M. D.,  
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The essential change in leucemia is a hyperplasia of the blood forming tissues. Numerous ripe and unripe leucocytes enter the blood stream bringing about a quantitative and qualitative change in the blood picture. There is evidence for the assumption that the entire hematopoietic system is affected by the hyperplastic change, and that the particular type of leucemia depends upon a preponderance of the process in one or the other tissue. Treatment of this disease was without avail until röntgenotherapy came into vogue, although remissions sometimes occurred under arsenic treatment, or during the course of a complicating acute infectious disease.

The effect of Röntgen rays on leucemic tissues was thoroughly studied by Warthin, who has

observers have found it producing a hypoplasia of the leucocytic marrow after an initial stimulating effect. If used to excess aplastic anemia and hypoplasia of the bone marrow with fatal termination may result. Gastrointestinal symptoms, bronchitis, dizziness, and eructation of gasoline like tasting fluid often accompany its use, but these symptoms are not of serious import. Persistent headache, kidney or bladder irritability, or the supervention of anemia should be regarded with concern, and the drug should be discontinued. As the effect of benzol continues for some time after its discontinuance, it is advisable to stop it when the white blood corpuscles have become reduced to 20,000 per c. mm.

According to von Koranyi benzol never fails in chronic leucemia, but its action is slower than that of Röntgen ray treatment. He believes that a combination of both is more effective than the employment of one agent, although benzol is effective where the x ray fails.

It is well to bear in mind that both therapeutic

Date	Sept. 26, 1916.	Sept. 7, 1916.	Aug. 24, 1916.	July 30, 1916.	July 15, 1916.	July 5, 1916.
Red blood count per cubic m. m.	4,460,000	4,200,000	3,200,000	3,890,000	3,800,000	3,810,000
H. C.	87%	83%	80%	80%	78%	76%
Color index	1.	1.	1.	1.	1.	1.
White blood count per cu. m. m.	14,000	18,000	20,800	170,000	195,000	216,000
Poikilocytes	None	Very few	Very few	Moderate	Moderate	Moderate
Macrocytes	None	None	Occasional	Few	Few	Few
Microcytes	None	None	None	Few	Few	Few
Staining affinity of red cells	Few pale cells	Varied	Varied	Varied	Varied	Varied
Polychromatophilia	No	Negative	Varied	Very few	Few	Few
Granular degeneration of red cells	No	Negative	Varied	Very few	Few	Few
Nucleated red cells	No	None	66%	Few normoblasts	Few normoblasts	Few normoblasts
Polymorphonuclear neutrophils	76%	80.5%	87%	57%	54%	56%
Lymphocytes (large and small)	17%	12%	8%	11%	20%	8%
Mononuclears and transitionals	3%	3%	2%	4%	5%	2%
Eosinophiles	3%	3%	9%	6%	6%	5%
Basophiles	1%	1%	7%	4%	3%	3%
Myelocytes	None	0.5%	8%	19%	21%	26%
Nucleated red cells				3 blasts to every 100 white cells	12 in 1,000 white cells counted	4 4
Unclassified forms						4 to every 100 white cells
	Only tonic treatment	Benzol discontinued	Since July 30, 1916, Röntgen ray treatment institut- ed. Benzol 2 gm. in 24 hours. Spleen within an inch of the ribs. X ray discontin- ued.	Benzol only used during this period in doses of 1 gm. to 1½ gms. in 24 hours. Spleen practically of the same size as at the first examination.		

reached definite conclusions as to their action. Their immediate effect is a degenerative one, either killing the cells outright or damaging them to such an extent that they die within a short period. After prolonged irradiation there comes a period of readjustment to this destruction; the tissues contain fewer evidences of cell death and degeneration, also fewer proliferating cells. He concludes that prolonged irradiation of the hematopoietic organs in leucemia causes first a degeneration of the young and maternal cells leading to a great decrease in the output of leucocytes. This destructive effect is followed by a reaction in which cells of a more resistant type are formed, and the essential leucemic process remains unchecked, although altered in character. We cannot, therefore, escape the conclusion that Röntgen ray treatment is, at the very best, but palliative, and that, sooner or later, the leucemic process is bound to return with probably greater destructiveness. His observations on the effect of benzol poisoning on girls employed in a factory where benzol was used, led von Koranyi to use this drug in leucemia. Von Koranyi and other

measures are potent for evil, unless their combined effect is carefully watched by frequent blood examinations and careful noting of clinical changes.

CASE. H. F., thirty-nine years, always well. Family history negative. He had no diseases since childhood and was never exposed to venereal infection. For several months he had been losing weight and strength, although he enjoyed a good appetite and ate well. He complained of mild gastric symptoms and of a sensation of fullness in the abdomen. During the last few months he has also become constipated. There was a slight suggestion of dyspnea on exertion.

*Physical examination.* Appearance pale and pasty; rather stout for his height. Chest organs negative. Palpation of the abdomen disclosed a large mass reaching considerably below the umbilical level and occupying nearly the entire left side of the abdomen. It was smooth and soft, with a well defined border. The liver only slightly enlarged, reaching somewhat below the costal arch. No enlargement of any glands could be made out. The urine was negative. A tentative diagnosis of leucemia was made while awaiting the result of the blood examination.

Benzol treatment was immediately instituted. The initial dose of one gram a day was given in 0.3 gram capsules with an equal quantity of olive oil, and slowly increased up to two grams a day. Irradiation of the spleen was begun somewhat later, giving in all six treatments. It was

not considered necessary to continue it, as a consideration of the subjoined blood report will show.

During the three weeks dating from the first blood examination, July 5th, to the third examination, July 30th, benzol only was used. The report shows a drop in the white blood count of 46,000 cells and of 7 per cent. of myelocytes. The largest dose of the drug given by that time was 1.5 grams a day. The rest of the blood picture was hardly changed at all. The spleen showed no appreciable change in size, although the patient considered himself much improved. Röntgen ray treatment was then instituted and the benzol was increased to 2 grams per diem. In the next three weeks, as the report of August 24th shows, there was a marvelous change for the better. The white cell count dropped to 20,800; the macrocytes and microcytes all but disappeared, and the myelocytes dropped to 8 per cent. The spleen had shrunk to within an inch of the margin of the ribs. The subjective symptoms have so far improved that the patient considered himself perfectly well. Irradiation of the spleen was then stopped.

Benzol, however, was continued until September 7th, when the report showed 18,000 whites, only 0.5 per cent. myelocytes, and an almost normal condition of the red blood cells. The spleen, on that date, was not palpable. The last report, two weeks later, shows a continuing decrease of the white cells, a substantial increase of the erythrocytes without abnormal characteristics, and a complete disappearance of myelocytes.

Observation of the effect of the two therapeutic agents in this case would justify the conclusion that benzol in small doses acts slowly both on the leucocytic tissues and the spleen. It did not show, in this instance, an initial stimulation of the bone marrow or a hyperplasia of the erythrocytic marrow. The Röntgen ray, on the contrary, produced a rapid change in both the white and red cells, and an extremely rapid diminution in the size of the spleen. The rapidity of its action should act as a warning against its careless use. The same is true of benzol, as during the nineteen days after its discontinuance the destruction of white cells was still going on.

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### ENFORCED REST.\*

By SIEGFRIED BLOCK, M. D.,  
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Enforced rest is a term used to describe a new form of treatment. The patients are told they will be made to live as nearly as possible like those animals which hibernate during the winter—just about live, with the least amount of vitality, movement, and food. This condition will be forced upon them. They will get compulsory relaxation, both mental and physical, and much more quiet than could be expected by any natural means.

This is a report of twenty-seven cases treated in the past four years at several hospitals and sanitariums, including two at hotels. Improvement occurred in every case, and the majority could be called cured. One lady discharged last week from the Long Island College Hospital said, "This is the best day I have had in ten years." The diagnoses among the cases included beginning dementia præcox, melancholia, neurasthenia, hysteria, borderline insanity, and paranoia. The class of patients for whom this plan of treatment is specially devised are those who are constantly in a state of unrest, the hyperirritable, overworked business or professional man or woman;

the mother or father who quarrels with the rest of the family; the heartbroken widow after the recent loss of her husband, or the disappointed individuals of a long but broken courtship are types amenable to this procedure. Even in cases where the ordinary sanitarium rest cures were useless good results were obtained. So called nervous prostration, states of fear, anxiety, etc., are also conditions to which help may be administered. Autointoxication from kidneys or intestines has also responded to this treatment.

The place selected for this treatment is preferably a well equipped hospital, but private sanitariums, even quiet rooms in hotels, can be made to serve as the loci operandi. It is absolutely essential that reliable nurses be in attendance, for the orders must be carried out to the letter. Granted we have the patient, the orders are written about as follows. Small variations may be made by the physicians to suit individual cases:

All visitors desired are allowed on the first day. On the second day visitors are allowed for only one hour during the whole day. On the third day only intimate members of the family are admitted for fifteen minutes. On the fourth day family members are admitted for five minutes only and they are told to talk very little to the patient. After this visitors are absolutely prohibited. Reading of books and newspapers is permitted for the first day. Newspapers are prohibited on the second day and books are prohibited on the third day. Mail may be received and sent on the first two days; not received but sent on the third and fourth days; and absolutely prohibited thereafter. Diet: Full diet the first day; soft diet the second day; fluid diet the third day, and milk diet thereafter. Medication: For the first two days violent catharsis is given—one compound cathartic pill every two hours for five or six doses, followed by a generous dose of saline. No nerve sedative is ordinarily given the first day. On the second night a coal tar preparation, as ten grains of veronal and one half grain of cannabis indica, is given in one dose in a capsule. The third day some mild sedative is given all day, as ten grains of sodium bromide repeated each six or eight hours. In the evening again a strong hypnotic drug, as paraldehyde, is given.

From now on we can safely establish the period of so called fully enforced rest. For the next three or four days the patient is kept in a semistuporous state, varying the drugs so that no habit will be induced. Morphine is never given for this reason. A standing order asking for pulse and respiration each hour during this time is necessary. If indications should arise, hypodermics of strychnine and digitalin are given and the physician notified. This was not required in any of this group of cases.

Neither nurses nor physicians should hold prolonged conversations during this time either with the patient or in the patient's room. During this stage of the treatment the shades are pulled down and the room made as dark as for twilight sleep. At this time the diet is restricted to milk and water. When this stage is properly established visitors or other causes of stimulation are as nearly as possible prohibited. *Absolute rest and quiet* should be the watchwords.

\*Read before the Brooklyn Neurological Society, November 1, 1916.

The feelings of the patient during this time are very interesting. Before he starts the treatment it is explained to him in its entirety and it is made plain that his cooperation is necessary. On the first day, as might be expected, he wonders what is going to happen. The thought that he will not be able to go through the whole course is uppermost in his mind. On the second and third days much unrest and a desire to go home often prevails, but after the rest is fully enforced and drowsiness occurs he does not seem to care, and he even rather seems to enjoy the treatment. Such statements as, "Doctor, I feel easier than in years," or "This sleep is what I needed," have been elicited frequently. Nearly every patient is grateful.

Two or three days before discharge the emunctories are stimulated, soft diet, fresh air, and visitors are encouraged. If possible he is told to take a short vacation, to move to a new home, and change his mode of living. In general he is instructed to be as different as he possibly can from the way he was before the treatment. For a time a restricted, nonstimulating diet is prescribed. This treatment in several cases has been of genuine value, the cure lasting for a number of years.

To summarize: A rest is offered which is stronger than any which can be obtained by natural means. This mental and physical relaxation for persons who have gone years with little or no assistance constitutes a most powerful method of treatment. In conclusion it is desirable to remember that one may become expert in narcotic administration and the best results may only be anticipated when cases are selected properly.

848 GREENE AVENUE, BROOKLYN.

## SPRAYER FOR PARAFFIN TREATMENT OF BURNS.

By W. G. HUDSON, M. D.,

Wilmington, Del., and New York,

Medical Director E. I. du Pont de Nemours & Co.

Much has been written in the lay press, and some comment is beginning to appear in the medical journals, concerning the alleged unwillingness of physicians to adopt the ambrine treatment of burns. It is doubtful if any such skepticism would have been shown if this preparation had not long ago made its appearance in France as a sort of patent medicine application for rheumatism and other ailments. We cannot blame the French physicians for viewing it at first much as we would, for example, the sudden exploitation of Pinkham's Compound as a sure cure for empyema when applied locally.

As usual with improved or alleged improved treatment from irregular sources, it has been heralded with a profusion of such adjectives as "wonderful," "marvelous," "miraculous," etc. Most of us would simply have brought it before the profession as a treatment for burns giving improved results. Nevertheless we of the medical profession are far from being as hidebound as some seem to believe, and I know that a number of good men are trying out this treatment, even though they may not expect to heal fourth degree burns without

scars, as has been reported (1). One tenth of its alleged efficacy would justify its adoption as the standard method of treating burns.

In order to judge of the value of any new treatment, it is necessary to follow the recommended technic in the test and use the genuine article in making it, even though this involves the purchase of what appears to be little more than unbleached paraffin at five dollars a pound.

While the instructions accompanying the ambrine suggest applying it in its melted state with a brush, it seems that the technic employed in France, where such "marvelous" results are obtained is as follows: The burned area is dried with a hot air blower, the ambrine is applied with a spray, and the layer of paraffin thus formed is reinforced with a thin layer of absorbent cotton attached by further application after the initial coat-

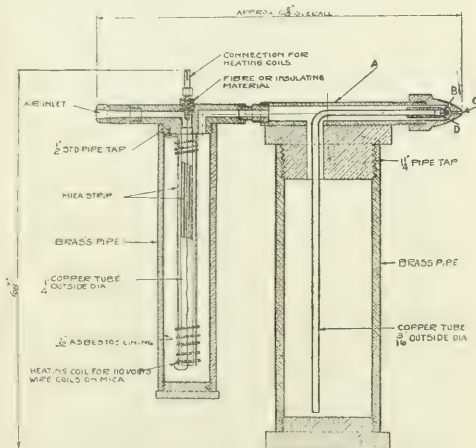


FIG.—Diagram of paraffin sprayer. A, half inch brass pipe soldered to cap, iron pipe size; B, this end of inner nozzle to have four grooves cut on outside to permit passage of air; C, No. 47 drilled hole in end of both nozzles; D, inner nozzle to be screwed on three sixteenths inch tube.

ing of the burned area with the pure material. If we depart from this technic or use a substitute, and do not get the alleged results, we may expect the introducers of the treatment to come back with the charge "Well, you did not use the genuine article" or "The technic was faulty."

To those who may desire to try this treatment, the first stumbling block will probably be, as it was with me, to get a really satisfactory spray for melted ambrine. I could not find one on the market, although I searched diligently. Even those sold for this particular purpose sometimes refused to work. But being handy with tools I soon built one for myself, and our machine shops are now turning out duplicates for all the Du Pont emergency hospitals. This spray is shown in the illustration, and any instrument maker is free to manufacture it.

The only requirement different from the ordinary atomizer is a means of keeping the paraffin melted. A hot water jacket is the first thought for this pur-



pose, but an electric heating coil controlled to constant temperature by a thermostat is the most perfect device that occurs to one's mind. I found after a few trials that if the container were made of heavy brass or copper, the metal would retain the heat better than a water jacket and conduct it far better to the jet, duct, and nozzle. The most serious practical difficulty arises from the narrow heat limit in which we must work. The mixture must be above  $50^{\circ}$  C. to melt, while above  $70^{\circ}$  C. it is too hot to apply. The result is a tendency to solidify in the duct and nozzle.

Even with the atomizer constructed as shown, with such liberal use of highly conducting metal, the passage and expansion of the stream of air through the apparatus and over the paraffin duct causes solidification and obstruction when attempting to use the mixture at low heat. Therefore the preliminary air heater was added. This is an asbestos lined cylinder to whose bottom the air is led through a central tube, whence it rises through electrically heated coils carried on mica strips attached to the central tube, issuing from the preheater at a temperature well above  $50^{\circ}$  C. I found after a few trials that sufficient No. 28 resistance wire to give a resistance of approximately 125 ohms is about right for the 110 volt electric light current.

The coarseness or fineness of the spray is adjustable by tightening or loosening the nozzle. Draftsmen drew the diagram of the apparatus after it was constructed, and have copied all my imperfections of workmanship; but any instrument maker will know how to rectify these.

When made as shown in the illustration, the spray works perfectly and is a real help in applying the paraffin. With ten pounds of air pressure and the hole in the nozzle the size of a No. 47 drill, an area of one square foot can be covered in about two seconds—a great advantage in the extensive burns we meet with after smokeless powder flareups. For ordinary use a nozzle bored with a No. 52 drill might be better. We are also making our container boxes larger to hold about two pounds of the melted ambrine.

While five to ten pounds air pressure is ample, there should be a good volume of air at this pressure. Therefore hand bulbs are not very satisfactory, for while they will develop enough pressure they will not deliver the air in sufficient volume. The same may be said of some of the small pumping machines for direct operation of nasal sprays. Most of the cutoff valves have apertures that are too small. The old fashioned compressed air tank is quite satisfactory, or the electrically operated device for inflating automobile tires called the "Lectrofrator." This is portable and very satisfactory if fitted with a safety valve, otherwise it runs the pressure up to 125 pounds.

As to results of treatment, our cases are as yet too few to report, although I am satisfied there is considerable good in the method. Developments in our service point to such changes in the technic as will first insure a surgically clean area by wet dressings of Dakin's solution for a day or two. Otherwise the secretions locked beneath the dressing are already foul and offensive at the end of

twenty-four hours, and while saprophytic bacteria may not delay the process of repair, we may easily lock up and incubate other kinds under the paraffin coating. Properly prepared Dakin's solution does not cause pain, but actually seems to give great relief in burn cases. Our chemists make ours for the emergency hospitals on the formula given by Dr. Lloyd Noland. (2) The preparation of the fluid requires skill and great care. I am convinced that the unfavorable results reported by some are due to errors in the preparation of the fluid.

Application of the ambrine is not painful if kept under  $70^{\circ}$  C. Redressings are easy, rapid, and not painful. As already remarked, if the results turn out to be one tenth as good as reported, it will be a burn treatment well worth adopting, whatever its value as a rheumatism remedy may have been; and in this country we will gladly give Dr. Barthe de Sandfort all due credit for introducing it, even though we may attempt to manufacture an improved mixture that can be prepared for less than five dollars per pound.

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### STRICTURE OF THE URETHRA.

#### *A New Method for Localization and Measurement.*

BY MAXIMILIAN STERN, M. D.,  
New York.

In commenting on Bier's reintroduction of hyperemia as a curative agent, Frank (1) states that "Bier has drawn attention to the fact that resorption is very much accelerated under the influence of heat hyperemia," and from his own work he concludes that "dilatation of urethral strictures is not accomplished solely through the mechanical effect of the instrument. The bougies occasion an inflammatory irritation. Rather marked leucocytosis sets in and the fermentative action of leucocytosis has the power of fusing and dissolving tissues."

Porosz, of Budapest (2), in applying his hot sounds to strictures found that "the treatment increased the dilatability of strictures. With the aid of the hot sound I have been able to dilate, without a single drop of blood, strictures which have been treated repeatedly by others and which had bled easily. In one or two cases; I was able to determine after considerable intervals that the normally dilated urethral calibre had remained for months and had not again become narrowed." And so through a long list of workers in this field, we find a consensus as to the efficacy of heat hyperemia to dissolve urethral infiltrate.

In my paper Heat Hyperemia in Urology (3), I described an apparatus with which it is possible to obtain a stream of water with a constant flow no matter how finely throttled down and at a constant temperature. This apparatus, together with the urethral instruments, were described as follows: 1. A glass container for the solution (Fig. 1, A). 2. An air pressure device to replace gravity (Fig. 1, B). 3. The terminal instruments for urethral and

The treatment of Burns with paraffin mixtures as developed by the experience of the present war.  
~~A review of recent contributions by~~  
R. MAIAS, M.D.

It is my purpose on this occasion to direct your attention to a method of treating burns which has attained a wide-spread interest in the lay and professional world of this country, since the beginning of the present war, and the publication of the extraordinary results claimed by its originator, Dr. Barthe de Sandfort of Issy-les-Moulineaux, near Paris, where the French Government has established a hospital under his direction, for the sole treatment of war burns.

So much has been written on the treatment of Burns by the use of "Ambrine" which is the name given to the proprietary paraffin substance originally compounded and used by Dr. Barthe de Sandfort that it will no doubt improve your appreciation of the subject if I introduce the discussion by a preliminary statement of the conditions arising from the peculiarities of the present frightful methods of warfare which have led to a new type of war injuries briefly referred to as "war burns." In addition to these are the ordinary causes of burns, chiefly the consequence of the liquid fire which the Germans have introduced with their asphyxiating gases and other innovations in destructiveness and frightfulness that has been a part of their program in the

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Most of the cars are too small. The old fashioned is quite satisfactory, or the electrically operated for inflating automobile tires called the "Lectroflator." This is portable and very satisfactory if fitted with a safety valve, otherwise it runs the pressure up to 125 pounds.

As to results of treatment, our cases are as yet too few to report, although I am satisfied there is considerable good in the method. Developments in our service point to such changes in the technic as will first insure a surgically clean area by wet dressings of Dakin's solution for a day or two. Otherwise the secretions locked beneath the dressing are already foul and offensive at the end of

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In my paper Heat Hyperemia in Dogs, (3), I described an apparatus with which it is possible to obtain a stream of water with a *constant flow* no matter how finely throttled down and at a constant temperature. This apparatus, together with the urethral instruments, were described as follows: 1. A glass container for the solution (Fig. 1, A). 2. An air pressure device to replace gravity (Fig. 1, B). 3. The terminal instruments for urethral and



bladder applications comprising a straight anterior urethral tube, a curved posterior urethral tube, and a dilator irrigator (Figs. 2, 3, and 4).

The container consists of a glass vessel of approximately three quarts' capacity, which is ample for treatments requiring a thin steady stream for one half to three quarters of an hour. This is fitted with an electrically heated spiral, the turns of which extend from top to bottom, to raise the temperature of its contents to any desired degree. A three point contact switch controls the elevation and maintenance of temperatures of 130° F., 180° F., and 212° F., respectively. During treatment the level of the fluid in the container recedes from the turns of the heating spiral. These being equidistant, the heating surface is diminished proportionately with the fluid, thus obviating an elevation in temperature of that remaining even during long treatments.

The stream from this container is actuated by air pressure. This is obtained by a simple apparatus to

ing in of the edematous tissue against the small orifices of the urethral instruments, pressure was found necessary to replace gravity. A small tank (Fig. 1, B) fitted with a hand pump, provides the pressure and as it requires but little to actuate the stream, the capacity of this tank is amply sufficient for several treatments extending over one half hour each, and replaces the motor pump employed at first. A valve permitting of fine adjustments, is attached



FIG. 2.—Straight anterior urethral irrigating tube.

to the air tank, which regulates and maintains the pressure applied to the surface of the water in the container.

It is thus possible to obtain any desired pressure in the water container, and automatically maintain it throughout the treatment, irrespective of the level of the fluid or the rapidity of the flow. The force and rapidity of the stream is regulated by this valve. The container on a table close to the patient is convenient for filling and cleansing and does away with the ever troublesome lengths of rubber tubing from a suspended irrigator.

Before entering upon a description of the variety of cases, the technic of their treatment, or the results obtained, it will be necessary first to describe the urethral instruments, without which the successful application of this method of treatment would be impossible.

A No. 6 French, straight irrigating tube (Fig. 2) made of metal and provided with orifices corresponding to the floor of the urethra was designed for the treatment of the anterior urethra.

A shield to catch and direct the return flow downward is fastened to a sliding sleeve which may be adjusted so as to close up either one or both orifices at the fossa navicularis. The orifice near the tip is situated so as to bathe the floor of the urethra, and is drilled slantwise in order to direct the stream out again and not toward the compressor urethræ. A small handle serves to facilitate holding the instrument in place and indicates its upper side. This instrument is intended for use in acute inflammatory conditions, and for the treatment of stricture in the urethra anterior to the compressor muscle.



FIG. 3.—Curved posterior urethral irrigating tube.

For the treatment of the prostatic urethra and the prostate from within the urethra, curved instruments (Fig. 3) were devised, which look much like ordinary metal catheters. They differ, however, in several essentials. Both the supply and discharge openings are on the convexity. The supply openings are two in number, quite small, and are situated well

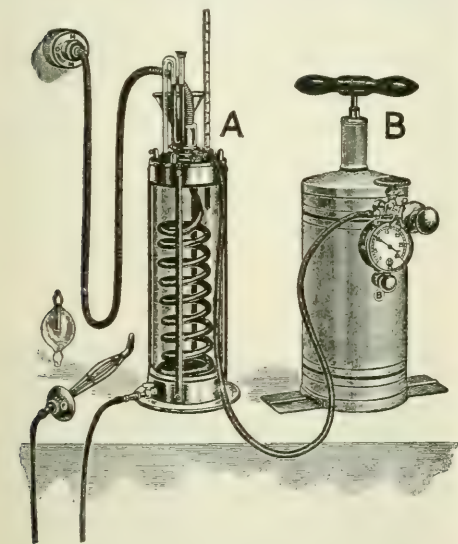


FIG. 1.—A, glass container for solution; B, air pressure device to replace gravity.

be described. The pressure within the reservoir is indicated by a mercury manometer, inserted through the top mounting and is so delicate that the slightest pressure is registered. The quantity or size of the stream is regulated by a small cock at the base of the container. The regulation of either the rapidity or the quantity of solution will also regulate in proportion the number of heat units delivered. A funnel for filling, an air inlet attachment, and a thermometer are also placed at the top of the jar. The ease of filling and cleansing, and the constant pressure of the stream, even when cut down to a mere drip, makes this apparatus also adaptable to cystourethroscopic examination purposes and also for postoperative proctoclysis.

In order to maintain the constant flow of a small stream against friction in the tubing and the fall-

back from the tip, so as to correspond to the prostatic urethra. The discharge orifice is near the tip, quite large, and delivers the return flow to the lower tube connection at the metal end of the instrument. A small olivary bulging is placed just in back of the supply orifices, to make the passage through the

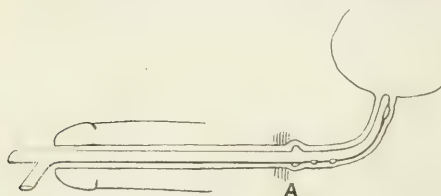


FIG. 4.—Curved urethral irrigating tube.

compressor urethrae felt by the operator's tactile sense and indicates the position of these orifices just within the prostatic urethra (Fig. 4). The olive also serves to make the instrument selfretaining. This instrument is made in two sizes, one of ordinary dimensions, and the other longer in its shank and greater in its curve for prostatic cases.

One other instrument was devised to complete the remaining requirements: an irrigating dilator for the treatment of subacute and chronic inflammations, infiltrations, and strictures (Fig. 5). This dilator is selfretaining when slightly expanded, because of its lightness, weighing but little over an ounce. Its blades are of thin wire, so that the least possible area of urethral surface escapes irrigation.

These blades stand well away from the central tube through which the stream flows, even in their collapsed position, when the entire instrument measures only 21 French, and extend throughout the length of the instrument, holding the tissues away to facilitate the return flow. It is provided with both straight and curved tips, for anterior and pos-

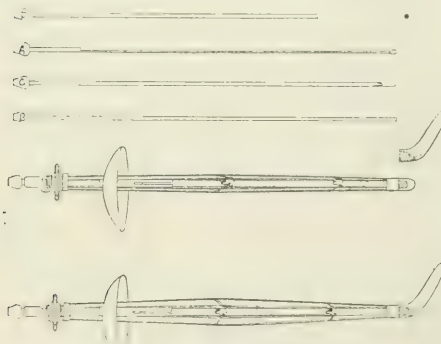


FIG. 5.—Irrigating dilator for treatment of subacute and chronic inflammations, infiltrations, and strictures.

terior urethral application, and also with a sliding shield for adjustment to the various lengths of the organs into which it is inserted, and for the prevention at the same time of escape of fluid outside the urethra, closing one or both of the supply orifices at this point. Orifices for the escape of water are situ-

ated in five places, the fossa navicularis, pendulous urethra, membranous urethra, prostatic urethra, and trigone. All of these points may receive the irrigation at the same time, or individually, as indicated. This is accomplished by inserting tubes of various lengths and construction into the central supply tube: Thus *a*, when inserted, closes the trigone orifice in the curved tip and allows of irrigation of all the rest of the tract; *b*, closes off all the orifices except the trigonal; *c*, closes off all except the posterior urethral; and *d*, closes the orifices in the anterior urethra. These tubes may be used interchangeably with the instrument in situ. When no inner tube is inserted, the instrument being connected directly to the supply, the entire urethra and trigone is bathed, depending on whether a curved or straight tip is employed.

**Technic.**—The selection of the proper instrument for the application of the hot water depends upon the degree of acuteness of the affection to be treated and upon the calibre of the urethra. Thus, in acute conditions of the anterior urethra, or where the lumen is encroached upon by stricture or in the event of a small meatus, the straight tube is desirable. In subacute or chronic conditions of this region, the dilator irrigator with the straight tip attached will be found useful. In conditions posterior to the compressor, either of the curved tubes or the dilator with the curved tip will suffice. A fine stream with just sufficient pressure to actuate it is essential when the treatment is begun. The return flow will give evidence that the stream is moving. As the treatment progresses, the tempera-

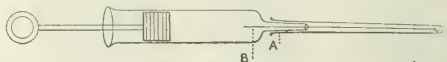


FIG. 6.—Apparatus for localization and measurement of stricture or infiltration.

ture is raised either by increasing the size of the stream, or by increasing its rapidity.

This is accompanied by either opening the water cock or by admitting a higher pressure to the container. A temperature easily borne is more desirable than one up to the limit of the patient's tolerance, because of the sharp reaction which ensues. Should this occur, an interval of several days is advisable before the next treatment, to allow for its subsidence.

There is a natural tendency to administer the water too hot, which causes sweating and bodily discomfort even when there is no local pain; an early termination of the treatment becoming imperative. It is only necessary to fill the container and raise the solution to a temperature five or ten degrees higher than ordinarily required, to allow for radiation, the rapidity and size of the stream being augmented as the treatment progresses. The tolerance of the patient increases and the number of heat units delivered can be gradually increased, care being taken to observe what has already been suggested to avoid a sharp reaction.

The individual tolerance of the patient determines in a large measure the temperature possible to employ; that which is tolerated by most patients is 120° F., and rarely exceeds 130° F. When the water in

the container is heated to 125° F. or to 135° F., and the patient is found intolerant, either a slower or smaller stream is necessary.

In order to obtain beneficial results from hyper-

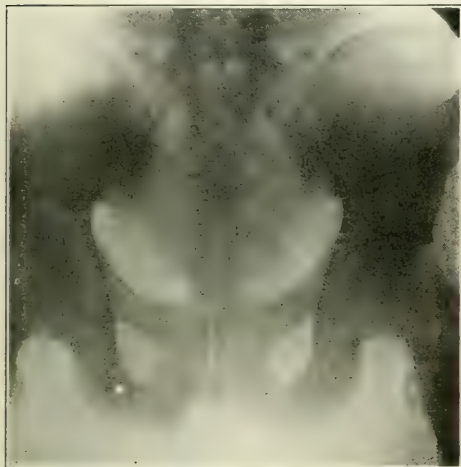


FIG. 7.—Point of stricture indicated by a constriction of shadow.

emia, it is necessary to administer the treatment for at least twenty or thirty minutes, penetration of the heat through tissues being slow because of its absorption by the blood stream.

In the treatment of dense, inelastic strictures of small calibre it is often necessary to begin dilating

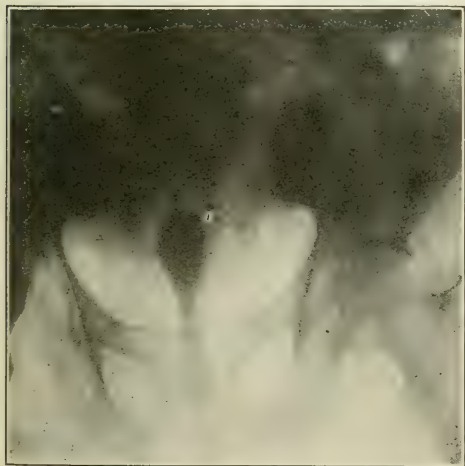


FIG. 8.—Infiltration indicated by absence of shadow.

in the usual way with filiforms. Soon, however, it becomes possible to use either the small straight or the curved tube, and begin the hyperemia treatment. When finally the dilator irrigator is admitted it will

be observed that the stricture softens as the treatment progresses, and from time to time it is possible to increase the dilatation.

For the localization and measurement of the stricture or infiltration I have employed an apparatus (Fig. 6), consisting of an ordinary four ounce syringe filled with twenty per cent. thorium solution, an olivary bougie, and a rubber dilator cover. The dilator cover is slipped over the end of the syringe with the bougie in it to lend rigidity for its insertion into the urethra. The olivary end prevents puncturing the rubber when force is applied.

Of course, this apparatus is applicable only to strictures of large calibre, but it is with these that we are commonly confronted, and we are desirous of knowing their calibre and linear extent. This is possible by introducing the dilator cover into the urethra attached to the thorium filled syringe. The thorium is then forced into the dilator cover and x rayed.

A constriction in the shadow (Figs. 7 and 8) indicates the point of stricturing. In both of these cases the bulbous urethra was the location affected. In Fig. 7 it will be observed that the length of the infiltration is considerably over an inch, while in Fig. 8 the total absence of a shadow for about one half inch indicates the inelasticity and density of the infiltration. Both of these cases received treatment with hot water, employing in succession the instruments here described after first making a way with filiforms and soft bougies. The dilator irrigator is perhaps the most important of these, since, after localizing the stricture, it is possible to insert the proper inner tube and spray just the area requiring it.

219 WEST EIGHTY-FIRST STREET.

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#### DON'TS IN THE AFTERCARE AND TREATMENT OF INFANTILE PARALYSIS.\*

BY CHARLES OGILVY, M. D.,  
New York.

So much has been said regarding what should be done in the aftercare of infantile paralysis that it will be of interest and benefit to study the subject from a negative standpoint and learn what should not be done. I therefore wish to emphasize a few don'ts in the aftercare of these cases.

Don't lose sight at any time of the pathological changes taking place while they are developing. What we have to deal with at first is the general systemic infection. Incident to, and associated with this infection there is, in the majority of cases, an involvement of the cerebrospinal axis. The virus gaining entrance to the respiratory tract infects the lymphatics of the upper nasal passage. These are in direct communication with the meninges, as demonstrated by Flexner (1). Thus we trace the infection to the cord, where we find a hyperemia with an exudate of small mononuclear cells in the peri-

\*Read before the New Rochelle Medical Society, October 9, 1916. And before the Bronx Medical Society, October 11, 1916.



vascular lymph spaces of the bloodvessels of the leptomeninges. This is then an acute interstitial meningitis. The blood supply of the cord is derived from the vessels of the meninges, and with the advance of the pathological process this perivascular infiltration follows along the vessels as they enter the cord from the meninges. Thus the earliest change that is found in the cord itself is hyperemia and the collection of small round cells in the lymph spaces surrounding the vessels (2). This small roundcell infiltration is so condensed at certain areas that the lumen of the vessels is diminished by pressure, and anemia of the nerve cells follows. A secondary result of this pressure from without the vessels is a thinning of the vessel wall, causing hemorrhages. Frequently at autopsy minute hemorrhages can be seen, not only in the gray, but also in the white matter of the cord.

Thus we have, as a result of the infection, cellular exudate, edema, and hemorrhage. These circulatory disturbances, either by reason of direct mechanical pressure or a diminution of the blood supply to the nerve cells, cause a lack of nutrition which, if continued long enough, results in degeneration and necrosis. Still another factor in bringing about this result is the toxic action upon the nerve cells by the infectious virus. It would seem, though not yet proven, that all of these causes are responsible for the changes found in the cord, some to a greater extent than others, being different in each case.

*Don't* limit these observations to the acute stage only, but extend them over the entire period of convalescence, which may last for years. Only with this pathological picture in mind can we fully appreciate the symptoms as they develop, and, what is of more importance, treat intelligently the resulting paralyses. If the exudate and hemorrhage are quickly absorbed, the nerve cells rapidly regain their function. If the pressure continues and the anemia persists in addition to the effect of toxic action upon the cells, then the destruction of the nerve cells goes on until there is an extensive involvement of the cord. Not only may the anterior horns be affected, but also the posterior. This destructive process with the cellular infiltration around the posterior



FIG. 1.—A simple splint for a case of partial paralysis of the anterior tibial group of muscles. Worn for three months with gradual return of function.

nerve roots in all probability accounts for the occurrence of the persistent painful symptoms.

*Don't* fail to emphasize the importance of absolute rest and quiet during the first three months. Nothing is gained by massage, manipulation, or electricity during this period; the patient should be kept at perfect rest. The one exception to this rule is in contraction spasm of the flexor tendons. Gentle massage relieves pain and spasm in these cases.

*Don't* use complicated or cumbersome means when simple ones are at hand. Paralyzed limbs may be put at rest most easily by the application of a light plaster of Paris bandage applied over cotton, as shown in Fig. 1. When such a splint is applied to the leg and foot, the leg should be flexed at an angle of five degrees and the foot be put up at a right angle. When applying a cast to the upper extremity the arm should be flexed at an angle of five degrees, the hand hyperextended, and the fingers and thumb put up in full extension. If the deltoid is paralyzed the arm should be put up in abduction at right angles to the body. A simple splint for this purpose is easily constructed by making a plaster of Paris mould fitted to the side of the chest and extending up under the arm. This is banded to the body, the arm resting in the concavity of the splint, as illustrated in Fig. 2. When the muscles of the spine are affected, a plaster of Paris shell, moulded to the back, should be made. The patient should lie in this, after it is evenly padded with cotton. Except for sponging and changing of soiled clothing the use of this shell should be continued for at least two months. When the patient is able to sit up, this should be replaced by a spinal brace.



FIG. 2.—Plaster of Paris splint for paralysis of deltoid muscle. This patient also has paralysis of the triceps; for this reason the forearm is extended.

We have learned that complete rest, so obtained in this early stage, promotes absorption, relieves irritation, and diminishes pressure. At the end of two months the acute stage having passed in the majority of cases, pain subsides, and the symptoms of a general systemic infection pass away. The patient is comfortably convalescing and that which remains in those so affected, the aftermath, which is much worse than the disease, is the paralysis. Any group or groups of muscles may be involved; any degree of involvement from a slight weakness to a complete paralysis may result.

*Don't* forget that the two main objects of all treatment are the regaining of lost muscle power and the prevention of deformities. The one is of fully as much importance as the others.

*Don't* begin massage too soon. Our best results are being obtained in those cases which have not had any massage until the fourth month after the acute attack. Massage carefully carried out is beneficial at this stage—four months after the acute attack. This should be a careful light massage; deep massage of the muscles of the extremities should be avoided.

*Don't* underestimate the value of muscle training exercise. At the same time, *don't overfatigue a muscle or group of muscles* at any time by any ex-

ercise or muscle activity. Muscle training must be conscientiously, thoroughly, and consistently carried out. It should be a daily routine and arranged for as part of the patient's daily work. Both the frequency and length of time for each muscle training lesson will depend upon the condition of the muscles involved, for overtiring a weak muscle is the worst treatment that it can possibly receive and does an infinite amount of harm. Muscle exercises a dozen or more times a day for a few minutes each time will accomplish the best results when such exercises can be instituted. We must depend upon the mother in great part for this muscle training. Voluntary attempts at seemingly impossible motions are made time and time again, and after weeks of apparently futile attempts motion will gradually reward the effort. As time goes by effort will increase until the finger or thumb is moved, the hand extended, and the forearm flexed, or the whole arm becomes a useful member by voluntary power.

In regard to the lower extremities we are dealing with the body weight bearer. We frequently have trouble with this weight bearing function in normal cases, as a result of loss of foot balance, foot strain, muscle fatigue, etc. How much more likely then are we to have disturbances in weight bearing upon limbs supported and balanced by partially paralyzed muscles. It is beneficial to get our patients up and about as soon as possible after the third month for a short time each day, gradually increasing the length of time. Great care must be taken to prevent overfatigue.

*Don't overbrace. Don't underbrace.* Braces should be applied when deformities would otherwise occur because of insufficient support or because of a stronger group of muscles overacting against the weaker or paralyzed group. Of such deformities, those of hyperextension of the knee joint and drop toe most frequently result. Correct braces, if properly adjusted and carefully applied, should not in any way interfere with muscle development; indeed, the contrary is apt to be the case. It is not always necessary to continue the wearing of the braces throughout the day. If the patient is able to walk without deformity developing, no brace need be applied. Here I wish to sound a note of warning, when braces are not employed, regarding a gradual, very gradual, development of deformity which is often overlooked and which finally necessitates operative treatment. A light, accurately fitting brace prevents deformity, relieves muscle fatigue, permits of body weight bearing, and encourages and improves ambulation, which would otherwise be impossible without harm being done. In this capacity a brace greatly benefits the general health of the patient.

*Don't overlook the spine.* When the muscles of the back are weakened by paralysis it is often a unilateral affection. The result is a lateral curvature of the spine, as may be observed in Fig. 3. This is a progressive deformity and must be immediately cared for. The best spinal support which the writer has used for these cases is a corset made with strong supporting steel inserts. This should be worn throughout the day, as the patient when not walking is for the most part sitting up, in which position the back needs to be supported.

*Don't omit bath exercises.* These active exercises, which I cannot recommend too highly, and which will give most encouragement to the patients, are those taken in a warm bath with the tub filled with water sufficient to immerse the body. Salt water accentuates the buoyancy, but is not essential. Active and passive motion of the arms and legs are continued from ten to fifteen minutes at a time. A leg which may be comparatively inactive otherwise, may be moved about in the water with surprising freedom and control. In this way, by extending one's activities to a swimming pool, patients with severe paralysis may be taught to swim even before they are able to walk.

After the sixth month electrical vibratory massage is also recommended. This should be applied over the spine at either side of the spinous processes. Heat is always beneficial in stimulating circulation and so aiding the nutrition of the part. Heat, both as to degree and intensity, can be applied most readily by an electric light bath.

*Don't expect a great deal from the use of electricity.* The benefits derived from the use of electrical stimulation in the treatment of these cases have been overestimated. Electricity, of itself, neither prevents deformities nor does it cause muscle power to be regained. It is sometimes, unfortunately, the only treatment employed, with the idea of accomplishing both of these results, only with disastrous effects. On the other hand, it seems to me that electricity has a definite, though limited, place in the treatment. It should be administered with more knowledge than the average layman possesses and should be applied by those skilled in its use. To be most effective, it should be used frequently for short intervals of time.

*Don't fail to see from time to time those patients who have apparently recovered from paralysis.* Many patients who seem to have recovered perfectly have been left with a slight weakness in one or other group of muscles in the lower extremities, or in the back. This weakness may not be perceptible at the time and there will be nothing demonstrable to call attention to it. Weeks or months later a slight limp will develop, this being the first indication of any residual paralysis. All patients, therefore, who have been paralyzed in the early stages of the disease and seem to have recovered completely should be followed up carefully for at least a year. If so



FIG. 3. Lateral deviation of the spine due to paralysis three months after an acute attack, no other muscles involved.

watched, muscle weakness can be detected and deformities be prevented. For at least a year, *don't* discontinue the supervision of these cases which have had a slight paralysis from which they seem to have recovered.

*Don't* give a too discouraging prognosis. Those of us who have been treating cases of anterior poliomyelitis during the past few years have learned that much can be done in severe cases even after one, two, or more years have elapsed. Lovett is of the opinion that this is to be accounted for by

a bridging over or around of the destroyed nerve cells by other nerve channels, so forming a new course for motor impulses. Flexner has stated that this is possible. There is certainly no doubt whatever that these cases do continue to improve for a number of years after the onset of the paralysis. This being the case, *don't* give a discouraging prognosis. There are few patients indeed that cannot be enabled to walk even though completely paralyzed at the onset.

*Don't* operate for any reconstruction of muscle power for at least two years after the acute attack. The only operative treatment that is justifiable during this time is that of straightening deformities. This will not be necessary if the case is treated from the beginning, as the most important part of the treatment is the prevention of such deformities. The normal relations of the foot to the leg and the leg to the thigh must be carefully maintained throughout. The same is true of the hands, forearm, and arm. If this is the case contraction of the tendons will be prevented and any deviation from normal to abnormal positions controlled.

40 EAST FORTY-FIRST STREET.

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1. FLEXNER: *Jour. A. M. A.*, 1910, IV, p. 1105.
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**A New Mercurial Preparation in the Treatment of Syphilis.**—Maurice F. Lautman (*Medical Record*, January 13, 1917) recommends an emulsion of ten per cent. mercury benzoate with two per cent. quinine and urea hydrochloride in white petrolatum for intramuscular injection. He gives ten minims three times a week, taking care that the syringe and needle are cold to avoid clogging and also that the injection is really into the muscle and not into the subcutaneous fat. In twenty-five cases treated there was a change from a four plus Wassermann to a negative in an average of eight weeks.



FIG. 4.—Patient with infantile paralysis with lateral deviation of the spine, wearing the spinal support advised by the author.

## RESEARCH IN EPILEPSY.

*With Report of Twenty-five Cases.*

By HOWARD A. KNOX, M. D.,

Bayonne, N. J.

### PART I. BACTERIEMIA.

Through the kindness of the superintendent, Dr. David F. Weeks, I have been enabled to make an intensive study of epilepsy at the New Jersey State Village for Epileptics during the past summer and fall. This work was primarily undertaken for the purpose of developing a more effective therapy and consequently the major part of the search has been linked with the immediate etiology or exciting causes.

The opinion is almost universal that epilepsy is a symptomatic condition, a syndrome arising in many diseases; but this is not in accordance with my observations. I am willing to concede that the determining causes are extremely variable, but when once the symptom complex is present the disease progresses in a constant manner and is in many ways comparable to dementia præcox. The result is practically always deterioration, and a greater or less degree of dementia at the end. It may run its course in a few short years and end in dementia, asthenia, and death; or it may extend over the entire natural life of the victim, blotting out the finer sensibilities, intellectual ability, and judgment, and leaving him a burden on the State or relatives for many years. One conclusion must be apparent to every epileptologist—the rapidity of the deterioration varies directly with the number of seizures and mental accessions, and if these are checked or stopped, the natural course of the disease is aborted. These were some of the general premises on which the author started, and further observation leads him to believe that they are correct.

Preliminary to the laboratory investigation a critical review was made of the literature, and following this the heredity charts and case histories were given careful attention. There are nearly seven hundred patients in the New Jersey State Village for Epileptics, and the records are probably the most complete of any institution in the country; hence the conditions for original work were ideal. In my work with the United States Government, I had occasion to visit many State and private institutions during the past seven years, and none of these were comparable in point of efficient scientific and technical administration to that of the epileptic village of New Jersey. Every convulsion, episode, accident, psychotic manifestation, and symptom is carefully recorded and charted. While there I conducted the staff meetings and acted as clinical director in addition to having charge of the hospital and laboratory, and through these opportunities my chances for observation were always at the maximum. It seems in fact that all research can be conducted better when a man has constant access to clinical material and records, in addition to doing laboratory work.

A careful survey was made of the contaminating organisms in the vicinity. Cultures were made from room dust, grass, earth, wards where patients sleep, finger nails, dejecta, etc., and the organisms



most frequently found were *Bacillus mycoides*, pus organisms, and two varieties of *cladotrix*.

The experimental work which led to the selection of the proper media and the most favorable temperature would make a voluminous paper in itself; it is sufficient here to state that cultures were made from epileptics in series on various media until it was finally concluded that the best medium was one per cent. lactose, neutral blood agar in which the egg which is usually used for clearing was intimately stirred into the medium at from 50° C. to the

become two mm. wide with raised edges and a concave surface. When growing in large numbers the colonies are smaller and tend to coalesce, forming an almost solid covering for the slant. This bacillus grows in chains of two or more, usually three or five; it is very small, even smaller than Pfeiffer's bacillus. When left at room temperature cocci and involution forms appear and the latter are larger but still in chains. They stain uniformly with methylene blue stains, but occasionally metachromatic granules appear at the extremities. Pleomorphism is exceedingly common, especially in old or subcultures.

Blood serum from ten patients having grand mal seizures showed specific agglutinins in dilutions of from 1:100 to 1:1,000. The serum of normals failed to clump the streptobacillus in dilutions above 1:100. Both the microscopic and macroscopic methods were used. The serum of thirteen epileptics showed bacteriolysins for the streptobacillus and not for any of the contaminating organisms. The opsonic index of thirteen epileptics for the bacillus was lower than that of two normals tested and the leucocytes chiefly engaged in phagocytosis were more often lymphocytes than polymorphonuclear leucocytes. A suspension of the organism in normal salt solution, 250,000,000 to the c. c., sterilized and phe-



FIG. 1.

FIG. 1.—Usual appearance of colonies of *Streptobacillus epilepticus* on neutral lactose blood agar after six days growth. The bacilli from this type of growth are extremely minute.



FIG. 2.

FIG. 2.—Streak subculture from type of colony shown in Fig. 1 when one week old and after growing for seventy-two hours. The growth here is quite green and pearly. The bacilli are larger and the chains longer. Grown on plain agar.

boiling point; the boiling, of course, clouded the media. The best temperature for growth was 38.5° C. A selfregulating electrical incubator was used, checked with a thermometer at regular intervals.

Under strict aseptic precautions and with suitable controls not less than two c. c. of blood was taken from the median basilic or median cephalic veins of twenty-five epileptics during or immediately following seizures and deposited at once on the above medium in the largest test tubes available. The blood was carefully rolled over the surface and the tubes put into the incubator as soon as possible. From nine of these twenty-five cases a small streptobacillus was eventually obtained. No contaminations were seen except after opening the tubes for study, in which case the colonies of the contaminating organisms usually overran those of the bacillus. I have made many blood cultures in normal cases and have never found this streptobacillus before. It has been given the name of *Streptobacillus epilepticus* not because it is necessarily the cause of epileptic symptoms but because it has been found in epileptics. It is a fairly rapid grower, usually requiring only from eighteen to twenty-four hours for visible growth, but longer for maturity. The colonies are at first discrete, circular in outline, and orange green in color; when occurring in scanty growth they may

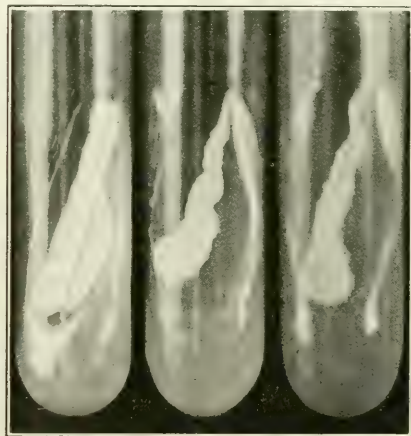


FIG. 3.—Subculture from the type of growth shown in Fig. 2, second subculture from the patient after growing 108 hours on plain agar. The organisms here are much larger and more closely resemble the ones described by Doctor Reed of Cincinnati. This pleomorphism is a constant characteristic.

nolized, gave a positive skin reaction in thirty-one out of thirty-five epileptics when injected intradermally in 0.5 c. c. doses, and produced no reaction at all on myself. This reaction was entirely local and consisted of soreness from the twelfth to the thirty-sixth hour and a sharply circumscribed pink areola from three to four inches wide from the eighteenth to the thirty-sixth hour after injection. These patients were high grades and volunteered for the experiment. No negative phase was produced and those who received more than three injections seemed to be distinctly benefited thereby from the standpoint of seizure incidence and general comfort.

From the foregoing results it seems that this organism has some specificity, and it is possible that it is identical with or a mutation form of organisms found by other investigators.

The attitude of epileptologists and others toward epilepsy in the past has undoubtedly delayed the discovery of a specific cause. So long as the disease was regarded as a symptom of other conditions men could not logically hope to attach a specific etiology to it. As a matter of fact, I believe that the etiology has been confused with the symptomatology, and whereas the causes vary very much, from trauma to congenital neuropathic susceptibility, the symptomatology is constant. When the brain is acted upon by trauma or chemical agents, or when there is defective development or loss of balance of the secretions of the endocrine glands, or when there is an absence of natural lysins, under these circumstances it reacts to stimuli that would fail to produce anything more than migraine or "nervous irritability" in a normal person. Anyone may have convulsions if the stimulus is sufficiently strong, as, for instance, in strychnine poisoning or tetanus; and it is the same with our epileptics, they vary in excitability, and when the irritant reaches their threshold then a convulsion of psychic episode is the result. Now the crux of the problem seems to centre around the nature of the exciting substance. From the fact that we have found bacilli in the blood that are constant in their morphological, cultural, tinctorial, and immunological characteristics, I believe that the irritant is or is produced by these bacilli, and that they are quite widely distributed in nature. Probably most people come in contact with them, but the average nervous system is so stable as not to react in the form of epilepsy. Analogy is of course seen in diphtheria and tuberculosis.

I hope that my emotions do not influence my judgment when I predict that the time is near at hand when we may take the young epileptic who has a fair heredity and intellect and save him from the fate that has been his for centuries.

Acknowledgments are made to Dr. M. M. MacLain, who was detailed as my laboratory assistant and who secured specimens for culture; to Dr. Dan S. Renner, first assistant physician, New Jersey State Village for Epileptics, for his kind cooperation and advice, and who, while temporarily in charge of the laboratory, discovered the pleomorphic characteristics of the streptobacillus, thus dispelling the fear of contamination which I at first entertained.

271 AVENUE C.

(To be continued.)

**Calcified Hematoma.**—Frederick C. Kidner (*Journal A. M. A.*, January 20, 1917) outlines the several theories which have been put forward to explain this condition, otherwise known as myositis ossificans. He describes a case of his own in which the evidence was fairly convincing in favor of the ossification being primarily due to a rupture of the periosteum with the escape into the hematoma of living osteoblasts which later took on their powers of bone formation and led to the ossification of the clot. He believes that this is the probable mechanism of most of these lesions.

## Abstracts and Reviews

### THE INFLUENCE OF NONSPECIFIC SUBSTANCES ON INFECTIONS.\*

BY PROFESSOR J. W. JOBLING,  
Vanderbilt University.

The lecturer said that for the treatment of infections only two general methods were available until recently. These were either the use of specific substances, such as vaccines and serums, or certain specific chemical agents like quinine, salvarsan, and emetine; or the use of means to strengthen the natural processes so that they might overcome the diseased condition. The use of specific vaccines was based upon the belief that by this means we could increase the production of immune bodies and thus aid the host in overcoming his infection. They were therefore recommended chiefly in the treatment of infectious processes in which the infecting agent was more or less sharply localized and so walled off from the blood stream that it could not well lead to the production of a sufficient supply of these substances. Since the number of specific chemical agents was small and the instances in which vaccines could be used limited, according to this theory of their actions, treatment was largely confined to the second of the methods mentioned.

In acute general infections, such as typhoid fever, the organisms were known to be present in abundance in the blood and hence they were in a position to stimulate the host to his maximum production of antibodies. According to the theory of the action of vaccines, therefore, they would not be applicable in such a condition. The observations of a number of workers in this field showed, however, that the administration of typhoid vaccine intravenously often abruptly checked the course of typhoid fever. From these observations it was obvious that, either our theory of the action of vaccines was not correct, or that certain nonspecific factors played an important role under such conditions.

Other observations soon began to throw some light on the extent and importance of the part played in infectious processes by the action of nonspecific factors. Thus it was shown that the injection of deutoalbumose, and probably of other protein split products was capable of producing a reaction analogous to the tuberculin reaction. It was also observed that animals became more resistant than normal to many infectious diseases after a course of vaccine therapy of any kind. The injection of tuberculin was found to give better results in cases of paresis, when combined with specific treatment, than were to be secured from the specific treatment alone. The intravenous injection of typhoid vaccine was found to give as good results in cases of paratyphoid fever as it did in typhoid, and colon bacillus vaccine also was as effective in typhoid fever as typhoid vaccine itself. The field of nonspecific therapy was further extended to include a number of dermatologic conditions, and arthritis of various forms, including gonorrheal arthritis. Septic war wounds and actinomycosis were also very

\*Summary of a lecture delivered before the Harvey Society at the Academy of Medicine, New York, February 3, 1917.

favorably influenced by such nonspecific injections as milk and secondary proteoses given intramuscularly, and typhoid vaccine.

The lecturer stated that he also obtained very favorable results in acute, subacute, and chronic arthritis, acute gonorrheal epididymitis, and erysipelas from the injection of relatively small doses of secondary proteoses. He began with one quarter of a mil of a one per cent. solution and increased the dose according to the severity of the reaction which followed the injection. This reaction was manifest in some by an almost immediate rise of the temperature with a slight chill, followed by a fall of the temperature to normal or to a point slightly subnormal. It was found impossible to predict the severity of the reaction for any given case, which led to the adoption of the plan of giving a small initial dose. The injection was usually repeated daily until the desired effects had been secured or until its failure had been demonstrated. No alarming symptoms were ever produced by such injections in his cases and they have not been reported by others working in the same field, except occasionally in typhoid fever. In this condition an occasional death from nasal or other form of hemorrhage was observed to follow the treatment. But the beneficial effects in this latter disease were so pronounced that they greatly outweighed the rare harmful effects. It was often observed that a single intravenous injection in typhoid fever would bring the disease to an abrupt termination with a critical fall of the fever. In other cases there was a rapid subsidence of the fever by short lysis.

Following the injection of many other substances, such as distilled water, normal saline solution, colloidal metals, dextrose, kaolin, etc., results were obtained similar to those just discussed as succeeding the administration of various nonspecific vaccines, the secondary proteoses, boiled milk, and others. The nonspecific nature of the effect produced was evident, or, rather, the nonspecific nature of the substance producing the effect was undoubted.

In the effort to explain the mechanism of action of these nonspecific substances several hypotheses have been offered. Students of immunity have generally come to the belief that the hematopoietic organs are the chief sources of antibody formation. As a corollary to this belief it was suggested that the injection of nonspecific substances stimulated these organs and gave rise to the liberation of an increased number of these antibodies. In other words, these organs responded to a nonspecific substance by the production of specific substances. A second hypothesis was based upon the fact that in immunized or partially immunized animals the injection of proteoses was followed by an increased mobilization of antibodies. A study of the results obtained from the injection of nonspecific substances in man in typhoid fever and other similar infections showed, however, that the mobilization of antibodies must play a minor role. Such mobilization would scarcely suffice to explain the immediate termination of typhoid fever by crisis.

A third hypothesis was based upon the fact that the injection of nonspecific substances was followed by a marked rise in temperature. This theory was

supported by the fact that the resistance of an animal to infection by small doses of an organism could be increased by the production of a high temperature. Associated with the rise in temperature there was known to be an increased production of antibodies. Further support of this hypothesis was found in the observation of several prompt recoveries from acute gonorrheal infection during the course of malaria with its very high temperature. It is well known, however, that the gonococcus is very susceptible to moderate temperature and further, that many bacterial diseases are themselves associated with very high temperature, such as septicemia. This hypothesis, therefore, would not seem adequate to explain the favorable response of many infections to the injection of nonspecific substances.

Following the injection of any of these substances it was observed that there was a brief period of leucopenia followed by an increase in the number of white cells above normal and then by a return to normal. This effect was not a specific response and did not give rise to the liberation of specific antibodies, as was proved by the spontaneous recovery from typhoid fever in which there is always a leucopenia. It is a fact, however, that the white cells are rich in ferments, the two chief ones being a leucoprotease and an esterase, both of which are thrown out into the blood serum in increased quantities in the presence of a hyperleucocytosis. Experiments have shown that leucoprotease may play an important role in aiding the destruction of bacterial toxins. A hypothesis for the action of nonspecific substances may be based upon this fact, since such an injection produces hyperleucocytosis and an increase in serum protease. This protease may attack and hydrolyze the circulating bacterial toxins, which would account satisfactorily for the critical fall of temperature observed in many cases of typhoid fever after the injection of some nonspecific material. This effect is known to result in some cases without bringing about a permanent recovery from the disease, which later develops and runs its course undisturbed if no further injections are given. In other words, the protease merely rids the body of the preformed toxins and does not destroy the bacteria producing the disease. The theory does not explain the recoveries from the disease often recorded. There is, however, another part of the hypothesis involving the leucocytes, namely, the additional liberation of esterase. Many bacteria are known to be protected by lipid coverings and it is conceivable that this esterase may attack these bacterial lipoids and thus lead to the destruction of the organism. In confirmation of this theory it may be cited that it has long been known that these anti-ferments are high in animals which are resistant to various infections.

Changes in the viscosity of the blood are also known to occur in animals undergoing immunization, and are also found following nonspecific injections. These alterations in viscosity are known to influence the union of antigen and antibody. Such changes are temporary, however, after the injection of nonspecific substances and do not suffice to explain the striking recoveries noted in early typhoid fever.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

EDITOR

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Address all communications to  
A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
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tered mail.

Entered at the Post Office at New York and admitted for transporta-  
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, FEBRUARY 17, 1917

### THE ARMY MEDICAL SERVICE.

Medical service in the regular army and navy of the United States offers many attractions to the young doctor who cares for travel, for change, and for adventure. It is a drawback to be subject to constant change of post, but there are many advantages to offset this. A summary of these advantages and disadvantages is presented in another column of this issue by Dr. W. H. Newcomb. The author also outlines the activities of the medical reserve corps and the qualifications required for membership in that body. It is to be hoped that a great many physicians will join the medical reserve corps so that they can fit themselves for active military duty by the instruction which is provided in that corps should occasion arise for a general call for volunteers.

Enrollment in the medical reserve corps does not make a doctor liable for duty except with his own consent, save in case of war, when he can be ordered into active service. So long as the applicant is physically fit to perform the duties which he might be called upon to perform there is no age limit imposed upon those who wish to enroll in the medical reserve corps. This corps already includes a number of the most prominent men in the medical profession, and membership in the corps is an honor as well as a duty. In case of hostilities specialists will be assigned to duty in their own particular

branches so far as that is practicable, and the older men will be ordered to duty in base hospitals as near their own homes as possible so as to lighten as much as may be the hardships of service.

An army of 500,000 men would require the services of all the medical officers which we now have in the regular army, the national guard, and in the medical reserve corps, absorbing our entire supply of trained medical officers. An army of 5,000,000 men would require the services of 35,000 medical officers, who would have to be taken from civil life not only without any training, but without any men to train them, for the first 500,000 ordered to duty would employ all the trained military medical officers now in the United States and still fall much short of the required quota. These figures do not take into consideration the needs of the navy, which are almost as great and quite as urgent as those of the army. A consideration of these statistics should make plain the necessity for a widespread and immediate enrollment in the medical reserve corps.

### THE PROTECTION OF CHILD LIFE.

Child life is beginning to be estimated at its true value in Europe. Warfare as waged under present day conditions is destroying and rendering useless the flower of the manhood in Europe to such an extent that unless the present generation of children can be raised in a healthy manner, the race must so deteriorate that the outlook will be black indeed. The hope of the race rests in the children, and this is especially true in Great Britain and France, in both of which countries the birth rate has declined of recent years in a most alarming way. Russia, perhaps, is the sole country in which the immense loss of robust manhood will not be severely felt, or rather Russia possesses such almost illimitable reserve human forces that she will quickly recuperate.

In Great Britain, before the war, attempts were being made to check the loss and waste of child life brought about by the carelessness and neglect of parents. In the industrial centres in particular child life did not appear to be regarded as of much account by the majority of parents. Industrial prosperity was generally accompanied or followed by neglect of children, and it may be said that for a considerable length of time the decline of the birth rate and the deterioration in physique and mental ability of children in the crowded centres of population have been a source of great anxiety to those who had the true welfare of the nation at heart. Through the efforts of various societies, medical and lay, by means of municipalities and public

bodies, systematic methods were put into force in the attempt to check the falling birth rate and to rear a healthy race of children. In overpopulated districts, buildings were set aside and equipped for the purpose of giving medical advice to mothers and young children and of feeding and even clothing them if necessary. Expectant mothers were given advice as to the prenatal precautions and care, and fed daily during the later period of pregnancy if they could not afford to feed themselves in the proper manner. Houses were visited by women trained in the rearing of children and advice given with respect to the kind of food to be bought, how to cook such food, the care of milk in the house, the menace of flies; in short, advice was tendered on all questions which concerned the healthful bringing up of children.

According to Robert J. Parr writing in *The Child*, November, 1916, cases of neglect of children in Great Britain are not so numerous as formerly, nor are there many cases of cruelty. To some extent this may be attributed to the fact that the working classes are earning more money than previously and also because the facilities for procuring intoxicants have been greatly curtailed. Some, and, it is to be hoped, the greater part of, the improvement may be ascribed to the elevation of spirit produced by the war, and by the recognition on all sides that in the conservation of healthy child life lies the salvation of the race. All the people are conscious that when the war is over, competition will be keener and more strenuous than before, and that only those nations will survive and prosper which consist of a virile and intelligent stock.

In this country children are not always cared for as well as they should be cared for. In some States the laws regarding the age at which they may work and their hours of work are too lax by far, and in most industrial cities and districts child life is neglected. The war has taught Europe the lesson that it is essential that children be reared in a healthful way, and it might be well if this country applied the lesson of Europe and paid more attention to the proper bringing up of her children.

#### TROPICAL AND EXOTIC DISEASES IN THE WAR ZONES.

It has been pointed out more than once in our editorial pages that a remarkable feature of the war from the medical standpoint has been the freedom from epidemics of disease on a wide scale. Indeed, with the exception of the outbreak of typhus fever in Serbia, there has been no occurrence of disease attended with great loss of life or of much invalidism. This is the first big war in

which injuries have caused greater mortality and disability than diseases.

This result is a triumph for sanitary science and is a convincing proof that in the realms of public health marked progress has been made. While devastating epidemics have not added to the horrors of war, it has happened in the ordinary course of events that certain maladies have been more in evidence than in times of peace. For instance, tropical and exotic diseases have been more prevalent in the war areas, owing, doubtless, to the fact that men unused to tropical climates have been compelled to live in such climates under unfavorable conditions. It is in the nature of things that soldiers from temperate climes, many of them young, when subjected to the hardships of campaigning in especially torrid countries, should contract the diseases common to the tropics much more readily than the natives, who may be immune, or the white man who by protracted residence has become more or less acclimated.

This has been the case, and in the Gallipoli campaign and in the Near East generally and in Mesopotamia, dysentery and other protozoal infections of the intestines have been the cause of a considerable amount of mortality and morbidity among the troops. Malaria, the most prevalent and in some respects the most serious of tropical diseases, has made its presence felt in the hot climate war zones, particularly among the French and British troops in the valley of the Verdard, north of Salonica. In connection herewith it is interesting to note that doubt has been thrown on the value of quinine as a prophylactic against malaria. In the *Lancet*, December 30, 1916, it is stated that so well known an authority on tropical diseases as Surgeon General Sir David Bruce has recently expressed some skepticism in regard to this treatment.

Cholera, perhaps the tropical disease most to be dreaded, has been showing signs of activity in Asia, and it is well within the possibilities that, if conditions are favorable, it may sweep with a fresh virulence across Asia into Europe. In India up to July, during the year just passed, about 184,000 deaths were recorded from cholera. During the summer and autumn of 1916 cholera was widely epidemic in Turkey, and at the beginning of the year the disease appeared among the Serbian soldiers and refugees who had been disembarked at Corfu. Also early in the year, cholera was present in Austria-Hungary, Croatia, and Bosnia. In Asia and especially in India that scourge of the East, plague, has been continuing its ravages. In fact, plague is present to a greater or less extent all over Asia. In Europe during 1916 there were several

isolated cases of plague, while in many parts of South America the disease existed on a comparatively large scale.

The excellently conducted scientific sanitary campaign against disease by the armies now fighting in all parts of Europe has been up to the present marvelously successful in warding off widespread epidemics.

#### FURTHER LIGHT ON THE MECHANISM OF HUNGER.

Dogmatism drops out of fashion as knowledge broadens. So likewise does the attempt to establish and hold on to definite and distinct entities of form or function. Investigation reveals with increasing fullness the underlying basic connection that exists in physiology as in all other fields of observation, and the interrelational dependence of any one group of phenomena upon many others.

The obscurity surrounding the phenomena of hunger invites such clarifying investigation. Its object is to isolate the definite anatomical and functional identity of the hunger phenomena, separating them from correlated factors, and at the same time explaining more fully their relation to them.

One of the resultant pictures which stands out distinctly from the recently published experimental work of Carlson, of the University of Chicago, deals with the phenomena and mechanism of hunger. He has definitely carried forward the work already accomplished in this field and presents certain conclusions which bear the stamp of careful experimental verification, but with no trace of arbitrary acceptance of these as final and unmodifiable through further study.

It was possible in distinguishing the various factors concerned in the hunger complex to differentiate between those plainly dependent upon psychic influences, the part played by the vagus and splanchnic nerves, and the actual occurrence of the gastric contractions of hunger independently of these. The first named elements of nervous control are largely concerned with appetite and the cortically perceived sensations of hunger. Psychic factors, as much recent work has demonstrated, also play an important role indirectly in the phenomena of hunger. The functions of the vagi and splanchnic nerves are confined to regulatory action, but are in no way essential to the occurrence or maintenance of the rhythmic hunger contractions of the empty stomach. The nutrient condition of the blood and consequently of the cortical centers is likewise eliminated from the final results since the role of this too is secondary, and the neuromuscular contractions continue in the stomach independently in starvation periods as in normal periods of hunger.

These neuromuscular contractions of the stomach wall seem to depend solely upon the control of a special reflex mechanism belonging to the gastric wall. It may be noted that these contractions are readily distinguished from the movements involved in digestion, since the latter belong to the pyloric region of the stomach, while the hunger contractions take place in the cardiac and fundus portions.

The study of the accessory phenomena arising from stimulation of the sensory nerves of the mouth or of the esophagus corroborates this view of the origin and control of the mechanism of hunger, and helps to explain the appearance of the contractions as soon as the stomach is empty of food. Stimulation of these nerves initiates the secretion of gastric juice in the stomach, but this, contrary to current opinion, does not increase the hunger contractions. It serves rather to inhibit them. The same effect is induced experimentally by introducing acid or other chemical substances directly into the stomach cavity. This, then, is probably also the effect of the normal introduction of food into the hungry stomach. At once through stimulation of the nerve endings in the gastric mucosa an inhibition of the gastric contractions is set up and serves the useful purpose of holding these in check while the digestive process takes place. It would seem that the gastric contractions are thus selfinitiated and maintained by a reflex mechanism of their own, for Carlson compares them to the spring of a watch which has just so long a time to run out, however long or numerous periods of inactivity may interrupt its consecutive running. In the same manner this neuromuscular mechanism seems to be set for continued action and is only inhibited more or less completely during the presence of food or other substances which probably act through the stimulation of the nerves of the gastric mucosa. As soon as the inhibiting substance is removed, or as soon as the stomach is empty, the reflex mechanism resumes its rhythmical activity.

The subject of hunger sensations is not left out of account. These sensations are felt in consciousness when the contractions have reached a certain degree of intensity and are correlated with the rhythm of contraction. Starvation produced in these experiments an increase in the hunger contractions and gastric tonus. Instead of the usual quiescent period between the more vigorous contractions there were more or less feeble contractions present. These accounted for the continuous hunger sensation which accompanied this enforced starvation. The weakening or absence of sensation during prolonged starvation may be explained by the depression of the central nervous system consequent upon depleted nutrition. Distraction of attention by



stronger temporary interests or absence of attention during sleep effaces for the time the sensation of hunger, but experiment proves the undiminished presence of the contractions independently of this.

Such a contribution to our objective knowledge of the phenomena of hunger is of the utmost importance. It paves the way to that further research which is its aim and purpose. It adds to the definite equipment of the physician who must understand these mechanisms and their control in health and disease. It enlarges the basis of understanding of the complex interrelation of psychic and physiological factors and their marked influence, one upon the other.

#### ENDOCRINOLOGY, A NEW MAGAZINE.

Specialization is the order of the day. Analytical research extends its inquiring spirit into the most obscure parts of the human body. In the field of endocrinophic variations of structure and function this probing has been particularly energetic and fruitful. We now have before us a medium in which this abundant and valuable material is to be collected. *Endocrinology* is a new quarterly publication, serving as a bulletin of the Association for the Study of the Internal Secretions, the first number of which has just made its appearance, and a goodly appearance at that. Editorial comments are contributed by L. F. Barker, Charles E. de M. Sajous, T. A. Williams, and the editor, Henry R. Harrower. The original articles are by E. Sergeant, of Paris, on the White Adrenal Line, by T. Brailsford Robertson on the Influence of the Anterior Lobe of the Pituitary, and by W. H. Nadler on the Endocrinous Glands and Osteomalacia. In addition there are some two hundred abstracts and reviews.

*Endocrinology* is a well dressed and attractive volume and we wish it all success.

#### MOBILIZATION OF OUR INDUSTRIES.

Seven committees covering practically every phase of the industrial activities in the United States have been appointed by the Council of National Defense with a view to organizing all these industries for national defense in case of war. Dr. Franklin H. Martin, of Chicago, has been appointed chairman of the Committee on Medicines and General Sanitation; Samuel Gompers, chairman of the Committee on Labor; Daniel Willard, chairman of Committee on Transportation and Communication; Hollis Godfrey, chairman of the Committee on Science, Research, Engineering, and Education; Bernard Haruch, chairman of the Committee on Raw Materials, Minerals, and Metals; Howard Coffin, chairman of the Committee on Munitions, Manufacturing, Standardization, and Industrial Relations, and Julius Rosenwald, chairman of the Committee on Supplies, Food, Clothing, etc. This step is a most commendable one, but it should have been undertaken years ago at the outbreak of the European War rather than now when we ourselves are on the verge of hostilities. Just a

year ago the manufacturers of pharmaceuticals urged the government to take the step which they are now taking as regards the mobilization of medical supplies. It is to be hoped that no further time will be lost in unnecessary preliminaries. In so far as the subcommittee on medicine and sanitation is concerned, we feel that the government is to be congratulated upon the choice of the chairman. Doctor Martin has amply demonstrated his unusual capacity as an organizer, and his ability will have ample outlet in the work which he is undertaking in the service of his country.

### News Items

**Long Island College Hospital.**—The two year college course given by Columbia University at the Polhemus Memorial Building of the Long Island College Hospital, Brooklyn, was opened on February 5th with an enrollment of twenty students.

**Birth Control Literature.**—Exemption from the law which prohibits the circulation of certain types of literature would be secured under the terms of a bill recently introduced into the Legislature of the State of New York by Assemblyman Greenberg, of New York city.

**Samaritan Hospital Medical Society, Philadelphia.**—Dr. Frank C. Hammond has been elected president of this society to serve for the year 1917, and other officers were elected as follows: Vice-president, Dr. H. Brooker Mills; secretary and treasurer, Dr. Daniel J. Donnelly.

**Harvey Society Lectures.**—Professor John R. Murlin, of Cornell University, will deliver the next lecture in the course, Saturday evening, February 24th, at the New York Academy of Medicine. His subject will be The Metabolism of Mother and Offspring Before and After Parturition.

**A Joint Meeting of Physicians and Pharmacists.**—The New York Branch of the American Pharmaceutical Association and the New York Academy will hold a joint meeting at the academy, Tuesday evening, February 20th, at 8:30 o'clock. Papers will be read and a general discussion will follow.

**To Legalize Christian Science Treatment.**—A bill has been introduced into the Legislature of the State of New York by Senator Koenig providing that the practice of medicine act shall not apply to the practices of any religious principles, provided that no fee is charged for religious treatment. The bill also provides that all practitioners of osteopathy must have been graduated from some incorporated school or college of osteopathy.

**Harlem Eye and Ear Hospital.**—With the completion of the new building for the Harlem Eye, Ear, and Throat Infirmary, at 127th Street and Lexington Avenue, the name of the institution was changed to the Harlem Eye and Ear Hospital. The hospital now has twenty-five beds, and presents an excellent opportunity for clinical experience. Any one who is interested should apply at once to Dr. C. B. Meding, executive surgeon, 111 West 121st Street, or at the hospital.

**Physicians' Motor Club of Philadelphia.**—Dr. S. Leon Jans was elected president at the recent annual meeting of the club, and other officers were elected as follows: Dr. John J. Robrecht, first vice-president; Dr. C. A. E. Codman, second vice-president; Dr. Charles R. Haig, Jr., third vice-president; Dr. Howard A. Sutton, secretary; Dr. Lewis H. Adler, treasurer; additional directors for four years, Dr. Francis J. Kelly and Dr. Ernest W. Kelsy.

**The Brooklyn Medical Association.**—At a stated meeting of this association, on February 14th, Major W. H. Steers, of the New York National Guard, read a paper on the Medical Department of the Mobile Army, with Some Remarks Relating to the Mexican Border Service. The paper was discussed by Major John J. Lyons, of the National Guard, who served on the border, and by Colonel Charles Richard, U. S. A., Chief Surgeon of the Department of the East. A report of the meeting will appear in a later issue of the *Journal*.

**Personal.**—Lieutenant Colonel Frederick M. Hartsock, Medical Corps, United States Army, has been directed by the War Department to proceed to the Long Island College, Hospital, Brooklyn, and give a course of lectures on military medicine and camp sanitation.

**Medical Preparedness.**—Dr. Franklin H. Martin, of Chicago, a member of the Advisory Commission of the National Council of Defence, has been appointed chairman of the committee on medicine, including general sanitation. This is one of seven committees. The chairman of these committees will call a series of conferences with representatives of the trades, businesses, or professions in their respective fields and ask them to organize so as to deal with the council through a committee of not more than three, to whom all problems relating to that particular field of industry shall be submitted by the Council.

**The Philadelphia Pneumonia Commission.**—This commission, which was appointed by the director of Public Health and Charities about a year ago, is still actively continuing its study of the causes and conditions responsible for gripe and pneumonia. On January 27th the commission issued a detailed statement of what it had accomplished during the past year. The commission is composed of the following members: Dr. David Riesman, chairman; Dr. Hobart Amory Hare, Dr. Judson Daland, Dr. W. E. Robertson, Dr. Randle C. Rosenberger, Dr. Paul A. Lewis, and Dr. John A. Kolmer.

**New York Physicians' Association.**—A regular meeting of the association will be held at the Chemists' Club, on Friday evening, February 23d, at 8:30 o'clock, under the presidency of Dr. Irving D. Steinhardt. Dr. I. Victor Haberman will give a demonstration of Some Forms of Mental Therapy. Dr. Abr. L. Wolbarst will read a paper on Surgical Aspects of Sterility in the Male, which will be discussed by Dr. Edward Reynolds, of Boston (by invitation), Dr. Eugene Fuller, Dr. Arnold Sturmordf, Dr. Frederic W. Bancroft, Dr. William Cary, of Brooklyn (by invitation), Dr. Leo Buerger, Dr. Samuel W. Bandler, Dr. Benjamin S. Barringer, and Dr. Victor Cox Pedersen.

**Modern Aspects of Tuberculosis.**—At a stated meeting of the New York Academy of Medicine, held Thursday evening, February 15th, the evening was devoted to a consideration of some modern aspects of tuberculosis. Dr. Allen K. Krause, of Johns Hopkins University, read, by invitation, a paper on the Nature of Resistance to Tuberculous Infection and Disease. Dr. William H. Park, of New York, read a paper on Channels of Infection and Methods of Transmission of Tuberculosis, and Dr. James Alexander Miller, of New York, read a paper on the Differential Diagnosis of Various Chronic Pulmonary Conditions. A general discussion followed which was opened by Dr. Hans Zinsser and Dr. Alfred Meyer.

**Ohio County, W. Va., Medical Society.**—A regular meeting of this society was held in Wheeling, Friday evening, February 9th. Dr. Charles H. Chetwood, of New York, read a paper on the Approach and Entrance to the Kidney for the Removal of Calculi, which was illustrated by motion pictures. Dr. John A. Bodine, of New York, read a paper on the Technic of Painless Radical Cure of Hernia Under Local Anesthesia, which was illustrated by motion pictures. Dr. John A. Wyeth, of New York, was prevented, by illness, from attending the meeting and presenting his paper on Motion Photographs as Adjuncts to the Teaching of Surgery. At the close of the meeting a banquet was held, Governor H. D. Hatfield presiding as toastmaster. Two hundred members and guests were present.

**To Standardize Medical Supplies.**—The committee on standardization of medical and surgical supplies and equipment of the Council of National Defense has been organized with Dr. Franklin H. Martin, chairman; Surgeon T. W. Richards, U. S. N., secretary, and an executive committee composed of Dr. Richard H. Hart, of Philadelphia; Lieutenant Colonel Carl R. Darnell, U. S. A.; Dr. Joseph A. Murphy, U. S. N., and Assistant Surgeon General W. C. Rucker, U. S. Public Health Service. A conference is to be called of manufacturers of drugs, surgical instruments, hospital supplies, etc., for the purpose of preparing a standard list of articles essential for the medical departments of the army, navy, public health service, and the Red Cross Society. This standardization will greatly facilitate the placing and filling of orders in case of emergency.

**Yorkville Medical Society.**—A stated meeting of this society will be held at the Physicians' Club, 165 East 81st Street, New York, Monday, February 19th, under the presidency of Dr. Adolph Schoen. The programme arranged for this meeting includes the following papers: Diabetes, by Dr. I. W. Held; Relation of Internal Secretions to Senility, by Dr. Heinrich Stern; Spiral Surgery, by Dr. Harold Neuhof; Abdominal Surgery, by Dr. Arthur H. Stern. Among those who will take part in the discussion are Dr. M. H. Gross, Dr. J. Wiener, Dr. L. Casamajor, and Dr. H. Climenko.

**The Medical Association of the Greater City of New York.**—A stated meeting of this association will be held in Du Bois Hall, New York Academy of Medicine, Monday evening, February 19th, at 8:30 o'clock. The topic selected for discussion at this meeting is the Conservation of Advanced Life. Papers will be read as follows: The Trend of Statistics Concerning Old Age and Their Significance, by Dr. Louis I. Dublin; The Effect of Fatigue upon the Aged with High Blood Pressure, by Dr. Arthur Lyman Fisk; Urine in Middle and Advanced Life, by Dr. J. Bergen Ogden; Sustaining the Heart in the Aged, by Dr. Harlow Brooks; Diet of the Aged, by Dr. I. L. Nascher. The subject will be discussed by Dr. Eugene Lyman Fisk, Dr. Louis Faugères Bishop, Dr. Frederic E. Sondern, and Dr. W. H. Guilfoxy.

**Health Department Needs Oculists.**—The Municipal Civil Service Commission announces an examination for oculists, for which applications will be received until February 23d. From the resulting list, appointments will be made in the Department of Health. The duties of an oculist in city service consists of the supervision or responsibility for the diagnosis and treatment of diseases, of physical abnormalities and other pathological conditions of the eyes, in hospitals, clinics, or other institutions. Twenty hours of service each week is generally required by the department. The examination is open to both men and women citizens of the United States and residents of New York State between the ages of twenty-one and forty-five years. Candidates must present a license to practice medicine in the State of New York at the time of filing applications and must present evidence of at least one year's internship or three years' service in the out-patient department of a hospital giving special training in the diseases of the eyes.

The position carries a salary of from \$1,020 to \$1,380 per annum and presents unusual opportunities for research and invaluable experience. During the year 1916 230,074 children were examined in the public schools by the Medical Inspectors, of which number 23,422 were found to have defective vision. Of the latter 15,139 were treated by the oculists of the department.

**The McIntire Prize.**—Last year Dr. Charles McIntire, of Easton, Pa., resigned the secretaryship of the American Academy of Medicine after twenty-five years' service. In commemoration the academy decided to raise a fund, the income of which is to be expended in accordance with Doctor McIntire's suggestions. As a consequence the academy now announces two prize offers, the prizes to be awarded at the annual meetings for 1918 and 1921, respectively. The subject for 1918 is The Principles Governing the Physician's Compensation in the Various Forms of Social Insurance. The members of the committee to decide the relative value of the essays awarding this prize are, Dr. John L. Heffron, dean of the College of Medicine, Syracuse University; Dr. Reuben Peterson, professor of obstetrics and diseases of women, University of Michigan; and Dr. John Staige Davis, professor of pediatrics and practice of medicine, University of Virginia.

The subject for 1921 is What Effect Has Child Labor on the Growth of the Body? The members of the committee to award this prize are, Dr. Thomas S. Arbuthnot, dean of the Medical School of the University of Pittsburgh; Dr. Winfield Scott Hall, professor of physiology, Northwestern University, and Dr. James C. Wilson, emeritus professor, practice of medicine and of clinical medicine, Jefferson Medical College.

For full particulars regarding the conditions of the contest write to the secretary of the American Academy of Medicine, Dr. Thomas Wray Grayson, 1101 Westinghouse Building, Pittsburgh, Pa.



## Special Article

### MEDICAL SERVICE IN THE ARMY AND THE NAVY.

By W. H. NEWCOMB, M. D.,

New York,

Lecturer, Post-Graduate Medical School and Hospital.

Preparedness is the topic of the day, and it is fitting, nay, essential, that the army and navy shall be provided with an adequate and efficient medical service. In this brief article an attempt will be made to describe the work and life of the army and naval medical officer, and to draw some points of comparison between the opportunities afforded by an army and civil medical career.

It goes without saying that there is no space to enter into exhaustive details. It may at once be stated that the army and naval medical departments are undermanned, although the members thereof are efficient and skillful. Consequently the object of those responsible for the introduction of reforms is undoubtedly to place the army and naval medical departments on a satisfactory basis, from the standpoint both of numbers and of efficiency. The navy in particular is lacking in medical officers. The condition of the British army medical service at the time war broke out was somewhat analogous to that of the American army at the present time. The medical corps was barely sufficient for the standing army of Great Britain, but was wholly inadequate when that army was immensely enlarged. Therefore, civil practitioners were called upon, as they have been called upon to a much less extent in this country. However, it is not the intention here to criticize the organization of either the army or navy medical service, even if such criticism were justified, but rather to endeavor to show the kind of career offered to an ambitious and energetic young medical graduate or indeed to an older man drawn from civil life. Further remarks will be confined to a consideration of army medical conditions as far as the duties and opportunities of the medical officer are concerned.

The medical department of the Army now consists of the Medical Corps, the Medical Reserve Corps, the Dental Corps, the Hospital Corps, and the Nurse Corps. The Medical Corps consists of a surgeon general with the rank of brigadier general, twenty-two colonels, thirty-six lieutenant colonels, 160 majors, and 300 captains or first lieutenants, with the rank, pay, and allowances of officers of corresponding grades in the cavalry branch of the service.

#### GENERAL REQUIREMENTS FOR APPLICATION.

An applicant for appointment in the Medical Corps of the Army must be between twenty-two

and thirty-two years of age, a citizen of the United States, and a graduate in medicine of a reputable medical school. He will be required to submit his diploma to the board at the time of his preliminary examination.

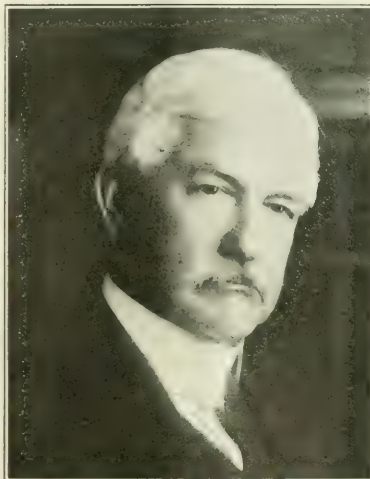
Hospital training and practical experience in the practice of medicine, surgery, and obstetrics are essential, and an applicant will be expected to present evidence that he has had at least one year's hospital experience as an interne after graduation. Marriage makes no difference with respect to his eligibility. The examination consists of two parts, a preliminary examination and a final, or qualifying, examination.

#### PRELIMINARY EXAMINATION.

The preliminary examination consists of a physical examination, which is thorough, and a written examination on professional subjects. Candidates who are not sixty-four inches in height are rejected. Each candidate is also required to certify that he suffers from no physical infirmity or disability which may interfere with the efficient discharge of his duty. Errors of refraction, if vision is not below 20/100 in either eye, are not causes for rejection, provided that they are not accompanied by ocular disease and are entirely corrected by appropriate glasses. The standards of height and weight are fairly high, but, of course, as to these points the members of the examining board are vested with a considerable amount of discretion.

The written examination embraces the following subjects: anatomy, physiology and histology, chemistry and physics, materia medica and therapeutics; surgery, practice of medicine, obstetrics, and gynecology.

The preliminary examinations are conducted under instructions from the Surgeon General by local boards of one or more medical officers and by a central board of not less than three, which is known as the Army Medical Board. Applicants who attain a general average of not less than eighty per cent. in the preliminary examinations and are deemed otherwise acceptable will be appointed to the Medical Reserve Corps with the rank of first lieutenant and ordered to the Army Medical School, Washington, D. C., for instruction as candidates for admission to the Medical Corps of the Army. A selected applicant will be required before entering the school to make an agreement to accept a commission in the Medical Corps if found qualified in the final examination and serve at least five years thereafter, unless sooner discharged. An applicant failing in one preliminary examination may be allowed another after the expiration of one year, but not a third.



BRIGADIER GENERAL WILLIAM C. GORGAS,  
Surgeon General, United States Army.



The course of instruction at the Army Medical School is of eight months' duration, commencing on the first of March next succeeding the preliminary examination. It is both theoretical and practical and comprises the following subjects: duties of medical officers, medical department administration and customs of the service; military hygiene; clinical microscopy and bacteriology; military surgery; military and tropical medicine; sanitary chemistry; hospital corps drill and field work; operative surgery; ophthalmology and optometry; x ray work; equitation. Great attention is paid to the conduct of the applicant while studying at the Army Medical School and if he fails to qualify for graduation conformably to the regulations of the school he will be relieved from active duty and his discharge from the service recommended at the close of the term of the school. A second course in the school will in no case be allowed.

#### FINAL EXAMINATION.

The final, or qualifying, examination of graduate candidates for appointment in the Medical Corps will be held by the Army Medical Board immediately after the close of the term of the Army Medical School. It will cover the following points: the candidate's physical qualifications, his clinical skill and acumen, and his general aptitude for the service.

#### APPOINTMENTS.

Graduate candidates who are found physically qualified and who obtain a general average of eighty per cent. in their preliminary professional examination, their course at the Army Medical School, their clinical examination and their general aptitude will be eligible for appointment in the Medical Corps. Eligible candidates who fail to receive appointments because of lack of vacancies at the time of qualification may receive them in the order of their standing as vacancies occur before the graduation of the next class. Thereafter they shall not be eligible for appointment in the Medical Corps, but will be preferred for selection for volunteer commissions and for active duty in the Medical Reserve Corps.

#### SALARIES AND PERQUISITES.

The pay is generous. A first lieutenant receives \$2,000 a year. At the end of five years he is promoted to captain and receives \$2,400 a year. In two years more he gets \$2,640 yearly, so that after ten years' service the pay will be \$2,880 annually. The pay attached to the rank of major is \$3,000 a year, which with ten per cent. added for each five years' service, becomes \$3,600 after ten years' service, \$3,900 after fifteen years' service, and \$4,000 after twenty years. The monthly pay of lieutenant colonel, colonel and brigadier general is \$375, \$416.66 and \$500 respectively. Officers in addition to their pay proper are furnished with generous

quarters according to rank, either in kind, or where no suitable government building is available, by commutation. The commutation for quarters, light, and fuel for a first lieutenant amounts to approximately \$500 a year, and increases with each elevation in rank. This allowance, when added to the commutation for forage where the officer is on duty that does not require a horse, makes a considerable addition to the income. Officers when traveling on duty are provided with transportation, while all officers of the Medical Corps are provided with forage, stalling, and transportation for horses owned and actually kept by them, not exceeding two for all ranks below that of brigadier. Horses and horse equipments are furnished by the Government for all mounted officers below the rank of major. Groceries and other articles may be purchased from the commissary at about wholesale cost price. Instruments and appliances are liberally supplied for the use of medical officers in the performance of their duties. Well selected professional libraries are part of the equipment of each hospital and at each military post there is a laboratory for those interested in such work. Medical officers are encouraged to carry on any special line of professional study which appeals to them and which tends to fit them better for their work as medical officers.

Before discussing the possibilities and potentialities of army medical service as a career it will be quite apposite to say a few words with regard to other possibilities.

#### PREVENTIVE MEDICINE IN THE MEDICAL SERVICE.

The most important part of the duties which fall within the province of the military surgeon is undoubtedly that of hygiene. It is no exaggeration to say that since 1870 surgery and preventive medicine have become new sciences, but it is especially in the development of preventive medicine that the greatest strides have been made. There are said to have been 21,000 cases of enteric fever in the American volunteer camps during the Cuban war and all wars have had similar accompaniments. The ancient saw that "prevention is better than cure" cannot be more aptly applied than in the case of the magnificent work done by military preventive medicine. Up to the time that military hygiene had attained its present high degree of excellence, disease exacted by far a greater toll of human life than shot and shell. It is accordingly upon the preventive side of their work that the medical officers of an army mainly rely. The principles of good sanitation put into practice with zeal tempered by discretion will effect more in the saving of life and prevention of disease than any other means. Thus it behooves the army surgeon in the making to learn very thoroughly all that there



REAR ADMIRAL WILLIAM C. BRAISTED,  
Surgeon General, United States Navy.

is to be learned concerning this subject. It is satisfactory to know that every opportunity is afforded for the young man entering the Medical Department of the Army at the present time to obtain the best instruction in this most essential branch of his duty.

#### SURGERY IN THE MEDICAL SERVICE.

In modern warfare every mode of treatment must be provided for, from dentistry to massage. War surgery is no longer a more or less straightforward affair dealing with the dressing of wounds.

#### THE DENTAL CORPS.

The Dental Corps of an army is of the utmost consequence and the truth of this statement has been most clearly demonstrated by the manner in which plastic surgery has developed during the progress of the war in Europe. The most appalling injuries to the jaw have been repaired in an almost marvelous way. A great deal of the best work done in this direction in Paris has been due to the skill of American dentists. But in time of peace the dentist is necessary. The care of the teeth and oral hygiene generally are now an indispensable means of preserving the health. It is gratifying to learn then that the Dental Corps has been reorganized and the probationary contract system abolished. Dental surgeons are now commissioned as first lieutenants and after eight years' service promoted to captains. It is further provided that after twenty-four years' service a number of dental surgeons not exceeding fifteen in number may be promoted to the rank of major.

#### THE VETERINARY CORPS.

Another notable advance in connection with the reorganization of the Army Medical Service is that a Veterinary Corps has been established and has become an integral part of the Medical Department. Appointments are made to the Veterinary Corps as assistant veterinarians with the rank of second lieutenants. After five years' service a second lieutenant is promoted to first lieutenant. The law provides that after fifteen years of service he attains the rank of captain and after twenty years the rank of major.

#### THE ARMY NURSE CORPS.

The reports of the work of the Army Nurse Corps have been highly gratifying and an increase of the corps has been authorized for the coming year. Owing to the mobilization of the regular troops and militia many hospitals have been established on the border, and the appointment of 276 nurses was authorized to meet the emergency. Further, nurses have been and are being appointed in the regular corps as rapidly as possible to meet the need, and their numbers have been augmented by the assignment to active duty of a large number from the reserve list, the enrolled nurses of the American Red Cross constituting this reserve.

The Army Medical Service undoubtedly offers many inducements to the energetic, virile young man. There may not be the big prizes from the monetary point of view that are open to the practitioner in civil life, but, on the other hand, in the army there is an assured income, and on the whole it may be stated that the young army surgeon earns

more and has a more congenial life than the struggling young civilian practitioner.

#### THE MEDICAL RESERVE CORPS.

The Medical Reserve Corps numbers 2,400 according to the latest roster, of whom 146 were on active duty and 2,254 on the inactive list.

An officer of the Medical Reserve Corps residing in the vicinity of each military post has been designated as a locum tenens, and the policy has been adopted of calling such an officer into actual service for duty at his post when all the regular medical officers thereat are called upon to accompany troops into the field. It will be observed that the principle underlying the establishment of the Medical Reserve Corps was to supply, as far as was possible, the manifest shortage of medical officers of the army. The Medical Reserve Corps is then a component part of the army. One year after the passage of the act (1916) for making further and more effectual provision for the national defense and for other purposes, the Medical Reserve Corps as now constituted by law shall cease to exist. Members thereof may be commissioned in the Medical Department of the Officers' Reserve Corps, subject to the provisions of this act, or may be honorably discharged from the service.

The Secretary of War may in time of peace order first lieutenants of the medical section of the Officers' Reserve Corps, with their consent, to active duty in the service of the United States in such numbers as the public interests may require and the funds appropriated may permit, and may relieve them from such duty when their services are no longer necessary. While on such duty they shall receive the pay and allowances, including pay for periods of sickness and leaves of absence, of officers of corresponding rank and length of active service in the Regular Army.

As a matter of fact, they are practically officers of the Army under the same regulations, and entitled to the same privileges as all the other officers. Furthermore, the commissions of all officers of the Officers' Reserve Corps remain in force for a period of five years unless sooner terminated at the discretion of the President. Such officers may be re-commissioned, either in the same or higher grades, for successive periods of five years, subject to such examinations and qualifications as the President may prescribe and to the age limits prescribed in accordance with military regulations; provided, that officers of the Officers' Reserve Corps shall have rank therein in the various sections of said Reserve Corps according to grades and to length of service in their grades. Thus when this act goes into force the Medical Reserve Corps will be on the same footing to all intents and purposes as the Officers' Reserve Corps, of which its members form a part and which again is a part of the Army. The formation of the corps on these lines is an intelligent effort to organize the civil practitioners who are willing and anxious to serve their country, so that they may be able to serve her in the most efficient manner. It is plainly evident that without a certain amount of training the general practitioner drawn from civil life is not equal to the fulfillment of his medical

military duties as the man who has been accustomed to army work. It is not enough to be a good surgeon or an excellent all round medical man in order to succeed in the army. A great deal of military medical work is peculiar to the army and cannot be learned in a day or in civil life. Therefore to be prepared for all eventualities it is essential that the patriotic civil medical man who has declared his willingness to assist his native land should be efficient in his military medical duties. At the present time the means for gaining the necessary instruction are adequate for those who are desirous of improving their military medical knowledge. That is to say, so few members of the Medical Reserve Corps as now constituted have taken advantage of these facilities that the opportunities provided are ample. Instruction is given in army medical schools and in camps of instruction of which little advantage has been taken. Probably the officers of the Medical Reserve Corps have either felt that they could not spare the time or have failed to appreciate the need for expert medical military knowledge and have not realized their own responsibility.

It is true, however, that recently much more interest has been displayed in this direction, but nevertheless it was felt that a correspondence course would interfere least with their professional work. Accordingly, upon the recommendation of the Surgeon General, the Adjutant General of the Army directed on September 7, 1915, that a correspondence course for officers of the Medical Reserve Corps should be conducted by the director of the Field Service and Correspondence School for Medical Officers, Fort Leavenworth, Kansas. The correspondence course was commenced on October 1, 1915, and it is intended that it shall cover four annual sessions, beginning each year on October 1 and ending on April 30, with an optional post graduate course of one session during the same part of a fifth year. A new course will be begun each year to furnish an opportunity for new officers or non-participants, to take up the progressive course from the beginning. According to Major M. A. W. Shockley, M. C., U. S. A., director of the Field Service and Correspondence School for Medical Officers, Fort Leavenworth, Kansas, writing in *The Military Surgeon*, January, 1916, arrangements will be made whenever possible for a written examination on the subjects covered by the year's work. The subjects of this correspondence course include most of those which come within the sphere of a medical army officer's duties and "certificates of proficiency" will be given to the officers who have acquitted themselves well in the course and examination, that is, so far as the subjects they have completed are concerned.

Correspondence papers will be forwarded to officers at such times as will permit them to have at least three weeks for consideration and reply to the questions or problems before the date of their return. As Major Shockley remarks at the conclusion of his paper, "the manner in which the work has been taken up is most satisfactory, and it is believed that the officers participating will get an insight into their duties, as medical officers, that will be of material advantage to them, and to the United

States, when ordered into active duty." From a perusal of this somewhat cursory account of the Army Medical Reserve Corps, it may be gathered that there are a goodly number of patriotic practitioners of medicine and surgery in the United States who belong to it and that schemes now afoot for their organization and instruction will doubtless secure the required efficiency.

In *The Military Surgeon* for February, 1917, is printed the Wellcome First Prize Essay, 1916, by Captain Mahlon Ashford, Medical Corps, U. S. A., dealing with the organization, training, and utilization of the medical officers of the Army and Navy Medical Reserve Corps. In this remarkably able disquisition of a question which he assuredly has at his fingers' ends he points out in his opinion the ideal mode of dealing with the matter.

For instance, he lays particular stress on the point that the proper place to commence the instruction of medical men for military emergencies is the medical school. Here, he goes on to explain, we can reach every potential doctor, not an occasional one as under the existing system. The students are chiefly young men whose sympathies may be enlisted more readily and whose ideals are untarnished by rubbing too much with the world. They are in a receptive state and are rapacious for knowledge and therefore easily acquire it.

The military service in the Regular Army or in the Navy offers an attractive career for the young doctor who likes change and adventure.

The older medical practitioner—there is no age limit—who wishes to serve his country in case of war and the younger man who does not care to devote his whole life to the Army should join the Medical Reserve Corps, making application to the Surgeon General of the Army or of the Navy at Washington. Membership in this corps will enable the civilian to fit himself for active duty, and he cannot be called to active duty without his consent, except in case of war, so that in case of war he will be able to render the greatest measure of service to his country. The Medical Reserve Corps now includes many of the most distinguished surgeons and practitioners in the United States.

157 WEST 105TH STREET.

**Treatment of La Grippe.**—J. H. Wysong (*Texas Medical Journal*, January, 1917) outlines the treatment as follows: Rest in bed until the fever is abated. A mild saline cathartic or castor oil should be administered at the outset. For headache and muscular pain some coal tar product or the salicylates may be given. If pain is unusually severe, codeine may be used. In case the cough is dry and persistent small doses of apomorphine should be used. After expectoration is established stimulating, nonnauseating expectorants are indicated. The diet should consist of nourishing food such as milk, cereals, the white of eggs, etc. During convalescence a good tonic is the elixir of iron, quinine, and strychnine. Of the complications the most important is the so called "influenzal heart." Drugs are of little help in this condition. As emergency circulatory stimulants ammonia, ether, and camphor may be used.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE TREATMENT OF LEAD POISONING.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 275.)

The absorption of lead compounds from mucous surfaces with which they have been brought in contact is, as a rule, a slow though steady process. The insoluble forms, such as the carbonate, commonly inhaled, are believed to undergo solution on the bronchial mucous membrane before absorption. Lead being, in general, excreted in organic combination, formation of a soluble compound of the metal with protein has been held to occur as a preliminary process in its absorption into the tissues. In the stomach, the hydrochloric acid of the gastric juice gradually dissolves any lead carbonate ingested, but in the alkaline medium of the intestine, Auerbach and Pick have found lead present again as a mixture of the basic and neutral lead carbonates. Further change to a soluble protein combination may be presumed to be here also necessary in the process of absorption. According to Lewin, lead compounds can be absorbed through the skin upon protracted exposure to them—a statement which seems clearly substantiated by the cases of manifest lead intoxication reported in 1915 by G. Wilse Robinson from the use of a lead containing preparation—"flake white"—as a cosmetic.

Once absorbed into the system, lead effects an entrance, still presumably in protein combination, in various organs or tissues. That there is little tendency for it to circulate in considerable amounts in the blood seems to have been definitely proved by the experiments of Dauwe, published in 1907, in which lead compounds were found upon intravenous injection to leave the bloodstream rapidly, over one half the amount introduced disappearing from the blood within two minutes. The metal appears to collect especially in the kidneys, bones, liver, and glandular tissues in general, the smallest amounts being, on the other hand, found in the muscle tissues, voluntary as well as involuntary, and in the brain. The precise condition in which the metal is held in these tissues has recently been studied by Riva and by Erlenmeyer. According to the experiments of the former, published in 1913, the metal, in animals to which injections of lead acetate have been administered, is to be found in the tissues only in combination with globulins, the nucleoproteins apparently having less or no affinity for it. From this and other facts he deduces that the lead in the tissues is present in the form of a soluble lead albuminate and remains in this form indefinitely, without becoming precipitated in an insoluble compound. The combination of lead with globulin, however, found in the livers of dogs in a state of chronic lead poisoning is, according to Riva, a firm one. This is in accord with the fact pointed out by Erlenmeyer, likewise in 1913, that all the

lead eliminated from the body passes out in organic combination, except that portion which has not yet been absorbed from the alimentary tract and is extruded undissolved in the feces. According to some, indeed, the greater part of the lead eliminated, whether absorbed or unabsorbed, passes out by the intestinal route, the metal being excreted into the small and large bowels with the intestinal and biliary secretions. Unquestionably, however, an appreciable amount also passes out in the urine, in which it can at times be detected by relatively insensitive chemical tests, and in the saliva, sweat, and mammary secretion.

The modes of absorption and elimination of lead, taken in conjunction with its behavior in the system in the interval between these two processes, are of distinct importance from the standpoint of treatment in lead poisoning. Erlenmeyer's conclusion that chronic lead poisoning depends on the presence of a more or less concentrated solution of lead in the circulatory and general cell fluids, rather than upon an accumulated mass of the metal in the body, facilitates an appreciation, not only that the advent of symptoms of poisoning may closely depend upon a slight excess of absorption over output of the metal at any given time, but that the balance between absorption and output is a relatively mobile factor, which can be easily influenced by remedial measures. Laying stress on the extent of lead circulation or "lead stream" as a factor governing appearance of lead symptoms, Erlenmeyer presents in illustration the case of a woman who, while remaining in perfect health for a long time when working eight and a half hours a day with cyanide of mercury and lead, manifested severe chronic lead poisoning when the working day was augmented to ten and a half hours, recovered in the following three months, then remained well under observation for one year upon resumption of the shorter working day. This example is held to show the necessity of a definite concentration of the "lead stream" if toxic effects are to occur. Any less concentration fails to excite symptoms. Permanent retention of lead in the tissues, or retention in a constantly increasing amount, does not, according to Erlenmeyer, occur. The possibility thus apparently exists, in the treatment of lead poisoning, of relieving the symptoms by merely causing the "lead stream" concentration to fall below the threshold of toxic effects. This fall in concentration need not necessarily be a pronounced one, and various simple means are available to secure it. In addition to the fundamentally important withdrawal of the body from exposure to lead compounds by cessation of work when acute symptoms appear, measures may with great advantage be taken, both to interrupt absorption of lead compounds recently brought in contact with the mucous membranes, and to accelerate the outgo of previously absorbed lead through the intestinal tract, kidneys, and skin. In

accomplishing the last mentioned of these objects, some care is required lest in the process of increasing elimination the concentration of lead in certain tissues, such as the bowels, be so raised as to augment the local toxic action and with it the patient's discomfort.

(To be continued.)

**The Treatment of Eczema.**—Oscar L. Levin (*Medical Review of Reviews*, February, 1917) gives the following outline, which is divided into general and local treatment. General treatment consists of the detection and correction of abnormal activity or condition of the internal organs. Most of the patients suffer as a result of a faulty diet, so a careful history should be taken, and a thorough physical examination made in every case. In addition to a thorough uranalysis the stools should be tested for evidence of carbohydrate fermentation and protein putrefaction, and, when the disease seems to follow the ingestion of certain food, cutaneous anaphylactic tests should be made. Great stress is laid upon the importance of the appearance of the buccal mucous membrane as an indication of carbohydrate fermentation and protein putrefaction. Evidence of the former is given by a narrow halo of white about the vermilion of the lips, a red, smooth, shiny, uncoated tongue with indented lateral aspects, and a reddened, glistening appearance of the throat. Protein putrefaction produces a swollen condition of the mucous membranes, and the tongue appears swollen and coated with a thick, white fur. To remove either condition the diet is modified by eliminating or reducing the quantity of the particular food at fault. The best diet consists of plain, wholesome food with the proper proportions of carbohydrates, proteins, fats, and salts. Large quantities of water should be taken at regular intervals. Proper modifications are made in the diet of those suffering from various diseases. Moderate exercise is advised, but overexertion is prohibited. Constipation should be relieved by daily abdominal massage, exercise, and a diet rich in vegetables, fruits, salts, and foods which give mass to the fecal content, or stimulate peristalsis. Habits should be regulated. When constipation is associated with hyperacidity a teaspoonful of the following mixture taken three times a day half an hour after meals will neutralize the excessive acid in the stomach and produce excellent bowel evacuations.

R Ext. rhamni purshianæ fl. ....20.0;  
Mist. rhei et sodæ, .....q. s. ad. 90.0.

Autointoxication is relieved by three grains of calomel in divided doses, followed in four hours by eight ounces of effervescent citrate of magnesia, or daily high colon irrigations. For deficient kidney elimination, or a strongly acid urine of high specific gravity, the following is recommended:

R Kalii citratis, .....50.0;  
Aque, .....q. s. ad. 230.0.

Two teaspoonfuls in a glass of water three times daily after meals.

Anemic and nervous patients should be given iron, quinine, and strychnine, and other drugs are prescribed when there are definite indications for their

use. Arsenic should never be given in eczema. All local disorders of the skin, like varicose veins, should be relieved, and measures should be taken to prevent the action of direct external causes, which may be mechanical, physical, or chemical.

Local treatment varies in the different stages, each of which has been given a distinctive name. In the first stage, acute erythematous eczema, the favorite application is a wet dressing of Burrow's solution, well diluted:

R Plumbi acetatis, .....3.5;  
Aluminis, .....9.0;  
Aque, .....ad. 1000.0.

The dressing should be kept moist with this solution and should not be covered with rubber tissue. Occasionally instead of this a ten per cent. solution of resorcin in alcohol mixed with nine parts of water, or a mixture of equal parts of witch hazel and water, may be used in the same way. A lotion that is used in conjunction with wet dressings is:

R Magnesii carbonatis, .....āā 16.0;  
Zinci oxidi, .....} .....ad. 240.0.  
Aque, .....ad. 240.0.

When the itching is severe phenol one to three per cent. may be added; when the burning is pronounced menthol one to four per cent. In persistent erythematous eczema five per cent. ichthylol is added. Either the lotion with menthol or phenol just described may be used in acute papular eczema, or the following:

R Pulv. calamin prep., .....6.0;  
Zinci oxidi, .....16.0;  
Glycerini, .....24.0;  
Phenolis, .....2.4;  
Aque calcis, .....32.0;  
Aque, .....q. s. ad. 240.0.

When papular eczema tends to become chronic liquor carbonis detergens, four grams to the ounce, should be added. The lotion should be applied frequently, sometimes every two hours. The glycerin should be omitted in cold weather, and when it is too drying distilled water should take the place of the lime water. Bland oil should be used to cleanse the lesions once a day.

In acute vesicular eczema, characterized by redness, swelling, vesicles, oozing, moisture, and crusts, pastes, lotions, and wet dressings soothe and protect the skin, remove the exudation, and promote evaporation. Ointments are not used. A paste contains approximately equal parts of powder and fat. The most commonly used is a modification of Lassar's:

R Zinci oxidi, .....āā 6.0;  
Amyli, .....} .....q. s. ad. 30.0  
Adeps benzoinatis, .....q. s. ad. 30.0

Three per cent. of salicylic acid often is added. Crusts should be removed by covering the lesions with vaseline, or a bland oil, or by frequent changes of compresses wet with equal parts of witch hazel and hot water. When there is a severe inflammation with a thick covering of crusts and scales a boric starch poultice should be used for two or three days. This is made by mixing one teaspoonful of boric acid with four tablespoonfuls of cold water starch in cold water until the mixture assumes the consistency of cream; then a pint of boiling water is added and the mixing continued until a transparent jelly has formed. This jelly is spread half



an inch thick on muslin and applied, a fresh one three times a day.

The most efficient remedy for chronic papular eczema is tar. Generally a five per cent. oil of cade paste is employed; if not irritating its strength may be raised to ten per cent. Oil of birch, one to five per cent., and liquor carbonis detergens, five to twenty-five per cent., may be used. The latter is very efficient in either lotion or paste. Glycerin should be added in lichenified eczema to prevent too drying an effect. Salicylic acid, one to five per cent., is useful and aids in diminishing the thickening of the skin. For lesions of excessive hyperkeratosis and marked acanthosis a one to five per cent. ointment of chrysarobin will produce a rapid resolution. (This drug must never be used on the face.—Ed.) Menthol and phenol often are of service, and an exposure of a patch to a fractional dose of x rays relieves the itching and hastens a cure.

The treatment of chronic squamous eczema is the removal of the scales by the daily application of a five to twenty per cent. salicylic acid plaster, followed by the use of the ointments mentioned for the treatment of the chronic papular form. The x ray also is of service.

In chronic vesicular eczema the remedies for the acute form should be used if there is evidence of active inflammation, and later, when the acute symptoms have subsided, ointments containing tar and salicylic acid are employed. Equal parts of compound picric ointment and zinc oxide ointment form one that is frequently of service for sluggish patches. A one to ten per cent. solution of silver nitrate painted daily on lesions with denuded superficial layers of the skin and prolonged profuse exudation, with Lassar's paste without salicylic acid applied twice a day in conjunction, is useful. In obstinate crusted vesicular eczema the parts may be bathed with hot water and soap for half an hour morning and night, and, after drying thoroughly, the following ointment applied:

R Resorcini. }	.....	ãã 5.0;
Ichthyoli. }	.....	
Acidí salicylici, . . . . .	.....	2.0;
Vasellini, . . . . .	.....	ad. 100.0.

When desquamation occurs the bathing is used only at night for fifteen minute periods and the following ointment applied:

R Olei rusci. . . . .	.....	2.0-4.0;
Zinci oxidí } . . . . .	.....	ãã ad. 100.0.
Vasellini, . . . . .	.....	

Water is not harmful, unless through prolonged soaking and maceration of the skin, or the presence of chemicals and irritants, and is often of distinct value. Various forms of baths are useful in various conditions.

**Antiarthritics for Gout.**—C. Bachem (*Medizinische Klinik*, December 3, 1916) reviews the subject of antiarthritics in gout and points out that they are employed on account of one or more of the following actions: to increase the excretion of uric action; to convert it into a more soluble substance; to combine with the preformed glycol; to increase the activity of the liver; and for the symptomatic relief of pain. The carbonates, or more particularly the bicarbonates of the alkaline earths,

may be given in doses of 0.5 to 1.0 gram several times a day, fulfilling the first condition named above. Although lithium has been stated to have an almost specific action in dissolving uric acid, it is probable that this does not occur in the body. The salts of many vegetable acids such as the alkaline citrates, tartrates, or acetates may be given in place of the carbonates or bicarbonates, since they are converted into these in the body. Several organic bases have been recommended to render uric acid soluble, but of these piperazin is the only one available and can be given in a dose of two grams daily. Atophan and its derivatives occupy a peculiar position due to their pronounced capacity to increase the elimination of uric acid, and have, in addition, some analgesic effects. Three to five doses daily of from 0.5 to 1.0 gram may be given along with some sodium bicarbonate to prevent gastric irritation. If it fails of beneficial effect after two or three days it should be stopped. Certain formaldehyde combinations such as hexamethylenamin and its congeners also produce soluble compounds with uric acid and can be given several times a day in doses of 0.5 to 1.0 gram. A considerable number of compounds of quinic acid have been introduced on account of their capacity of combining with glycol. Preparations of salicylic acid act by stimulating the function of the liver. Preparations of colchicum, including colchicine, are valuable during the acute stages to reduce pain, swelling, and redness, but should be given with care on account of their toxicity. The dose of colchicine should not exceed 0.5 to 1.0 mgm. from one to three times daily and should always be administered by mouth. Various external applications may be employed for the relief of pain, such as ichthyol, tincture of capsicum, camphorated oil, etc. Recently radium and radium emanation have been advocated in the treatment of gout, probably acting by promoting uric acid elimination.

**X Ray Treatment in Leucemia.**—Henry K. Pancoast (*American Journal of Röntgenology*, January, 1917) maintains that Röntgen therapy is the most successful and the safest agent known in the treatment of leucemia. The Röntgen applications should be directed mainly and primarily against the primary focus of the disease—the bone marrow. Extensive experiments with intensive doses at close range were carried out with the advent of the Coolidge tube, but a return to the older method of exposing larger definite areas of bone from a distance followed, because it was found that the treatment with intensive doses required more time and was not as efficacious. The treatment of the spleen consists in dividing it into zones of eight to ten cm. in diameter and crossfiring is practised from the front, side, and back. Only one area is treated at a time. Arsenic in small doses is advocated in those cases in which progression ceases and the condition remains stationary without further improvement; also in those cases in which there is a low red count or the red blood cells and hemoglobin are diminishing. A comparison of the results of x ray treatment with those obtained under treatment with benzol shows the former to be the safer method.



**Tartar Emetic in Malaria.**—Leonard Rogers (*British Medical Journal*, January 6, 1917) contributes a preliminary note on his recent experiences with the intravenous injection of tartar emetic for the removal of malignant tertian crescents from the blood. In one case one dose of 0.04 gram, two of 0.08 gram, and one of 0.12 gram of tartar emetic seemed to remove the crescents entirely from the blood of a patient suffering from a very marked infection. In a second case two doses of 0.08 gram each were effective. In both cases the administration of the drug before all of the crescents had been removed always gave rise to a sharp febrile reaction, probably due to the destruction of the parasites with the liberation of their toxins. Tartar emetic was also tried in cases of benign tertian malaria, but the results indicated that it was less effective than quinine against the intracorporal forms of the parasite. Against the extracorporal forms, however, it seemed far more effective than quinine, and since it is the latter forms which give rise to infection of mosquitoes and maintain the disease in man, their destruction is a great gain. The drug was given in the form of a two per cent. solution, and no ill effects were noted, the doses used being less than those which have been given in cases of kala azar with impunity. The destruction of the crescents in the tertian form of malaria make it possible that the use of tartar emetic will go far toward reducing the frequency of black water fever.

**Obstetrical Advances.**—John Osborn Polak (*Boston Medical and Surgical Journal*, January 18, 1917) states that the present status of 'anesthesia in labor is as follows: During the first stage we have two drugs, morphine and chloral, which definitely aid dilation, relieve muscular spasm, and diminish the shock of the first stage. Moderate doses of morphine have an analgesic effect during the first stage and have no influence on the child. It is more generally used than chloral because the latter cannot be given hypodermically and is likely to be rejected by the stomach. With the proper administration of morphine and scopolamine a loss of memory of pain is produced without interference with the force of the involuntary muscular contractions of the uterus. It is safe in the first stage to relieve pain with morphine and scopolamine or chloral, when the uterine contractions are regular or excessive and the relations between head and pelvis are known. In the second stage morphine and scopolamine have a decidedly injurious effect, as they prolong the second stage and subject the child to a longer period of pounding and uterine compression, which interferes with the fetoplacental circulation. He considers morphine and scopolamine the anesthetics of choice in the first stage of labor, and gasoxygen, or etheroxygen for the second stage. Each has its place—neither can do the work of the other with safety. Pituitary extract, under one of the many trade names, may be used in inertia of the uterus to hasten delivery when the cervix is fully or nearly dilated, the head in the pelvis at or just above the ischial spines or on the pelvic floor, and the outlet diameters ample. In accidental hemorrhage when the head is engaged—after rupture of the membranes—small doses may

contract the uterus enough to check the hemorrhage. In the third stage, after delivery of the placenta, its effect is more lasting. Rightly used it is of value in Cæsarian section. Its ill effects are the result of its spasmodic tetanic action on the uterus and of its indiscriminate use. These are rupture of the uterus, extensive lacerations of the cervix and pelvic floor, and death of the fetus. We can never know when it will produce tetanic spasm of the uterus, so chloroform should always be at hand to relax the spasm, or the fetus may be asphyxiated in the second stage. No ill effects will be produced if it is used only in small doses in the second stage where there is no disproportion, or in the third stage when the placenta has been delivered.

**The Keeping Qualities of Serums.**—A. T. MacConkey (*British Medical Journal*, January 6, 1917) reviews some of the observations made by others and confirms them with a series of his own. He also extends the list of therapeutic serums upon which such observations have been made. Like others, he finds that diphtheria antitoxin is decidedly influenced by the method of storage, including the temperature, as well as by the duration of storage. A group of commercial diphtheria antitoxins was examined and showed an average rate of deterioration amounting to about ten per cent. annually. The deterioration of the samples varied quite widely from the average. Although the potency of this serum was reduced by the time of storage, its therapeutic value was not impaired, for correspondingly larger doses could be given. About the same rate of deterioration was observed for tetanus antitoxin, while antiplague serum showed little change in activity in two years. Antidysentery serum also seemed to lose nothing during a period of a year and a half. Antiscorpion serum showed stability similar to that recorded for antiplague serum.

**Lues and the Baby.**—L. R. DeBuis (*Southern Medical Journal*, January, 1917) advises treatment to be instituted at once, combining salvarsan or neosalvarsan with mercury and the iodides, as soon as it is ascertained that a woman known to be or to have been syphilitic has become pregnant. When the baby is born it is determined as soon as possible whether or not he is luetic by clinical and laboratory evidences. If the baby is free from signs he is closely watched and subsequent examinations are made. If the baby shows positive signs both the child and the mother are given salvarsan or neosalvarsan, preferably into the veins, the mother is given mixed treatment and the baby mercurial rubs. His methods of applying the rubs is to bathe the baby with soap and water, thoroughly rinse the skin, particularly over the abdomen, dry it, rub in the ointment over the abdomen, and put on a flannel binder. This procedure is used daily, making the application in the same place and using the same binder. At the end of a week the dose is increased and the binder changed. In this way the daily dose of mercury is increased until the point of tolerance is reached. He says that no skin irritation is produced. When rubs cannot be given calomel or mercury with chalk may be substituted by mouth. Occasional Wassermann tests are made to determine when the patient becomes apparently cured.

**Death after Salvarsan.**—Maneck D. Wadia (*British Medical Journal*, January 6, 1917) records a case of death following the administration of a single dose of 0.5 gram of salvarsan to a man in the early second stage of syphilis and apparently free from all other abnormalities and disease. The administration of the dose was followed by considerable vomiting and diarrhea with feeble, rapid pulse. The patient seemed to recover from these symptoms for a few days and then manifested diarrhea, jaundice, enlarged tender liver, and marked progressive weakness. Death ensued from collapse eleven days after the injection. Three similar cases have been reported in the literature, in one of which necropsy showed marked intestinal ulceration and acute fatty degeneration of the liver.

**Treatment of Syphilis with Salvarsan and Its Substitutes.**—Benjamin A. Thomas (*Pennsylvania Medical Journal*, January, 1917) concludes that the ultimate proof of cure does not rest upon continuously negative Wassermann reactions, but rather upon complete freedom of symptoms for a generation or more. The sheet anchor in the treatment of syphilis is not mercury, but salvarsan or one of its substitutes. Syphilis in the chancre stage may be cured by a single injection of these drugs. Secondary syphilis seems to do just as well with mercury, provided sufficient salvarsan is given to produce a negative Wassermann. The results in tertiary syphilis are not so brilliant. The best substitute for salvarsan is arsenobenzol. The French preparation of the same name, and the Canadian diarsenol, are too prone to cause toxic phenomena. Soamin and sodium cacodylate should not be used because of their inefficiency.

**Optochin in Pneumonia.**—A. Stühmer (*Medizinische Klinik*, December 3, 1916) states that he administered optochin orally and, on the theoretical grounds of more rapid and complete absorption, restricted himself to the use of the hydrochloride, which is the most soluble of the salts. The oral dose which has been generally recommended is 0.25 gram repeated at uniform intervals throughout the twenty-four hours for six doses daily. This has proved to be rather too large a dose for safety and should be reduced to 0.2 gram given as before. During the administration of even this smaller dose the patient should be watched carefully for the appearance of tinnitus or impairment in hearing and the administration of optochin discontinued at once if either of these early toxic symptoms is observed. The most striking effect observed from the use of optochin in pneumonia was that upon the temperature which typically began to fall by lysis on the second day of treatment, usually reaching normal by the fifth or sixth day. Since the drug had no effect upon the pathological process in the lungs this power of reducing the fever was attributed to either an antipyretic action of the drug, or possibly to a specific property of the drug to reduce the effects of the pneumococcus toxins in their capacities of producing fever and the general symptoms of the disease. The drug also exerted a marked beneficial effect in alleviating such general symptoms as malaise, dyspnea, and mild delirium. As a result of his observations he believed that further optochin

administration is without value if there is no permanent fall in temperature amounting to at least one or two degrees C. during the second day of administration. In a number of cases the drug failed entirely to have any influence upon the course of the disease, these being precisely the cases in which a thoroughly helpful drug was most to be desired—namely, those which from the very beginning were of doubtful outcome. He found that the relation between the favorably influenced cases and those in which optochin failed was as three to two. He offered three possible explanations for the frequent failures: 1. The existence of optochinfast strains of pneumococci. 2. The failure of the drug to reach the pneumococci in sufficient quantity and the consequent development of an optochinfast strain. 3. The entire failure of the drug to reach the pneumococci in the lungs. He saw one instance of transitory total amaurosis following a total of 2.25 grams in forty-eight hours. He also observed the development of relapses and extension of consolidation, of pneumococcal empyema, and of wandering pneumonia in patients under the influence of optochin. He concludes that the drug is of some value for its antipyretic and symptomatic effects in pneumonia, but that it scarcely can be regarded as capable of improving the prognosis to life.

**Prophylaxis and Treatment of Pemphigus Neonatorum.**—F. H. Falls (*American Journal of Obstetrics*, December, 1916) states that within the last year there have occurred eight or nine epidemics of this condition in the maternity departments of Chicago hospitals. The disease is a staphylococcal vesicular dermatitis occurring in the newborn, as a rule, but capable of being transmitted to older children and adults. Though usually benign, the disease may be fatal, generally through a septicemia initiated by invasion of the umbilical vessels. Early diagnosis and isolation are of the utmost importance. Intimate contact seems to be unnecessary for transmission, which is believed to occur through medical attendants, nurses, bathing water, towels, and other fomites. Midwives who have cases appearing in their practice should be prohibited from practicing until the cases have cleared up and their complete outfit sterilized. Persons suffering from impetigo or other pustule forming affections must be excluded from contact with the newborn. Nurses should wear rubber gloves when dressing the lesions. In an epidemic prompt isolation of all cases with special equipment and attendants, and subsequent sterilization of rooms and equipment, are alone effective. Active treatment consists in rupturing new lesions with a sterile needle, applying a two per cent. ammoniated mercury ointment, and using individual dressings to prevent extension to other parts of the body by contact. In adults a three to five per cent. ointment is to be used. A one in 2,000 mercury bichloride bath is also recommended. No striking results from vaccines in the severe cases have been reported, but the writer suggests their prophylactic use in exposed subjects during epidemics. Not more than ten or fifteen million bacteria should be injected; three to four drops of the suspension should equal the desired dose. Hygienic measures should also be applied to facilitate resistance to the infection.



**Mercurial Medication and Spinal Drainage.**—L. B. Pillsbury (*Journal A. M. A.*, January 27, 1917) states that he sought to try the combination of spinal drainage with mercurial inunctions in the treatment of various forms of cerebrospinal syphilis and chose ten cases of paresis, taboparesis, or cerebrospinal syphilis. All were given daily inunctions of four grams of mercurial ointment for six days weekly and lumbar puncture was done every two weeks with the removal of twenty to thirty-five mils of fluid. This treatment was kept up for periods of time varying from ten weeks to four months, but the results were not found to be better than might be expected from other lines of treatment. The purpose of the spinal drainage was to increase the passage of the mercury into the spinal fluid.

**The Effects of Artificial Pneumothorax upon the Blood of Tuberculous Patients.**—M. Gutstein (*Zeitschrift für Tuberculose*, November, 1916) says that in complete, uncomplicated pneumothorax of patients with pulmonary tuberculosis there is a quick and marked increase of the erythrocytes together with a slower one of the hemoglobin. The number of leucocytes is diminished by the complete collapse of the lung, and a hyperlymphocytosis and eosinophilia are demonstrable. In complete but complicated pneumothorax with unfavorable course these blood changes are only partially and transiently present, or the opposite may be demonstrable, a decrease of hemoglobin, hyperleucocytosis, and lymphopenia. The appearance of the typical blood change in artificial pneumothorax is a good prognostic sign, while their absence must make the prognosis of the pulmonary disease less favorable.

**Heliotherapy in Skin Lesions.**—Arthur Jordan (*Northwest Medicine*, January, 1917) believes that heliotherapy has not received the consideration which is due it. It has long been practised abroad with very promising results in a variety of conditions, but since its effects are largely limited to the superficial layers of the skin, owing to the relatively slight penetration of the ultraviolet rays, its most satisfactory field of application is in certain types of skin disease. Two good lamps have been devised, the Kromayer and the Alpine, the former having the advantage of producing rays with much less heat than the latter. No fixed times of exposures or distances of the tube from the skin surface can be stated, but each patient must be tested to determine his reaction. This test should consist in an exposure of from one half to two minutes, followed by the observation of the reaction on the following day. After the individual resistance has been determined by the reaction exposures are then begun and the dose is progressively increased in duration at each sitting. All skin areas not to be treated should be protected from the rays by a covering of tinfoil, black cloth, adhesive plaster, or some other suitable material. The frequency of repetition of the exposures should be determined by the duration and severity of the reaction produced and a second exposure should not be given until the reaction of the preceding has disappeared. The effects of the light are bactericidal upon certain pyogenic organisms, antipruritic, decongestive, and

stimulant to the regeneration of the tissues as well as decidedly analgesic. The following skin diseases and lesions have proved quite susceptible to the beneficial influence of heliotherapy: acne vulgaris, acne rosacea, furunculosis, simple pruritus, eczema, psoriasis, alopecia areata, nonspecific ulcers, erysipelas, coccogenic syphilis, pigmented naevi, etc. It is not to be understood that all of these conditions can be cured by the exclusive use of heliotherapy, but it has proved a valuable addition to the usual therapy.

**Manganese Dioxidhydrozol.**—L. Sarason (*Medizinische Klinik*, November 26, 1916) recommends highly the application of dilute solutions of manganese dioxidhydrozol for the control of persistent itching, especially in cases of chilblains. Through its rapid liberation of oxygen it exerts decided anesthetic action. Its utility is not limited to cases of simple chilblains but can well be extended to include those in which blisters have developed. One of the difficulties associated with the use of this preparation—namely, the marked tendency to undergo decomposition—has been overcome by the addition of alkaline salts of sulpholigneous acid, which render the solution stable for keeping.

**Hypochlorous Acid in Surgery.**—Charles H. Gilmour (*Canadian Journal of Medicine and Surgery*, February, 1917) states that he has used hypochlorous acid and is of the opinion that it is the most powerful and efficient antiseptic discovered so far. He has used two preparations, the one prepared by Professor Lorrain Smith, of Edinburgh, and the other prepared by Professor Cohen, of the University of Leeds. The Edinburgh preparation is also known under the name of eusol and is made up as follows: To a litre of water 12.5 grams of bleaching powder (chloride of lime) are added and then shaken vigorously. Then 12.5 grams of boric acid powder are added and it is again thoroughly shaken. It is allowed to stand over night and filtered, and is then ready for use. The solution contains hypochlorous acid 0.54 per cent., calcium bichlorate 1.28 per cent., calcium chloride 0.17 per cent. It should be kept well corked in dark colored bottles and is effective for one month. The other preparation, also known as chloramine, is made up as follows: 140 grams (dry) of sodium carbonate, or 400 grams of the crystallized salt, are dissolved in ten litres of tap water and 200 grams of chloride of lime are added. The mixture is well shaken and after half an hour the clear liquid is siphoned off from the precipitate of calcium carbonate and filtered through a cotton plug. Boric acid, forty grams, is added to the clear filtrate and the resulting solution is ready for use. It contains 0.5 to 0.6 per cent. hypochlorous acid and should not be kept longer than a week. The author prefers the Edinburgh preparation. It has been administered intravenously in some cases. It is to be recommended because it is easily prepared at a very small cost, is nontoxic, keeps the wounds bathed in a profuse flow of lymph which contains antibodies, is practically painless, dissolves necrotic tissue, causes wounds to lose their fetid odor, has hemostatic properties, and has been proven to be the most powerful antiseptic.



# Miscellany from Home and Foreign Journals

**Early Diagnosis of Tabes Dorsalis.**—Walter F. Schaller (*Journal A. M. A.*, January 20, 1917) bases his conclusions upon the study of 150 cases of tabes and an investigation of the literature. He finds one of the earliest pathologic changes affecting the nervous system to be a syphilitic leptomeningitis of the cord on its posterior aspect. This lesion bears a direct etiologic relation to the degeneration of the posterior columns. Its characteristic manifestations are found in a multiple symmetrical radiculitis with pain and paresthesias; impairment of superficial and deep sensibility; loss of the Achilles reflex; increased cell count and globulin content of the spinal fluid, and a positive spinal Wassermann reaction. Further very early signs of tabes are to be found in anisocoria, pupils of irregular contour, and in diminished hearing. Cardiovascular disease, especially involving the aorta, and general glandular enlargement are very constant early concomitant signs. Upon the discovery of any small group of these symptoms one should suspect an early tabes or that the patient is, at least, a potential tabetic. All of these evidences may occur before the appearance of any of the signs usually considered necessary for a diagnosis of tabes.

**Diagnosis and Treatment of Tuberculosis in Children.**—Josef Hollos (*Zeitschrift für Tuberkulose*, November, 1916) asserts that the disease begins in the peribronchial glands, whence it extends slowly. It may remain for years localized in one or more glands, but frequently it appears in the lungs in little foci which grow slowly. Often it enters the circulation, and in not a few cases a traumatism suffices to reduce local resistance so that tuberculosis appears in the bones, joints, or meninges. More than a half of all children are infected before the fourteenth year without the disease making itself manifest as such, and the question arises: How are these latent foci in the lymph glands of the thorax or elsewhere clinically demonstrable? Hollos believes that in adults latent tuberculosis expresses itself in various ways, chiefly through anemia, neurasthenia, neurosis, rheumatism, and in general in the form of diseases of uncertain etiology. In children it gives rise to such clinical symptoms as disturbances of development and functional disturbances in the nervous, circulatory, and metabolic systems. Latent tuberculosis is to be suspected when a hitherto normally developed child begins to be backward in increase of weight, or to lose flesh, while the healthy color becomes pale, the tension of the skin yields, the muscles become thin, the lanugo, especially on the forearm and between the shoulder blades, becomes feeble, and the bones, particularly of the vertebrae and of the limbs, soften. Often the child remains backward in growth until about the eleventh to the thirteenth year, when he begins to grow rapidly, probably in consequence of the effect of the intoxication upon the blood glands, such as the thyroid, the hypophysis, and the genital organs. In a smaller number of cases the child grows too fast,

becomes altogether too large, and it is only about the age of puberty that one becomes aware that he has tuberculosis. The first sign of the disease is a functional disturbance of the digestive organs. The hitherto well nourished child becomes fastidious in his appetite, he refuses certain foods, he may loathe them enough to make him vomit, he is capricious in his choice of food. Usually he is constipated, but may have attacks of diarrhea without apparent cause. Alcoholism of the parents renders the child less susceptible to treatment. A great many factors, like congenital peculiarities, external influences, the repetition and strength of infections, take part in determining when the disease shall pass from the latent stage into manifest tuberculosis and the rapidity with which the disease extends; it also affects how far it may be brought to a standstill during childhood, or how long the latent stage may persist during puberty or even later.

It is beyond doubt that a complete cure of tuberculosis can be attained in childhood. To do this three things must be done: prevent repeated infections, increase the power of resistance, and introduce a regular specific treatment. The first two are secured through hygienic measures, for the last he recommends treatment with immune bodies as superior to anything heretofore suggested. His claims in regard to this remedy are strong, and he states that through its antitoxic action he has been enabled to rescue children whom he considered to be hopeless cases, "standing on the brink of the grave." He knows of no contraindication, but finds it not as efficient when there is a family history of alcoholism. It may be administered either by injection or by inunction.

**Subjective Disturbances after Cranial Operations and the Oculocardiac Reflex.**—Paul Sainton (*Bulletin de l'Académie de médecine*, December 26, 1916) notes that most patients in whom the trephine has been used experience, even long after the wound has healed, nervous disturbances such as headache, dizziness, dazzling, excessive emotionalism, increased susceptibility to fatigue, and vasomotor reactions. Whatever the opinion held in regard to whether these disturbances are functional or organic in origin, the fact remains that such patients, while apparently able to resume normal life when still in the hospital, are seized anew with dizziness and headache if brought back to the firing line or even upon resumption of target practice. Rapid visual or auditory impressions cause extreme discomfort, and no less than twenty-four out of twenty-seven such subjects were found strongly averse to witnessing moving pictures, most of them being obliged to leave the room in ten minutes owing to the dazzling, dizziness, and headache induced. As an objective and therefore more reliable test of the nervous excitability of these patients the oculocardiac reflex—already fruitfully employed in exophthalmic goitre—was applied in these cases. Whereas in the normal subject compression of the eyeballs causes a reduction in pulse rate not exceeding eight beats to the minute, among fifty cases

trephined at least three months before and complaining of the symptoms referred to alone, the reflex was normal in but ten. In twenty-one of the remaining forty, the reduction of pulse rate upon ocular compression exceeded eight, varying from twenty to forty a minute. In one the reflex was so violent as almost to arrest the heart. In one other the reflex was inverted, the rate being accelerated by twelve beats a minute, showing an excessive sympathetic tonus, while in eleven cases the reflex was abolished, no change of rate occurring. Neither the site of cranial operation nor the extent and depth of the lesions bore any relationship to the appearance of a modification of the reflex. There did, however, appear to be a relation between the intensity of the subjective disturbances and the variations of the reflex. In most trephined subjects there is evidently produced a rupture of the functional equilibrium normally existing between the opposing pneumogastric and sympathetic systems, the oculocardiac reflex showing an hyperexcitability of one or the other system comparable to that described in exophthalmic goitre. The reflex thus assumes importance among the procedures available for certain determination of the extent of subjective disturbances in trephined cases.

**Etiology of Pellagra.**—Louis Sambon (*Presse médicale*, December 18, 1916) reports his conclusions from a prolonged study of this question in various countries, including the United States. He points out that the corn theory of pellagra, dominant for a century and a half, was conceived in a period in which nearly all diseases, even scabies, were considered of alimentary origin. The corn theory is disproved by the following facts: 1. Pellagra is a very ancient disease; that it first appeared in Europe in the eighteenth century along with the introduction of maize from America is an error. 2. The distribution of pellagra in no way coincides with that of the cultivation or consumption of corn; it occurs in rural districts, but in disseminated, well circumscribed foci, unrelated to corn growing. 3. Prophylactic measures in Italy based on the corn theory have completely failed. 4. The striking recurrence of the symptoms in the spring or fall, or both, in pellagrins situated at points distant from foci of pellagra and entirely deprived of corn can be explained on the basis of a parasite persisting in the body but not on that of a toxic substance, which would be rapidly eliminated when no longer ingested. Pellagra develops only in an infinitesimal proportion of corn consumers, and sometimes in people who eat no corn at all, e. g., in the British Isles. The disease can be contracted or transmitted only in the special pellagra foci, and is not directly contagious, nor can it be transmitted to the offspring through the milk. In foci of pellagra, newcomers unavoidably contract the disease, generally within a year. A characteristic and necessary feature of these foci is the presence of the disease in very young children. These cases, being mild, have hitherto often been overlooked. The distribution of pellagra and malarial foci is, as a rule, very different. Thus, in Italy and Rumania pellagra occurs in hilly regions crossed by rapid streams, while malaria occurs in marshy lowlands. Children born at the close of winter or beginning of spring, as a

rule, contract pellagra in the third or fourth month; if born later, they often escape until the following year. The incubation period of pellagra may be limited to two weeks, or perhaps even less. The yearly crop of recurrences in chronic malarial subjects at the season when mosquitoes are again on the wing seems strikingly analogous to the yearly pellagra recurrences. Old Rumanian peasants are familiar with the fact that the skin eruption in chronic pellagrins recurs in March "when the grass is growing afresh," while the new cases appear later, in April, May, or even June. This interval between recurrences and new infections suggests an insect as vector in pellagra. By exclusion of all insects the distribution and biology of which do not correspond with the evolution of pellagra, Sambon has been led to incriminate the small biting flies of the chironomidae and simuliidae families, together with, probably, the widely distributed but less known ceratopogonine. Further study of insect transmission, as already carried out with success in relation to trypanosomiasis, typhus, and yellow fever, is now in order.

**X Ray Diagnosis of Gas in the Tissues.**—J. D. Morgan and G. Vilvandré (*British Medical Journal*, January 6, 1917) cite nine cases of unsuspected gas gangrene which was discovered in each by the use of x rays. The presence of gas in the tissues gives rise to light areas on the plates. These may appear as bubbles of varying size and arrangement, or as definite areas of light color following the fascial planes or lying beneath the skin. The employment of x rays not only renders diagnosis possible in some cases without the usual definite physical signs, but it gives an accurate indication of the extent of the process and is therefore a great aid in determining the level for amputation or incision and the method of treatment to be employed.

**Studies of the Gastric Residuum.**—Chester C. Fowler and Zelma Zentmire (*Journal A. M. A.*, January 20, 1917) review the recent literature of studies on the gastric residuum of normal subjects and add the results of their own series of observations made upon apparently normal women. They find that there are no striking differences between the residue of the two sexes; that the usually accepted limit of volume of the residuum—twenty mils—is too low, the average for eighty-one samples from women having been about 49.5 mils, while that for men was found to be fifty-two mils by Fowler, Rehfuß, and Hawk; that both colorless and bile colored fluids might be obtained, even from the same individual at a single sitting; that the colored fluids were commoner with high acidity of the fluid than when the acidity was low; that the total and free acidities varied directly, a free acidity rarely being found when the total was below ten and always being present when the total was over fourteen; that both acidities ran somewhat higher in women than in men; that there was a definite relation between pepsin and acid in low acidity, which disappeared with high values; and that women did not show the inverse relation between trypsin content and free acid which was observed in men. The several values found for the different constituents studied are given in the paper.



**Absolute Diabetes with Recovery.**—C. D. Christie (*Journal A. M. A.*, January 20, 1917) gives the detailed report of a case showing an absolute diabetes, with no capacity to use any sugar, even that derived from the body protein, with intense and increasing acidosis, and a febrile complication in the form of an infected carbuncle. The employment of fasting treatment for a period of eleven days led to a recovery of the capacity for the utilization of sugar to the extent that the patient could take care of sixty grams of carbohydrate daily in a mixed diet containing fifty-five grams of protein and 225 grams of fat. The fasting not only restored sugar tolerance, but also brought about a marked reduction in acidosis, which, however, was not removed until sugar tolerance had been restored. During the period of fasting he received only 180 mls of whiskey daily and large doses of sodium bicarbonate. The urine was subjected to complete quantitative analysis daily and it was found that the ammonia percentage of total nitrogen failed to give an index either of the severity of the condition or of the progress made during treatment. The only trustworthy method of measuring the degree of the acidosis was found to be the determination of the alveolar carbon dioxide tension.

**Subacute and Latent Infantile Scurvy.**—Alfred F. Hess (*Journal A. M. A.*, January 27, 1917) believes that scurvy in one or the other of these two forms is a very common condition among artificially fed infants in the larger cities where the total milk supply is pasteurized. The condition is, however, not generally recognized, owing to the absence of the more striking symptoms given in the textbooks as characteristic. The symptoms of the subacute form include failure to gain weight, appearance of fair nutrition, pallor, slight edema of the eyelids, irritability and peevishness, diminished appetite, lividity of the gums, or slight peridental hemorrhages, enlarged and congested papillæ of the tongue, eczema, and skin erosions. There may also be a petechial spot on the frenum of the tongue, slight tenderness of the lower thighs, slight edema over the tibiae, exaggerated knee jerks, and some albumin and red and white cells in the urine. These symptoms may be present in varying number and combination, and do not constitute a clinical entity of any certainty. A specially characteristic and constant sign, which may be overlooked, is enlargement of the heart to the right, and less to the left as demonstrated clinically or by the x ray. By the latter means there is also fairly constantly an enlarged shadow over the region of the great vessels. A new sign of great importance has been found in a marked increase in the rate of the heart without disorder of its rhythm, and accompanied by a striking polypnea without subjective symptoms of distress. The heart rate may rise to over 150 and the respiration to sixty and over a minute. There is usually some slight febrile reaction also present in most of these cases. The condition of latent scurvy is even less marked by suggestive symptoms than is that of the subacute infantile form just described, and its diagnosis rests largely upon the prompt appearance of gain in weight and improvement in

physical condition following the addition of orange juice to the diet. The same therapeutic test may be applied in the subacute form and the response will usually be prompt and definite, including a striking fall in the heart and respiration rates. If the development of either of these forms of scurvy is to be prevented in babies fed mainly upon pasteurized milk, the administration of orange juice should be begun when the infant is a month old with a dose of a teaspoonful daily. This should be increased so that at the age of three months the infant is taking a tablespoonful each day.

**Renal Function in Nephritis.**—Robert L. I. Smith (*Journal A. M. A.*, January 27, 1917) made 150 determinations of renal function in unselected cases, using McLean's urea excretion index, and found that this index gave much more information regarding the degree of renal impairment and in the matter of prognosis than did the blood urea determination. He found that all cases of chronic nephritis with hypertension showed a lowered index of urea excretion, while most of them had a blood urea concentration which fell within normal limits. Either a normal or a low index of urea excretion was found in cases of chronic nephritis with normal blood pressure, depending upon the extent of the renal impairment. The phenolsulphonephthalein test was found, in general, to run parallel to the index of urea excretion, but some exceptions were encountered in which it would have given an erroneous idea of renal impairment.

**The Care of School Children with Ear Disease.**—Otto Laubi (*Correspondenz-Blatt für Schweizer Aerzte*, December 16, 1916) speaks from a considerable experience, as he has examined the ears of children entering the schools of Zurich for the past twenty-two years. During twenty-one years the number of children examined in the first primary class was 62,738, of whom 6,785, or 10.8 per cent., had aural trouble. The analysis of these figures and of the forms of disease present are given in tabulated form. The percentage varied in different years from 4.8 to 21.6. Boys seemed to be rather the more apt to be affected, as the percentage was 11.8 for the boys, 9.8 for the girls. The primary test is whether a whisper can or cannot be heard at a distance of eight metres. The parents of the children whose ears are found defective are notified that the children must be placed under treatment, and the latter are obliged to bring a certificate that treatment has been begun. The very deaf are seated near the teacher, with the better ear turned toward the latter, and another child is detailed to sit near each to explain whatever is not understood. Special classes or schools are furnished for those unable to hear a whisper at two metres, and Laubi urges an improvement on these by the organization of a school with three grades for such children, with teachers trained in deaf mutism. He recommends the use of artificial aids to hearing, especially for those whose hearing is so poor that they do not hear their own voices, as they are thereby enabled to hear and to learn to modulate their voices. It is also well for them to utilize as much as possible the hollow hand for the improvement of their hearing. Lip reading should be taught.



# Proceedings of National and Local Societies

## MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

*Forty-second Annual Meeting, Held at Indianapolis, Indiana, October 10, 11, and 12, 1916.*

The President, DR. WILLARD J. STONE, Toledo, Ohio, in the Chair.

**The Frequency of Protozoic Enterocolitis in the Middle West: Clinical Manifestations, Diagnosis and Treatment.**—DR. FRANK SMITHIES, of Chicago, presented the records of the last 100 stool analyses in his clinic at the Augustana Hospital, which indicated that there were ninety-three cases where protozoa were observed. The patients' ages ranged from seven years to eighty-two years. The average age was thirty-nine. There were fifty-one males and forty-two females. There was practically no difference noted in the sex age figure. Fifty-two patients were of Scandinavian birth or extraction; the remainder were Americans, Germans, Irish, Russians, Austrians, and English. The geographic diversity of the patients forming this group was as follows: Illinois, twenty-nine; Iowa, sixteen; Wisconsin, thirteen; Nebraska, eight; Michigan, seven; Minnesota, six; Indiana, four; South Dakota, two; Arkansas, two; Ohio, two; Texas, two; Kentucky, one; and North California, one. Of ninety-three cases sixty-six were large eaters of fresh garden truck, unwashed fresh raw fruits, and bananas. Diarrhea was complained of in eighty-six cases. The duration of the diarrhea varied greatly. Sixty-seven per cent. of the patients had been affected from one to five years; eight patients had been ill less than one year, while the same number had been ailing for more than ten years, the longest period being forty-three years. Constipation occurred in four cases. Dyspepsia was prominent in seventy-five cases. Abdominal pain or discomfort was a complaint in eighty-nine cases. Loss of weight was noted in seventy-five cases. The loss varied from five pounds to 104 pounds. The average loss was 17.3 pounds. Loss of strength was often striking, even though the weight might have decreased comparatively little. Anemia was usually evident, although melancholia was frequently observed. On physical examination these patients generally appeared both starved and toxic. The stools were commonly of a greenish brown or yellow color and of a purelike consistency, intermixed with flakes of mucus and food particles. They might be blood streaked or foamy. The reaction was usually definitely alkaline. In his series there were forty cases with gastric achylia; thirty-three cases with subnormal hydrochloric acidity, and twenty cases with normal or increased gastric HCl. In one instance of most pronounced acute infection with cercomonads and trichomonads the free HCl was eighty-six. The gastric motility was normal in eighty-three cases. In ten cases there was mild stagnation. In sixteen instances albuminuria was noted. His study of specimens of gall-bladders and appendices removed at laparotomy indicated that in these parts of the gut cysts of protozoa might lurk for years. Reinfection of the bowel was thus possible.

**The Treatment of Infected Wounds.**—DR. FREDERICK G. DYAS, of Chicago, drew these conclusions: 1. The application of voluminous dressing to infected wound surface confines the infective discharges and subjects the tissues to a bath of pus. 2. Exposure of infected wound surfaces to the air causes a rapid drying up of the wound secretion and a desiccation of the tissues by the evaporating action of the atmospheric air, which can be increased by playing a current of air from an electric fan on the exposed area. 3. Infection from the air is negligible. 4. The open method of treatment tends to convert the moist into the dry type of gangrene and produces unfavorable conditions for the growth of anaerobic organisms which are clinically more virulent than aerobic. 5. The period of infection is shortened by the use of certain solutions, as a bath or irrigation, unfavorable to the growth of bacteria, which must be discontinued as soon as the signs of infection subside.

Dr. HENRY T. BYFORD, of Chicago, said the principle of drying out the wound was the proper one. To do that the wound must be drained, not the surface of the tissue. Convert a wound into a dry cancellous condition and it would heal. In treating wounds he began using the old fashioned method of dry dressing for bed sores or where there was a cancellous area which required some time to come off. He used gauze, but he did not have the same result as when he used absorbent cotton. When he began to use absorbent cotton in the proper way he would have a wound dry up in two or three days until finally it needed no dressing at all. But he changed the cotton every hour or two for a few times. After a few hours it would not have to be changed so often, say, every three or four hours, then once a day, and then he would leave it on a week or until the slough came off. It was better to use cotton for this than gauze because gauze rubbed off the granulation. In fresh wounds that were not infected he would put on some cotton, change it in a few hours, and after that there would be less serum, and in a day or two the wound would dry up so that he would leave it, and it would heal up dry.

Dr. DANIEL N. EISENDRATH, of Chicago, said we must change our present method of treating infected wounds. The European War had shown that the battle which had raged between the upholders of the use of antiseptics and the upholders of the Wright theory had been decided in favor of the latter. If we stopped to think how infections were propagated in wounds there were practically only three methods: 1, by continuity of tissue; 2, by way of the bloodvessels, and, 3, by way of the lymphatics. The more he saw of infected wounds the more he was impressed with the fact that the third method was the most important one to combat. An infection by way of the bloodvessels would take place in very virulent infection, and the other—by way of continuity of tissue—could be combated by means of the principles Doctor Dyas had laid down. In the lymphatic infection the microorganisms were carried into the lymphatics and from there into the systemic circu-

lation. The principle upon which Doctor Dyas's method depended was first of all to have free drainage, so that there would be no possible absorption through the lymphatics; in other words, that the flow from the lymph vessels carried the organisms away from them instead of allowing the organisms to be sealed up in the wound or be forced into it. The method of treatment which Doctor Dyas had outlined, supplemented by these other practices, to induce constant lymphatic flow, was one of the most important things we had to deal with today in surgery.

Dr. F. KREISSL, of Chicago, stated that about forty years ago Hebra installed in a sanitarium for skin diseases a so called permanent water bath for burns of the second or third degree and for wounds that did not seem to heal. This bath was arranged so that the water ran constantly at body temperature, the patient being suspended on a bed sheet so that he was not exposed to the pressure of the modern bath. The patients did very well, there was no bad odor, and nearly all of them got well. The same method was applied to the cold water treatment as it was originally introduced by Winternitz, and he supposed those gentlemen who had been in England and Austria had had occasion to observe both methods. These gentlemen advocated it in an empirical way, but the underlying principle was the same as expressed in Doctor Dyas's very able paper.

Dr. WALTER F. MCGAUGHEY, of Greencastle, Indiana, asked whether in the case of an injured hand the essayist would let a man go without any dressing on it.

Doctor DYAS replied that one man was walking around in the ward with a piece of ordinary window screen to keep the flies off. He had used wire screen very extensively in laparotomies and infected herniotomies.

**Relationship of the Mammary Gland Secretion to Albuminuria and Eclampsia.**—Dr. W. E. GARY, of Louisville, Ky., drew these conclusions: 1. Eclampsia is a toxemia arising from the accumulation of material in the blood of the mother intended for the nourishment of the fetus in greater quantities than is used by the fetus and greater than can be eliminated by the maternal organism through the ordinary channels. 2. The greater the number of leucocytes in the blood of the mother the greater the toxemia within certain bounds, of course, due to individual maternal resistive ability. 3. The presence of leucocytes in the urine in large quantities is the first symptom of impending danger. 4. Leucocyte count of the blood of the mother may be reduced and albuminuria may be cleared up by the elimination of leucocytes through the secretion of the mammary gland. 5. When the convulsive stage is reached, damage has already been done to the kidney and other organs, so that treatment must be given to overcome this damage. This line of treatment is suggested.

Inflate the glands to start secretion. Empty the uterus to get rid of the exciting cause. Eliminate by purgation. Support the kidney elimination by proctoclysis as the patient cannot drink water. Control blood pressure with veratrum viride. By these measures you can keep your patient alive until full elimination can be secured through the glands."

**Ectopic Pregnancy, Diagnosis and Treatment.**—Dr. RICHARD R. SMITH, of Grand Rapids, Michigan, said the treatment of ectopic pregnancy was the removal of the offending tube with its contents and extravasated blood. This should be done as soon as suitable arrangements could be completed, but it was unnecessary so to hasten matters as to interfere with the proper performance of the operation. In the city he preferred to remove patients to the hospital; in the country he preferred to go to them, rather than submit them to a railroad journey unless the case was one of long standing. During severe shock the patient might be removed to the hospital, and then it was merely a matter of judgment as to whether one should watch and wait for a better physical condition or operate at once. If after, say, a few hours, the patient showed no improvement, he usually operated; if she did he usually waited six, twelve, twenty-four, or forty-eight hours.

Under gas or ether anesthesia a median incision was made and after walling off and scooping out large clots of blood, a prompt approach to the tubes is effected. Great gentleness was attended with safety. The tube should be gently grasped and gently loosened if it was adherent. Roughness at this point might easily tear the tube from its attachments, and the patient lose more blood. The ovary might ordinarily be preserved, but in old standing cases with dense adhesions the ovary was apt to be so torn in getting the tube into the field that its removal with the tube seemed wiser. It was well to excise the tube well into the cornu of the uterus as with an infected tube covering the denuded surface might be omitted in critical cases. Attention was then directed to the opposite tube. What should be done with it? If it was adherent, a gentle loosening from adherent structures was good surgery when time permitted. In young women or in those who had had few children or desired more, the tube, if patulous, should invariably be saved. He thought it well to talk this matter over with the patient and her husband before operation. In older women and those who had already borne children and felt that they were through with child-bearing, it was wiser to remove it, for repeated pregnancies occurred in something like ten or fifteen per cent. of those women in whom a patulous tube was left at the first operation, and normal pregnancies occurred in less than half of those already operated upon for this disease.

The removal of the appendix was usually unwise, but when matters were less pressing, and the condition of the patient seemed likely to give rise to future trouble it might be removed. Usually the less we did in the abdomen of a woman with an ectopic pregnancy the better. The removal of most of the unattached blood clots was necessary, but the removal of partially organized and adherent blood should not be attempted. It was surprising how well everything cleared up after operation, far better than in inflammatory cases. No drainage should be instituted unless as rarely happened we were dealing with an infected case. The closing and suturing of the abdominal wall should be well done, since postoperative distention was perhaps more common than following an ordinary laparotomy.



DR. WILLIAM M. HARSHA, of Chicago, said he would like to say a word or two about diagnosis. Doctor Smith had spoken of the pain usually not reaching throughout the abdomen. In some cases he had seen the pain had been very severe and very extensive, often reaching up to the sternum. The pain was of that type which had been called an abdominal crisis and it was out of all proportion to the lesion that we recognized as occurring in ectopic pregnancy. Here was a small tube no larger than a rye straw letting out a little blood, which was normal to the human tissue, and that small amount of blood started a frantic pain. He had never been able to satisfy himself as to the cause of the great pain that occurred in tubular rupture, but the extension of the pain, if we assumed that there was bound to be pain from that little escape of blood, and the explanation of its general character were to his mind found in the so-called overflow or reflex; for there was the abdominal brain, it was the herald of some great danger and the impression of that pain conveyed to the spinal column and from that pain was reflected and overflowed into the adjacent segment, and so pain all over the abdomen resulted.

DR. DANIEL N. EISENDRATH, of Chicago, stated there was one feature in connection with this paper he would like to emphasize, namely, those cases which we did not see at the time of rupture or within a few hours of that time. We were accustomed to see these patients of ectopic pregnancy either with extreme pallor or with moderate pallor. The cases to which he referred were those which we see after twenty-four or forty-eight hours, when the blood in the peritoneal cavity gave rise to symptoms of peritonitis, for the presence of a foreign protein in the peritoneal cavity would cause the same symptoms as a mild degree of peritonitis. We had the tympany, the rigidity, the tenderness on pressure, and above all there was a very marked leucocytosis. He had seen several of these cases that he thought were typical cases of appendicitis, with a mild form of general peritonitis, but when we entered the abdominal cavity we found the extrauterine pregnancy had ruptured two or three days before.

DR. J. H. PEAK, of Louisville, Kentucky, said that the time when this condition was first noticed was usually dependent upon what was occurring in the tube and how long pregnancy had existed in the tube. If the pregnancy had occurred near the extremity of the tube there was liability of a tubular abortion, and that might occur frequently without many symptoms and the patient might get well because extrusion took place. Operate then before there was much possibility of hemorrhage, and the patient would get well. If the pregnancy took place in the isthmus and further towards the uterus, when labor took place the hemorrhage would be more severe, and the more severe the hemorrhage the greater the amount of shock and tenderness and pain and the quicker a diagnosis could be made.

**Is the Genealogy of the Gonococcus and Meningococcus the Same? A Genitourinary Surgical Case Study of the Question.**—DR. CHARLES E. BARNETT, of Fort Wayne, Indiana, drew the following conclusions: It is quite desirable to diagnose the meningococcus complication early, because the

period of prognosis will be calculated for months rather than weeks. The treatment will also be dissimilar. There is no known method of differentiation except in the treatment of the case with its own manufactured antibodies—antimeningococcus serum—because it has been the writer's experience to have acute gonorrhea cases react to meningococcus vaccine. The laboratory findings for both the meningococcus and Neisser coccus are practically the same. The almost negative findings in the rectal examination and the rapid dilatation of the urethra and bladder following resolution would indicate the inflammatory action superficial rather than deep, in the genital tract. Meningococcus infection of the genital tract is rare, or else only the most virulent ones are recognized. The overload of the kidney is quite manifest during the active stage of bacterial body elimination. The continued alkalinity of the urine presents a hazard that requires constant diligence in order to keep it within the bounds of neutrality. The meningococcus in the genital tract stimulates the gonococcus in its action, precisely, with the exception of showing a marked increase in virulency and persistency.

DR. E. O. SMITH, of Cincinnati, Ohio, stated that he did not catch from the reading of the paper what was probably the source of the meningococcal infection. As he understood, it was a gonococcus infection.

DR. F. KREISSL, of Chicago, said that we all saw cases sometimes where the patient presented himself with an acute gonorrheal urethritis, and upon microscopic examination we found the patient had a typical gonococcus. Then, when the acute condition subsided suddenly, we found on microscopic examination that other microorganisms had appeared which resembled these very closely. If we sent the specimens to a first class laboratory man, we got a mixed report. One day he would report to us a diplococcus resembling a gonococcus, Gram positive; the next day it would be Gram negative, and the next day a staphylococcus, and the Lord knows what. If we treated that case, after a time it seemed that the gonorrhea disappeared, and we would not find a trace of a diplococcus or gonococcus, and yet the patient kept on having discharges. The patient was not usually prudent, and then all at once the discharge stopped, and then, without provocation, or perhaps with provocation, the discharge reappeared, only to disappear with a few treatments. If we made a culture of these discharges we got practically the same answer. He had examined a great many cases carefully for years, and he had never yet been able to get a report from the laboratory telling him there was a meningococcus, although all the others were fairly represented. No matter what we did for these cases we could not cure them. Doctor Kreissl had come to the point where he told his patients their condition and that he did not promise them anything.

DR. P. E. McCOWN, of Indianapolis, believed that in many instances prostatitis arose from sexual abuses and some other causes, and following prostatitis from excesses, such as drinking, the patient would have a urethral discharge. He had felt in a number of instances where men had stated that



they had not been exposed to infection that a staphylococcus was involved, and he believed Doctor Wardle's work in Chicago had shown conclusively that staphylococcus could be diplococcus many times. He also made the statement that it was more susceptible to leucocytes than the gonococcus itself. He had felt in dealing with these cases, and he had two at the present time, that we were dealing with a staphylococcus which was growing as a result of a prostatitis, there being a lowered resistance of the urinary tract which permitted the staphylococcus to grow. The staphylococcus was in intimate contact with the urethra at all times. We could perhaps get a staphylococcus growth there almost any time. These discharges were sometimes very annoying. Patients believed they had gonorrhea, and where there had been no exposure they could not understand the condition. In two instances these gentlemen accused their wives of infidelity, but after going into the matter thoroughly he had persuaded them that this was not the fact.

Doctor BARNETT, in closing, said that Doctor Smith had asked for the source of the meningococcus. One could never tell the source. We might have a hematogenous infection anywhere. In this case the source was from the woman, and yet the infection of the other thirteen men did not seem to be as virulent as this one. His idea was that, for instance, this was his first infection. This man in fact had very little experience in sexual matters, and the epithelium was quite green, so in this case we had a greater virulence than where the field had been traumatized a good deal. He should say that it came from the woman.

In regard to the prostatitis that Doctor McCown had spoken about, the first infection was Staphylococcus albus, and then the whole bacillus, and finally the meningococcus.

**Some Clinical Phases of Focal Infection with Especial Reference to Its Location in the Head and a Plea for More Accurate Classifications.**—Dr. JOSEPH D. HEITGER, of Bedford, Ind., stated that a great field in the treatment of chronic focal infections lay before us, but the still greater field of prevention of a large percentage of these cases lay ahead of us. Childhood was the time to forestall and prevent many of these infections, and there was no knowing how much of the morbidity of later life might be prevented by proper attention to these foci in the head, especially the teeth, tonsils, sinuses, and ears.

In order that the profession at large might obtain the greatest good from these advances, there must be continual exchange of ideas not only between the general practitioner and the specialist, but also among the different specialties. The saddest thing about some of these phases of focal infection was that men were classifying patients, putting them into this or that group, who were not studying these patients; who did not understand focal infection in its broadest sense, or at least they were attempting to put the focus where they wanted to place it, and the patient learned by sad experience of the mistake in diagnosis.

Focal infection, when found and properly diagnosed, offered much that bordered almost on the

miraculous. Its treatment should be judged not by the worst that was done by some in falsely interpreting its hiding place, but rather by the best that resulted in those cases which were carefully and accurately diagnosed and classified. A routine method for their diagnosis and classification could be obtained and it was to this work that he would invite all to lend their best efforts.

**The Surgical Management of Acute Perforation Complicating Intraabdominal Infections.**—Dr. W. D. HAINES, of Cincinnati, Ohio, stated that the type of operative procedure would depend upon many factors, chief among which would be the patient's general condition, i. e., his ability to withstand operation.

The length of time which had elapsed since perforation took place, the surroundings, the actual findings at operation, and the experience of the operator were important factors for consideration in planning the operation.

Many of these patients were in such a desperate condition when they were brought to the operating room that locating and closing the perforation and providing drainage as quickly and with as little disturbance to surrounding structures as was consistent with making a watertight joint and placing the drainage would best subserve the interests of the patient. Latterly the tendency on the part of the surgeon had been to liberate adhesions, resect damaged loops of intestines, provide drainage by anastomosis, and remove all visible pathology, and while ideal when the patient's condition and surroundings would permit of extensive operation, still by far the greater number of patients suffering from gastrointestinal perforation were in such physical condition as to preclude either the least and quickest surgery which would reach the goal of closure and drainage at the primary operation, leaving the more extensive and technical elements for subsequent operation.

A bad surgical risk before perforation took place was not improved by the incident of perforation and a live patient with his perforation closed and peritoneal cavity drained, although the operation was incomplete with much pathology in his abdomen which might be removed later if occasion demanded, was preferable to turning the patient over to the undertaker after a technically perfect operation.

Much good might be accomplished in the presence of extensive soiling of the peritoneum by gentle mopping with dry gauze; conversely much harm might be done by flushing the peritoneal sac. Perhaps the most that could be claimed by the followers of this all but obsolete and archaic practice of flushing the peritoneal cavity, was that it insured the widest possible distribution of infectious material, destroyed newly formed plastic material, and materially increased the mortality.

**Blood Chemical Analyses in Reference to Diagnosis and Treatment.**—Dr. R. B. H. GRADWOLD, of St. Louis, Mo., said that chronic kidney degeneration was accompanied by the accumulation of all three constituents: uric acid, urea nitrogen, and creatinin. The normal finding in respect to uric acid was one to two, five mg. per 100 c. c. of blood; of urea nitrogen, from twelve to fifteen

mg., and of creatinin of from one to 2.5 mg. An undue accumulation of all three constituents was a remarkably valuable method of estimation of true kidney function. Values for urea nitrogen in conditions of uremic nephritis had been known to reach as high as 300 mg., and of creatinin as much as thirty mg. These high values indicated grave uremia. His experience had shown the tremendous accumulation of these constituents in bad cases of nephritis, even where the urinary findings were scant so far as albumin and casts were concerned.

He had been able in all his work to confirm the contention of Myers and Lough that the presence of over five mg. of creatinin in ten c. c. of blood indicated an absolutely fatal prognosis. The combination of nephritis with diabetes mellitus had possibly long been recognized, but too often was disregarded. The estimation of blood sugar in diabetes should be accompanied by an estimation of the other nonprotein nitrogenous blood constituents to determine the condition of the kidney. If blood chemical analyses were made more often in grave diabetic states, it would be shown that some of these so called cases of diabetic coma were really in a state of extreme uremia due to this complicating nephritis. Many patients with diabetic mellitus had died of uremia, the condition being diagnosed and treated as diabetic coma.

By personal experiences he was able to confirm the data already obtained on the undue accumulation of these nonprotein nitrogenous constituents of blood in gout, the nephritides, and deranged renal conditions. He had used the blood sugar methods of Benedict and Lewis and could vouch for their inestimable benefits in the diagnosis and treatment of diabetes mellitus. He could also recommend the Van Slyke method of estimation of the combining power of blood plasma.

**The Clinical Value and Methods of Blood Analysis in Medical Diagnosis.**—Dr. G. W. McCASKEY, of Fort Wayne, Ind., first asked attention very briefly to the subject of acidosis as determined by dialysis, removal of carbonic acid from the dialysate by aeration, and the determination of the hydrogen ion content by the indicator method according to the technic of Merriott. The determination of the hydrogen ion concentration of the fresh blood containing variable amounts of  $\text{CO}_2$  did not give us definite information in regard to the actual existence of acidosis. The existence of acidosis could only be assumed when there was a diminution of the reserve alkali of the blood which was made up of the bicarbonates, alkaline protein compounds, and alkali phosphates. Under normal conditions this reserve was very constant. The total hydrogen ion concentration might be constant with varying amounts of reserve alkali by fluctuation of the  $\text{CO}_2$  content. A certain very slight degree of acidosis, almost infinitesimal in amount, was physiologically required for stimulation of the respiratory centres and this was really the information given by determining the total hydrogen ion concentration of perfectly fresh blood. This had, at present, very little clinical value. If, however, we dialyzed the oxalated blood or, perhaps better still, the serum, and completely removed the  $\text{CO}_2$  by aeration, the hydrogen ion concentration then became a

very accurate measure of the alkali reserve and varying grades of acidosis might be accurately determined. It was no longer necessary to make a clinical guess as to the existence of an acidosis. A normal alkali reserve under average conditions of diet was found to vary but little and was expressed by the logarithm 8.5 with a variation of 8.4 up to 8.55.

These various grades of acidosis in adults were found especially in diabetes and in some cases of nephritis, but, of course, they were much more common in children in whom the tendency to acidosis was more marked. It was largely a question of the quantity of acid products of metabolism and whether they were volatile like carbonic acid or nonvolatile like oxybutyric, sulphuric, etc. The latter acids actually combined with the reserve alkali of the blood, permanently fixing it, producing genuine and demonstrable acidosis with the symptoms of which we had long been familiar.

The sugar content of the blood had a very definite clinical significance. Under physiologic conditions it was 0.1 per cent. or less. This was the threshold beyond which renal excretion occurred with normal kidneys. With a rise in this threshold considerably above 0.1 per cent., which occurred in some cases of diabetes and nephritis, the quantity of sugar in the blood might be greatly increased, producing tissue irritation and various functional perversions, but without glycosuria. Hence the importance of estimating the sugar content of the blood in all doubtful cases.

In addition to the determinations of the alkali reserve and sugar of the blood, and perhaps more important than either, the estimation of the creatinin, urea, and uric acid content of the blood demanded our attention.

Creatinin, the determination of which in the blood had just been outlined, was first given clinical significance by Folin as the most constant exponent of nitrogen tissue metabolism. Recently Myers had studied its blood retention in nephritis. A considerable increase undoubtedly occurred in the severer grades of nephritis, but in the quantities usually present it was so easily excreted by the kidneys that its retention undoubtedly indicated severe impairment of the kidney function.

His own observations led him to conclude that the quantity normally present was nearly always less than one mg. per 100 c. c. of blood. Six mg. had been his most common result. In seven fatal cases of nephritis and a considerable number of nonfatal cases he had never found the very high values reported by Myers. As a result of his own clinical studies, he was forced to conclude that 1.5 to 2 mg. of creatinin per 100 c. c. of blood indicated pathological retentions from increased renal block.

The quantity of urea in the blood, as was well known, was influenced within certain pretty well defined limits, by the protein intake. Widal's estimate was 20 mg. per 100 c. c. in health. It undoubtedly varied both ways from this amount, but on ordinary diet, 30 to 35 mg. might be regarded as the highest normal limit.

Recent studies by Chase and Myers seemed to indicate that in variations of the uric acid content of the blood we had an earlier and more delicate



index of impairment of renal function. Of the three principal end products of metabolism there was apparently more difficulty in excretion, and comparatively slight impairment in the functional capacity of the kidneys led to an increased quantity remaining in the blood.

The estimation of the chlorides in the blood did not seem to hold out as much promise as in the case of the nitrogenous constituents and sugar. The chlorides apparently had a habit of playing hide and seek between the tissues and the blood, influenced by physiological and pathological conditions which were at present obscure.

Dr. H. K. LANGDON, of Indianapolis, stated that body metabolism in general found expression in the urine in some manner, but this expression was frequently only an end reaction, and was subject to great variation, due not only to the complexity of kidney function, but also to many extrarenal factors. It was reasonable to suppose that the blood would give us a more intimate knowledge of the changes in metabolism brought about by certain internal diseases.

The phenolsulphonephthalein test, as it was most generally interpreted, was a test for the entire eliminative power of the kidney as a whole, but the kidney was a very complex machine and the physiological functions of the component parts were affected in different degrees by different diseased conditions. It was not right, therefore, to place too much dependence on this one test, or any one test for kidney function, or upon one test for any obscure condition. This tendency was well illustrated by the attitude of many medical men toward the Wassermann test for syphilis. It seemed to be the general idea that a blood Wassermann was sufficient, when the collected data up to the present time showed that the examination of the spinal fluid was of greater value than the blood Wassermann, not only in late but in early syphilis.

(To be continued.)

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Psychology of the Unconscious.* A study of the transformation and symbolisms of the libido. A contribution to the history of the evolution of thought. By Dr. C. G. Jung, of the University of Zurich. Authorized translation, with introduction, by Beatrice M. Hinkle, M. D., of the neurological department of Cornell University Medical School. New York: Moffat, Yard & Co., 1916. Pp. 566. (Price \$4.00 net.)

The reader, in following Doctor Jung through the mazes of his speculations, is reminded of the description of Wilde's mind, "chaos illumined by flashes of lightning." The first feeling is, indeed, one of bewilderment. So much material is offered, such a wealth of reference, and such abstruse speculations, that one may be pardoned for catching his breath, as it were. The translation itself is admirable, and Doctor Hinkle has added to the value of the work by a remarkably clear and concise introduction, which should be read by all the opponents of psychoanalysis—a sufficiently large audience. Doctor Jung has delved into the activities of the unconscious, as shown in dreams, fables, poems, myths, and legends. He has taken for a starting point the published phantasies of a neurotic woman

and has indulged in lengthy speculation on topics suggested by them. In the second part of the book he has devoted several chapters to the attributes of the libido, as he terms the vital force, and also discusses many motives which are seen in neurotics and psychotics as well as in normal persons; with it all he is inexhaustible in drawing illustrations from all fields of human thought. The book will prove endlessly fascinating to the students of philosophy, mythology, and psychology. Undoubtedly all psychoanalysts will find it indispensable, especially if they have preceded its acquisition by adding the author's "Analytical Psychology" to their library.

*A Practice of Gynecology.* By HENRY JELLETT, M. D. (Dublin University), F. R. C. P., L., Master, Rotunda Hospital Dublin; Gynecologist and Obstetric Physician to Dr. Steeven's Hospital, Dublin; Censor and Examiner in Midwifery and Gynaecology, Royal College of Physicians, Ireland. With Three Hundred and Seventy-four Illustrations (many in color) and Eleven Colored Plates. Philadelphia: Lea & Febiger, 1916. Pp. 618. (Price, \$6.00.)

This book represents a fourth edition of the author's *Short Practice of Gynecology*, originally intended for students and general practitioners, but now so expanded and elaborated as to assume a more advanced character. This seems to apply especially to surgical subjects, to which the entire second half of the book is devoted. In the first half, the various disorders of the reproductive organs are discussed as to etiology, pathology, diagnosis, and nonoperative treatment in a concise direct manner. Little space is devoted to theoretical considerations or presentation of the views of various observers, the author's own conclusions on each subject being alone mentioned, with corresponding reduction of the volume to a convenient bulk. Of special interest are two chapters contributed, respectively, by R. J. Rowlette and W. C. Stevenson on vaccine treatment and radiotherapy as applied in gynecology. In the former, the availability of vaccines in various types of infections of the different portions of the reproductive tract is clearly explained and specified, and this will undoubtedly prove one of the most useful chapters in the work to the reader. The second portion of the book, devoted to a description of operative procedures, the indications for which have already been mentioned in the first portion, contains a large number of illustrations depicting the various operations. In the case of the more commonly performed operations, the illustrations provided are sufficient alone to permit of a clear understanding of the technic. On the whole, the work in its new form will be found a satisfactory presentation of modern gynecology.

## After Office Hours

Physicians who golf should read "Dormie One," by Holworthy Hall, in *Everybody's* for February. It might be called "The Psychology of a Champion."

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"Getting Acquainted with Yourself" is the attractive title of a little sketch by Arnold Bennett in the *Woman's Home Companion* for February, and it is good psychology.

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"The Shrinking Dollar Bill" in the *Saturday Evening Post* for February 10th will interest the physician who already takes considerable interest in this particular form of atrophy.

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After a few hours idled away in the genteel company of the thirty-five cent magazines, a dip into the *Masses* gives one a bit of a bounce. The January number is as defiant as ever. "Till Death" is a somewhat sordid sex story which any dispensary doctor can furnish from his daily work. Arthur Young's muscular monstrosities stalk through the pages as amazingly as ever.

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Prostitutes may be quite healthy and live long, says Alice Hamilton in the *Survey* for February 3. Doctor Hamilton makes an appeal for the truth of any propaganda. Do not tell working girls that prostitutes only live three to five years and always die of loathsome diseases. Surely there are other arguments against a life of immorality than the fear of punishment.



## Meetings of Local Medical Societies

**MONDAY, February 19th.**—New York Academy of Medicine (Section in Ophthalmology); Yorkville Medical Society; Medical Association of the Greater City of New York; Medical Society of the County of Erie; Elmira Clinical Society; Psychiatric Society of Ward's Island.

**TUESDAY, February 20th.**—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Medical Society of the County of Monroe; Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Federation of Medical Economic Leagues of New York.

**WEDNESDAY, February 21st.**—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medicolegal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York; Bronx County Medical Society; Dunkirk and Fredonia Medical Society; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology).

**THURSDAY, February 22nd.**—Ex-Intern Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital Graduates' Club, New York; New York Physicians' Association.

**FRIDAY, February 23rd.**—Society of New York German Physicians; New York Clinical Society (annual); Manhattan Medical Society; Society of Alumni of Sloane Hospital for Women; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

**SATURDAY, February 24th.**—New York Medical and Surgical Society; West End Medical Society; Harvard Medical Society; Lenox Medical and Surgical Society.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending February 7, 1917:*

**ACKER, R. B.**, Assistant Surgeon. Relieved from duty at Chicago Marine Hospital; ordered to proceed to Fort Stanton, N. M., Sanatorium.

**DERIVAUX, R. C.**, Assistant Surgeon. Directed to stop en route at Brinkley, Ark., to advise in regard to the city water supply.

**FAUNTLEROY, C. M.**, Passed Assistant Surgeon. Relieved from duty at Hongkong, China; ordered to proceed to San Francisco, Cal., and wire Bureau for further orders.

**GRUBBS, S. B.**, Surgeon. Granted five days' leave of absence from February 6, 1917.

**HEISER, VICTOR G.**, Surgeon. Granted one year's leave of absence without pay from March 1, 1917.

**IRWIN, FAIRFAX**, Senior Surgeon. Granted one month's leave of absence on account of sickness from February 1, 1917.

**KEATING, T. F.**, Assistant Surgeon. Relieved from further duty in the Philippine Islands and ordered to proceed to Hongkong, China, for duty in the office of the American Consul General.

**KEER, J. W.**, Assistant Surgeon General. Detailed to attend a meeting of Manufacturers of Medicinal Products, held in New York on February 5, 1917, with relation to the enforcement of the act of July 1, 1902.

**KING, W. L.**, Public Health Statistician. Ordered to proceed to Spartanburg, S. C., for duty in the investigations of pellagra.

**LAVINDER, C. H.**, Surgeon. Ordered to deliver an address on poliomyelitis at the conference of boards of health, to be held in Trenton, N. J., February 16, 1917.

**RUCKER, W. C.**, Assistant Surgeon General. Directed to proceed to Philadelphia, Pa., on February 17, 1917, for the purpose of delivering a stereopticon lecture on the origin and development of the United States Public Health Service.

**SPENCER, R. R.**, Assistant Surgeon. Detailed as recorder of board to examine applicants for appointment as assistant surgeon at Chicago, vice-Assistant Surgeon Yarbrough relieved.

**STEVENSON, A. F.**, Sanitary Chemist. Directed to proceed to Tuscaloosa, Ala., to advise local health authorities in regard to the establishment of a municipal pasteurization plant.

**STEWART, P. M.**, Assistant Surgeon. Relieved from duty in investigations of poliomyelitis in New York; ordered to rejoin station at Ellis Island.

**TUCK, D. H.**, Assistant Physicist. Ordered to proceed to Washington, D. C., to calibrate at the Bureau of Standards the portable illuminometer to be used in the investigations of shop lighting in Wisconsin.

**WILLETS, D. G.**, Assistant Epidemiologist. Ordered to proceed to Washington, D. C., for duty in connection with pellagra reports.

## Births, Marriages, and Deaths

### Died.

**ALLARD.**—In Wellesley, Mass., on Monday, February 5th, Dr. Frank Ellsworth Allard, aged fifty-five years.

**ALLEN.**—In Pekin, Ill., on Wednesday, January 31st, Dr. William H. Allen, aged seventy-three years.

**AMES.**—In Ada, Ohio, on Thursday, February 1st, Dr. Charles S. Ames, aged sixty-five years.

**CHAPMAN.**—In Stafford Springs, Conn., on Monday, January 29th, Dr. Eugene A. Chapman, aged seventy-seven years.

**CRAWFORD.**—In Williamsport, Mass., on Monday, January 29th, Dr. Annis H. Crawford, aged sixty-one years.

**DELAPELIERRE.**—Of Hochston, Ga., in Florida, on Monday, January 29th, Dr. William P. Delaperriere, aged sixty-one years.

**ELLIOTT.**—In Peoria, Ill., on Thursday, February 1st, Dr. John M. Elliott, aged eighty-seven years.

**FRIEND.**—In Stetson, Me., on Monday, January 29th, Dr. George Friend, aged sixty-two years.

**GRAY.**—In Worthington, Ind., on Thursday, February 1st, Dr. Simeon Gray, aged seventy years.

**HIXSON.**—In Delphos, Ohio, on Thursday, February 1st, Dr. Manford M. Hixson, aged sixty-seven years.

**HOEHN.**—In Cincinnati, Ohio, on Saturday, February 3rd, Dr. Aloysius Hoehn, aged sixty-three years.

**HYNDMAN.**—In Norvell, Mich., on Wednesday, January 31st, Dr. Duncan Hyndman, aged seventy-two years.

**JENKINS.**—In Auburn, N. Y., on Saturday, February 3rd, Dr. James M. Jenkins, aged sixty-seven years.

**LANE.**—In Woburn, Mass., on Thursday, February 1st, Dr. Albert C. Lane, aged sixty-five years.

**NESBIT.**—In South Burgetstown, Pa., on Saturday, February 3rd, Dr. John C. Nesbit, aged sixty-six years.

**OAKS.**—In Ingleside, Neb., on Thursday, January 25th, Dr. Charles Allison Oaks, aged thirty-eight years.

**PORTER.**—In Topeka, Kan., on Friday, January 27th, Dr. Melanchthon Cameron Porter, aged fifty-four years.

**PROUSE.**—In Detroit, Mich., on Sunday, January 28th, Dr. Edwin Prouse, aged sixty-seven years.

**ROBILLARD.**—In Montreal, Canada, on Wednesday, January 31st, Dr. Napoleon Robillard, aged ninety years.

**SCHNEIDER.**—In Gowanda, N. Y., on Monday, January 29th, Dr. Carl von Arx Schneider, aged thirty-seven years.

**SEAMANS.**—In New York, N. Y., on Tuesday, February 6th, Dr. William S. Seamans, aged thirty-five years.

**SMITH.**—In Avoca, N. Y., on Sunday, February 4th, Dr. William W. Smith, aged seventy-one years.

**SMYLYE.**—In Brooklyn, N. Y., on Monday, February 5th, Dr. Arthur E. Smylye, aged fifty-four years.

**THOMPSON.**—In Washington, D. C., on Thursday, February 1st, Dr. Joseph Ford Thompson, aged eighty years.

**WADSWORTH.**—In Skowhegan, Me., on Monday, January 29th, Dr. John E. Wadsworth, aged forty-two years.

**WILKINSON.**—In New Orleans, La., on Wednesday, January 31st, Dr. Clement P. Wilkinson, aged sixty-seven years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 8.

NEW YORK, SATURDAY FEBRUARY 24, 1917.

WHOLE No. 1995.

## Original Communications

### THE RESPONSIBILITIES AND THE DANGERS OF MEDICAL PRACTICE AMONG PRIMITIVE MEN.

By JONATHAN WRIGHT, M. D.,  
Pleasantville, New York.

We read the uncomfortable announcement in the daily paper that one of our surgical confrères has been sued and heavily fined for closing an abdominal incision and leaving behind in his patient a sponge or a clamp, and we turn to the medicolegal column in our weekly professional journal and read with relief the triumph of the surgeon in court who clearly showed in another case that the leg was longer, not shorter, straighter, not more crooked, when the plaster was taken off than the uninjured limb. We run back in mental review through the generations of medical men who have suffered for excusable mishap rather than for ignorance and willful neglect in the arduous practice of their calling, and we realize that, beyond almost all others, the responsibility the practitioner of medicine has borne and must bear is the most distressing which afflicts any of his co-laborers in the service of humanity. Many have erred—to err is only human; some have sinned and their comrades must to some extent expiate their faults, but in the evolution of medicine which has brought it to its present estate it is difficult to realize how great has been the change in the attitude of the public toward us. This change has been brought about, we must frankly admit, not because we no longer make mistakes, but because through the spread of intelligence the public understands our impotence in the face of the forces of Nature. Social progress in its evolution has taught mankind confidence in the fabric of the civilization it has reared.

It no longer ascribes to us the evil believed of the physician of primitive man. It knows we are common clay, like themselves, liable to err, but subject to the same inexorable laws of society as the rest. The courts are inclined to leniency for the shortcomings of the medical man. Hard feelings, it is true, often rankle in the bosoms of the laity and cruel jibes are still hurled at the unfortunate, but he is no longer in danger of life, limb, and fortune from the unexpected and unfortunate turn in a patient's case. We go back but a little way, however, when we meet the records of the dangers that encompassed the ministering activities of the doctor

of primitive men. But a short time back in the long history of civilization we find instances of a savage and unreasoning vengeance visited upon the medical man. Zerbi, an Italian medical writer of the fifteenth century, who added materially to our knowledge of the anatomy of the olfactory bulbs, was asked to go to Constantinople to treat a Turkish bashaw, who improved so much under treatment that the busy practitioner did not think it necessary to remain longer, but sailed away loaded with the gifts of the grateful patient. No sooner had he gone than the patient had a relapse and died. His relatives, believing Zerbi had poisoned him, overtook the ship in which he had sailed away, brought him back to Constantinople, sawed his son in quarters before his eyes, and then did likewise with him.

When there was no professional organization for mutual defense and general enlightenment was little advanced, the only safety was in the shadow of fear and superstition beneath the shield of the priesthood. The laity shrank in awe from inflicting a vengeance they would otherwise often gladly have visited upon the doctor, when they believed him the servant of the gods acting with his brother priests under their direction. We still wriggle out of an awkward situation occasionally by saying the unfortunate issue really lay in the hand of God, or more recently, "he would have died anyway." It was quite impossible for physician or ruler to exist without a support based upon the awe and fear with which primitive man stood in the presence of the Unknown—the mysteries which the priest presumes to interpret, and which he does interpret, in his own behoof, as ruler, doctor, and priest. At the very beginning of the earliest book of medicine preserved to us, the ancient Egyptian Papyrus, Ebers, the author of it, after stating that his book is one devoted to directions for the preparation of medicines for all parts of the body, goes on quickly to explain that it comes from Heliopolis with the priests, who are lord protectors, kings of eternity, and salvation. It comes also from Sais, whose goddesses protect it. Insisting before he recommends his cures that its protectors are the powers of the mysteries of Life and Death, is significant. He falters before the danger of recommending medication which may result disastrously for his patients, or at least of placing himself in a position of moral responsibility for the health, comfort, and safety of his clients. Until it is thoroughly understood that he works beneath

the protecting shield of Heaven, he does not take the great risk of tampering with a man's life or health. When a drug was given, recovery was expected; a suitable spirit had been put into the patient. He usually recovered, but occasionally he did not; he died. "You have put a demon into my child," says the distracted mother. The modern practitioner can prove he used the usual medicines; the apothecary has the prescription. This would be his defense. The Egyptian would have laughed at such a defense. "What has the drug to do with it if you put a devil into the drug before you put the drug in my child." The Egyptian doctor would never think of making such a defense.

It may be remembered that Miss Kingsley on the West Coast of Africa saw the liver and lights of some imprudent practitioner stuck on poles as warnings not to use one's inward powers for evil in ministering to one's fellowmen. Against these unpleasant results, no doctor of primitive man was ever completely assured. The danger might be made more or less remote by inculcating the belief that his ministrations were but the handiwork of God, but he had no other refuge. So the old Egyptian receipt book declares: "Words are loaned to me by the Lord of the Universe to drive away the sufferings inflicted by the gods and deadly disease of every kind." "The Lord giveth and the Lord taketh away, blessed is the name of the Lord," says the Prayer Book. "I am but his agent," says the Egyptian doctor, who has lost his patient, and he had the whole force of the hierarchy on the Nile to back him up, but even so, when it came to surgery, he must try it on a low caste man, and again even so he was more or less under the *lex talionis*, if anything went wrong when he operated on a man of high station. "An eye for an eye and a tooth for a tooth" he had staring him in the face. We find this further developed in Babylonia. The ever present, the ever threatening danger for the medicine man of primitive men, as compared with the mere traces of it still left to our daily observation, sprang from the belief in his powers for evil, among them that of causing as well as curing disease. From the point of view of primitive man, and a point of view which long persisted in historical times, he was perfectly consistent.

Let us turn to the records of those who have studied primitive man at first hand. Wallace (1) wrote: "According to the belief of Australians, as of most other primitive peoples, all evils and misfortunes are occasioned by wicked spirits and magicians, and hence can be removed only by breaking their power." Of the same races Lumholz (2) said: "In the various tribes are so called wizards, who pretend to communicate with the spirits of the dead and get information from them. They are able to produce sickness or death whenever they please, and they can produce or stop rain and many other things. Hence these wizards are greatly feared. Mr. Curr has very properly called attention to the influence of this fear of witchcraft upon the character and customs of the natives. It makes them bloodthirsty, and at the same time darkens and embitters their existence. An Australian native is unable to conceive death as natural, except as the result of an accident or of old age, while diseases

and plagues are always ascribed to witchcraft and to hostile blacks." In the Andaman Islands (3) it is thought that the medicine men "can bring trouble, sickness, and death upon those who fail to evince their belief in them in some substantial form; they thus generally manage to obtain the best of everything, for it is considered foolhardy to deny them, and they do not scruple to ask for any article to which they may take a fancy." Boas (4) says of the Chinook Indians: "When a person is angry with another, he engages a seer to watch for his enemy. If he finds him asleep he takes out his soul, which he hides in a graveyard, under the house, or in rotten wood. Then the person falls sick. His friends pay a conjurer to look for his soul. He says: 'Somebody has taken it away.' He looks for it and finds it where it has been hidden. If the soul is still unhurt, the sick one will recover. If the conjurer's guardian spirit has eaten of it, he must die. Sometimes a conjurer is paid a high price secretly to take away the soul of a person. Sometimes he is given dentaria, sometimes he is given a woman; then indeed he takes away the soul. Sometimes he takes both souls of the person, who in this case cannot recover. When the relatives of the sick one learn about it they kill the conjurer. If they do not kill him he must pay a blood fine." But Bancroft (5) says of the Chinooks, in a footnote, "Doctors, if unsuccessful, are sometimes subjected to rough treatment, but rarely killed, except when they have previously threatened the life of the patient."

As with the Chinooks so with the Cayuses and the Walla-Wallas, "the reputation of the sorcerer is at once the most terrible to others and the most dangerous to one's self that one can have. His is a power of life, and death; his evil eye can wither and freeze a hated life, if not as swiftly at least as surely as the stare of the Medusa; he is mortal, however, he can slay your friend or yourself, and death is bitter, but then how sweet an anodyne is revenge! There is no strong magic that can avail when the heart's blood trickles down the avenger's shaft, no cunning enchantment that can keep the life in when his tomahawk crumbles the skull like a potsherd—and so it comes about that the conjurers walk everywhere with their lives in their hands, and are constrained to be very wary in the exercise of their nefarious powers."

Medical activities are thus seen to be inextricably mixed up with the malevolent pursuits of those working all sorts of evil by magic as well as those benevolently dispensing other gifts of the gods to mankind than that of good health. The objects which the worker of Black Magic uses to work his fearful will are limited only by the power of his own and of his victim's imagination. An observer (6) in the enclosure of an African village heard a man calling in the night: "Wake up! Wake up! Last night my mother had a bad leg—now she is sick in her finger. All of you beware that when the leopard comes you do not receive him, as we shall divine who he may be! All of you! The white man is sleeping in town and if I make a noise he will think me a fool." There were some other conversations entirely unintelligible. This was followed by a long silence, when finally the woman, who was the mother of the previous speaker, called out, that "he



has just now told the truth. I tell you that I keep on suffering pain in my body!" This apparently had something to do with the superstition that the leopard was mixed up in a charm affecting the woman unfavorably. The author goes on to say that the leopard is connected with witchcraft and that in this instance what the man meant to say was that someone who had some influence over the leopard, which is apparently meant by the expression "ndongo" (in the stomach) had willed the leopard to come to his town or someone in that very town perhaps was ready to use the leopard as a means of destroying his neighbor's life and someone also with evil thoughts was causing the mother to keep on suffering.

In South Australia "if any person should die and his friends are ignorant of the cause, his death is attributed to sorcerers called Melapar. They applied this name to the Adelaide and more northern tribes, and believe that they have the power of transforming themselves into birds, trees, etc. Both young and old are very much afraid of this Melapar, and in consequence do not like to be away from their huts after sunset. Nearly every tribe has its own doctor, who has but one remedy for every disease; but every doctor has a different one, and this is the object, animal or vegetable, which he regards as his friend or protector. Thus one has a snake, another an ant, another seaweed, etc." (7). "Among the Narrinyeri, when a man dies, his nearest relative sleeps with his head on the corpse and dreams a dream and discovers the name of the sorcerer who has caused the death of his friend" (8).

In Bengal "in a recent case, eight women were denounced by a *sokha* as witches, who had introduced epidemic cholera into the village, and caused a terrible mortality, and among these were some very young girls. They were ill treated until they admitted all that was imputed to them, and agreed to point out and remove the spells they had prepared. They pretended to search for dead birds which, it was said, they had deposited as charms, but nothing was produced, and one of the poor creatures, fearing further ill usage, destroyed herself by jumping into a well" (9). The accounts of witchcraft practised by the Australians are very interesting. Among their performances is the practice of "pointing" with a bone, which seems to differ as to its origin in different regions; the details of belief and practice also vary slightly. In South-eastern Australia (10) the medicine men were believed to throw their victim into a magical state by pointing at him with the *yerlung*, which is a bone instrument made from the fibula of the kangaroo. Chunkey, a native of South Australia, had carried off some women. "A man belonging to the Bimbowrie tribe endeavored to rescue the women; he, in doing so, was put under enchantment by Chunkey; he pointed a human bone at him. This bone is generally part of the femur, scraped to a point, smeared with red ochre and human kidney fat, and having a ball of fat and ochre rolled together at one end. The natives believe that if this is pointed at any member of a tribe, nothing on earth can save the victim from death. They are so convinced of this that immediately it is done his

spirits droop, he becomes melancholy, his appetite fails, and gradually he pines away and dies. Such an act of witchcraft is never forgiven" (11).

Roth (12), in speaking of the Australians in Northwest Central Queensland, says that a doctor in seeking for the individual who by sorcery has injured his patient must have some of his life's blood in the hollow of the pointing stick. It is well to go slow, for a guilty person must be found who is not too strong or too sly, or who has not too many friends. Moreover, before overt acts of hostility are undertaken by the victim, the latter's blood must be got, for it is passed into the stick, when pointed, at the time a pebble or bone went out of it into the victim, a string playing an important part in the transaction. Several doctors may combine in a consultation or assist at an operation whereby the blood is restored to the victim and revenge is visited upon an obnoxious fellow practitioner. In different districts there are different ways of manipulating this bone pointer. Sometimes each party believes he has his enemy's blood, but unfortunately it is a reciprocal condition and they are afraid to fight one another, and subsequently, time having elapsed, the affair is adjusted. One party may feel uncertain whether his doctor has really got the right man's blood. To settle it they go out into the woods, and lighting a fire, the doctor warms the bone while the other slips back to camp to observe the person the doctor says the blood was taken from. If he complains of illness and not feeling well, then his enemy knows he is on the right track and has the bone heated up until serious illness or death ensues. If he discovers no sign of discomfort in his suspected enemy he concludes a mistake has been made, and the blood receptacle is washed out, and the doctor tries again. Women doctors are not allowed to practise with the pointer, and they have to persuade some male relative to get the victim's blood if they wish to work evil.

Coming back to America again, in the Queen Charlotte Islands (5) "death is ascribed to the ill will and malign influence of an enemy, and one suspected of causing the death of a prominent individual must make ready to die. . . . The Rogue River medicine men are supposed to be able to wield their mysterious power for harm, as well as for good, so that should a patient die, his relatives kill the doctor who attended him; or in case deceased could not afford medical attendance, they kill the first unfortunate disciple of *Æsculapius* they can lay their hands on, frequently murdering one belonging to another tribe. . . . The magicians of Chatham Sound keep infernal spirits shut up in a box away from vulgar gaze and possess great power by reason of the implicit belief on the part of the people in their ability to charm away life. The doctor, however, is not beyond the reach of a kinsman's revenge and is sometimes murdered." Doctoring among people with beliefs of this kind is a dangerous business, but further south the medicine men "fare better, as, in event of the nonrecovery of their patient the death of the latter is attributed to the just anger of their god and consequently the physician is not held responsible."

Among the Cherokee Indians, "a person dying

by disease and charging his death to have been procured by means of witchcraft or spirits, by any other person, consigns that person to inevitable death" (13). In the case of the death of a chief, indiscriminate slaughter sometimes decimates the individuals of his retinue, some to keep him company after death, some dying as having possibly had a hand in his demise. In the northwest of America among some of the Coast Indians attempts have had made (14) to check this murderous policy toward the doctors.

When the white man intrudes his therapy upon these undesirable patients it is not always with the happiest results for people anxious for the spread of the true doctrine. Ellis (15) tells of an experience in Polynesia where, having received injuries from playing with the strangers' belongings, "the chief appeared in a most affecting state, dreadfully scorched with the powder; Mr. Broomhall made such applications as he supposed likely to alleviate his sufferings; these, however, increased and both the chief and his wife attributed his pains, not to the effects of the explosion, but to the remedies applied, or, rather, to the poison imagined to be infused into the application by the god of the foreigners. This not only aroused the jealousy of the chief, and the rage of Uto, but having nearly caused Mr. Broomhall and his companions their lives, it made missionaries extremely cautious in administering medicine to any of the chiefs."

Diseases, introduced by Europeans, were spreading their destructive ravages unmitigated, and some members of almost every family were languishing under the influence of foreign maladies or dying in the midst of their days. The survivors, jealous of the missionaries, viewed them as the murderers of their countrymen, under the supposition that these multiplied evils were brought upon them by the influence of the foreigners with their god. We are now well aware that this supposition was correct. The savages only mistook the *modus operandi* and the intent of the invaders. Bancroft (5), in referring to one of these incidents, says of some Western Indians: "One motive of the Cayuses in the massacre of the Whitman family is supposed to have been the missionary's failure to cure the measles in the tribe. He had done his best to relieve the sick, and his power to effect in all cases a complete cure was unquestioned by the natives." The point to bear in mind here, as in a number of such instances which might be cited, is that the savage acted very much as the civilized man would under the circumstances, if he were chained to the Indian's pantheistic concepts and freed from the shackles which modern society, with other concepts, imposes. For in the power of their own medicine man "to cause as well as to cure disease at will implicit confidence is felt, and failure to heal indicates no lack of skill; consequently the doctor is responsible for his patient's recovery, and in case of death is liable to, and often does, answer with his life, so that a natural death among the medical fraternity [of these tribes] is extremely rare." Dobrzhoffer (16) more than 150 years ago said: "Amongst the Payaguas there exists a law that if any of them dies of a disease, the physician who undertook his cure shall be

put to death by the arrows of the assembled people." Again of the Patagonians he says: "If anyone dies of a disease, the relations persecute the physician most terribly, as the author of his death. If a Cacique dies, they put all the physicians to death, that they may not fly elsewhere." Of the Tena wizard men of the northwest coast of America, Jetté said (17): "The power for evil ascribed to them is in truth the objectionable side in the condition of the medicine man. He is influential, feared, respected to a certain extent, receives abundant gifts from his fellow natives, but he is not loved, nay, he is strongly disliked. He may win the gratitude of patients who believe they have been cured by him; but he is always considered a dangerous person, who may at any time turn against his best friends and cause their death, either willingly or by witchcraft, or even unwillingly by the inadequate protection of his spirit. He is aware of this feeling, too, and though he generally disregards it, it weighs at times heavily upon him.

"The Malays (who appear to be more superstitious than the Benua) have a greater faith in the efficacy of the supplications of these Poyangs, and a greater dread of their supernatural power. They are believed not only to be able to cure the most virulent maladies, but to inflict disease and death upon an adversary, and the Malays have recourse to them for both purposes. Even the tigers are believed to be subject to them, and every magician has one in constant attendance upon him. When a man falls a victim to a tiger he is supposed to have been sacrificed to the malevolence of some magician whom he has offended" (18). Among the Malays, the physician did not seem to suffer the penalties usual in many other tribes. Indeed, he seemed veritably to thrive, unchecked, on the native belief that he could kill at will. It would seem that for a spirited, wide awake man, the chance, as a practitioner, to cause disease and then cure it, must always have possessed irresistible attractions, and doubtless this aspect of the matter moved many a lighthearted savage to enter upon a path more mature wisdom would have avoided. When one has the power to injure others, one is very apt to use it. The belief that the medicine man had such power often made him more feared than respected, but wisely used, the supposed power he possessed must have been an enormous asset. The trouble is that he, in the state of pantheistic belief universally existing, was often accountable for things which of course he could not perform, but, far worse, which he could not prevent. Not only that, he is supposed to have in his power the supernatural ability to detect crime in others—or, worse, to detect witchcraft. Perhaps half conscious of the fraud of it all, he nevertheless, for the sake of his reputation, must choose some poor wretch, very possibly against whom he may himself have no grudge. Naturally those of his dislikes were sacrificed first.

In West Africa, "whoever dies, especially if great or distinguished, is supposed to have perished by the machinations of someone in his village, and everyone howls and puts on all the signs of mourning—as much apparently out of fear as out of grief. Meanwhile the witch doctor has been sent for, if he

is not already present, and he sets to work in different ways to find out who are the persons guilty of causing the death; and the witch doctor chooses the witch and the victim is tortured to death. Hence the fear and the high standing of the witch doctors. They do not always wait for the death of the patient to seek out the witch who has caused the illness, but proceed to deal with the person accused by various means from which there is no escape except by 'squaring' the witch doctor who has done the accusing" (19). It is often a dangerous game to play, whether for sorcerer, king, or medicine man, but God favors the brave; nothing risked—nothing gained. In savage times and in later times there has been a universal tendency to hold the doctor strictly accountable for the results of his doctoring. An eye for an eye and a tooth for a tooth may have been an inevitable stage of general social evolution toward a higher standard of ethics, but whenever that primitive rule has been applied to the relationship between doctor and patient, the former took no chances, and he who takes no chances of his patient dying in spite of his ministrations is not going to minister very much to the patient's sufferings or advance very much the art of medicine. In primitive society, then, the doctor must lean on the credulity of his clientele, and that has ever been and still is largely in the keeping of those who pretend to have traffic with supernatural powers—the priests. In fact, he must be one of them. Men are still indisposed to extend the cloak of charity over a doctor's shortcomings in the way of medical science when it has to do directly with the lives of those dear to them, but when social organization was weak and when man's reasoning powers were embryonic, through lack of reliable facts upon which to exercise them, when man acted more promptly, and generally more on the promptings of his emotions than on the guidance of his reason—it was a stormy outlook for the independent medical practitioner. How dangerous this was, was fully appreciated by Livingstone (20), one of the most fearless, yet the most humane of men, who shrank from incurring such peril in the heart of Africa. As to the habits of mind of the blacks in blaming the doctor for a fatal termination of illness, he thus speaks of a great African king, who had been his very good friend: "Poor Sebituane, however, just after realizing what he had so long ardently desired, fell sick of inflammation of the lungs, which originated in and extended from an old wound got at Melita. I saw his danger, but, being a stranger, I feared to treat him medically, lest, in the event of his death, I should be blamed by his people. I mentioned this to one of his doctors, who said, 'Your fear is prudent and wise; this people would blame you.'" Even in China (21), in the remote parts, at least a few generations ago, any one of the numerous professors of the healing art "is not infrequently obliged to hide himself or fly the country, to avoid imprisonment, fines, the bamboo, or even worse punishment. This may happen when, having promised to cure a patient, he has been so awkward as to allow him to die. The relations then, without hesitation, commence a law suit against him, and the safest way, if the doctor have any regard for his life or his sapeks,

is to take flight. It would seem that the legislature favors these severe proceedings, for the following passage occurs in the penal code of China, section 297: "When those who shall exercise the professions of medicine or surgery, without understanding them, and shall administer drugs or operate with a piercing or cutting instrument, in a manner contrary to established rules and practice, and that they shall thereby contribute to cause the death of the patient, the magistrate shall convoke other men of the profession to examine the nature of the remedy that they shall have made, and which has been followed by the death of the patient. If it should appear that the physician or surgeon has only acted in error, and without any injurious intention, he may, by a certain payment, obtain remission of the punishment inflicted on a homicide, in the manner established for cases of killing by accident; but the physician or surgeon shall be compelled forever to quit the profession." And the author, an ecclesiastic of the usual type, remarks: "This last provision appears to us very sagacious, and such as might be imitated with advantage in other places."

"In Persia also the fee is forfeited by the death of the patient and the doctor has some blame as the direct cause of the patient's death to bear in addition. The retirement of the doctor is a hint to the family that death is imminent, while if it comes suddenly unannounced the doctor runs the danger of being roughly handled by the women and friends. The practitioners there find it prudent to keep spies in pay to watch out for such dangers." At lower stages of culture this is more frequent. The danger to the doctor comes not only from the decay of belief in his supernatural powers, but in the conviction of his fellowmen that the only way to get even with fate for the misfortunes visited upon them, that the only way for them to solve the mystery of evil, was to skin or simply burn the family physician. Until the time arises when he thus determines to take into his own hands the punishment of the believed author of his ills, the medicine man exercises the sway which can be brought to bear in no other way upon the actions of primitive man. It is by virtue of the power of this superstitious fear that society among savages is often held together. It may easily be imagined that the doctor has mostly had devices whereby he escapes punishment. If this was not usually possible no one would venture to practice. We have seen how some do so, by acknowledging defeat in magic curing at the hands of the magician who caused the trouble, and as with us, so among the Dacotahs (22): "When the patient recovers, it redounds to the honor of the doctor; if he dies, 'the time had come that he should die.'"

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## THE USE OF ETHYLHYDROCUPREIN IN DISEASES OF THE EYE.\*

BY WILLIAM ZENTMAYER, M. D.,  
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Any agent which promises aid in the treatment of pneumococcal inflammations of the eye is especially worthy of a thorough trial. Such an agent is ethylhydrocuprein. It is therefore incumbent upon those who have used this drug to make known their results. In order to assist in reaching a conclusion as to how far the claims made for it by its earlier investigators are justified, a review of the literature of the subject is in order.

The drug, which was introduced in 1913 under the name of optochin hydrochloride, is a derivative of quinine. It is supplied in two forms—a hydrochloride for aqueous solutions, and the base for its use in the form of an ointment.

**Experimental evidence.**—The early laboratory investigations of Gebb showed that when a loop of a culture of pneumococci was mixed with three or four drops of serum bouillon and a drop of a two per cent. solution of optochin was added, the pneumococci were killed in one minute. A one per cent. solution took three minutes, and a 0.5 per cent. solution was ineffectual. In no strength did the drug have an appreciable effect in inhibiting the growth of the staphylococci or the xerosis bacillus. It had an inhibiting effect on the diplobacillus. Ginsberg and Kauffman found that when the eyes of a rabbit were injected with blood serum and a bouillon culture of pneumococci from an infected nasal cavity, and one eye not treated with optochin kept as a control, the one treated was almost invariably saved, the other lost.

Morgenroth and Ginsberg found that the base in four per cent. olive oil produced complete anesthesia of the cornea after one minute, lasting four or five days, with some anesthesia persisting for eight days. The cornea became cloudy under its action. It caused very sharp burning, which gradually disappeared in twenty minutes. Conjunctival hyperemia persisted one hour. They further determined that a two per cent. solution never produces lasting disturbance of the tissue. Puscarn found it painless in her employment of it in children. We have found that, used in one and two per cent. strength, it usually produces very sharp pain. Gradle states that it has no penetrating power; but Ginsberg and Kauffmann have experimentally killed virulent pneu-

mococci placed between the lamella of the cornea by a subconjunctival injection of a 0.5 per cent. solution, and Morgenroth asserts that the deep corneal anesthesia which results is evidence of its penetrating powers. Cavara found that it had a selective bactericidal action on the pneumococcus *in vitro*, far superior to any antiseptic in use in ophthalmology. He noted that the repeated instillation of a one per cent. solution produced slight dilatation of the pupil. There was no increase in tension, rather a tendency to lessen tension.

**Clinical uses.**—Stengele has classified its ocular uses as follows: 1. Ocular diseases produced by the pneumococcus. 2. Diseases of the tear sac. 3. Ocular diseases in which optochin has a special action in regard to photophobia. 4. Ocular diseases from other organisms or other causes such as gonococcal conjunctivitis, streptococcal conjunctivitis, vernal conjunctivitis, and trachoma.

Interest in its therapeutic value centres about its efficiency in pneumococcal infections, especially of the cornea. Goldschmidt, who was one of the first to experiment with it clinically, concluded from his experience that the drug had a far reaching curative effect in pneumococcal infections in the human eye. He found that its action was specific, i. e., that it does not affect staphylococci, diplobacilli, etc. He suggested that it might be of use as a prophylactic in corneal injuries and preliminary to intraocular operations where the presence of the pneumococcus is known or suspected. Kraupa suggests that workmen might use it every second day as a prophylactic measure. Schur records his results in thirty-five unselected cases of pneumococcal ulcer of the cornea. Thirty recovered under optochin treatment alone. In five advanced cases complications such as perforation, hypopyon, etc., occurred. Kümmell reports a cure in every one of his seventeen cases. The duration of the stay in the hospital ranged from seven to fourteen days, with an average of twenty days. In only one case (advanced) did perforation occur. Cavara treated fifty-five corneal ulcers of pneumococcal origin, and finds that it has marked beneficial effect. Superficial progress of the ulceration never occurs. The deeper infections sometimes progress to perforation, but this is no contra-indication to its further use, as the iris tolerates it well. The resulting scar is usually smaller than the original ulcer. Comparison of results with those obtained with the cautery is greatly in favor of optochin.

Schwartzkopff gives the results obtained at the eye clinic at Berlin University, where all pneumococcal ulcers have been treated with optochin since 1913. The average stay in the hospital was fifteen days. At the time of discharge eighteen per cent. had V. = 0.5 to 1.; thirty per cent., .25 to 1.; thirty per cent. fingers at one to three M.; twenty-two per cent. had l. p. or hand movements. Two eyes were enucleated. Twenty-seven cases in all were treated. Hoth employed it in two cases. In one the ulcer was clean and covered with epithelium in ten days. The second got well in a few days. Lundsgaard, Lindgren, Muhsam, Paderstein, Wertheim, and Meissner all report excellent results.

\*Read before the Pennsylvania State Medical Society, September 26, 1916.

In the case reported by Hansell the result was striking. A pneumococcal ulcer covered the outer third and involved half of the layers of the cornea. In twenty-four hours the ulceration was checked and in twenty-four hours more the eye was practically well. Leber details the effects noted upon the ulcer treated with optochin. He found that in most cases there was a rapid cleansing of the floor of the ulcer, and in the absence of latent infection of the sac the organisms disappeared so rapidly that after one day they were not culturally demonstrable in the conjunctival sac. In a majority of the cases the cleansing of the floor of the ulcer was followed by a long persistence of the marginal infiltrate and the deposit on Descemet's membrane. The hypopyon disappeared slowly. In a small proportion of the cases there was an initial arrest of the process with later exacerbation which was not amenable to the drug. This he explains by the resistance on the part of the bacteria to the toxic effect of the drug. Ramsay found that pneumococcal ulcers treated with optochin ran a shorter and a conspicuously more favorable course than did those dealt with in earlier days by the well recognized methods formerly in use. Solowejeff, Gradle, and Darier also report favorably as to its use in pneumococcal ulcer of the cornea. The author has treated eight cases, which will be detailed later.

Oliver has seen no special advantage in its use and states that cases have been reported in which the instillation of a one per cent. solution caused rapid destruction of the cornea. While this is the one discordant note in the literature, the author has found in conversations with surgeons of large clinical experience, in various parts of the country, that their results have not been strikingly good.

*Pneumococcal conjunctivitis.*—The author has employed optochin in three cases. In one the inflammation was of less than twenty-four hours' duration and one instillation of the drug brought about a cure. The second case was one of pneumococcal conjunctivitis in a patient admitted to the hospital for cataract operation. On the fourth day of treatment with optochin the organisms had disappeared. On the sixth day the cataract was extracted. Healing was without incident. In the third case the process had been going on for two weeks. At first considerable improvement was noted, but a relapse occurred and five months later the eye was still inflamed and other organisms were present in the secretion. Risley gives the notes of an interesting case exhibiting the same apparent cause for failure to heal. An eight year old child had lost both eyes from an inflammation occurring during an attack of pneumonia. When seen by Doctor Risley the eyelids were swollen, the tarsal conjunctiva covered with redundant granulations and granulation masses projected through the ruptured cornea. The laboratory report revealed an abundant pneumococcal infection with a few streptococci. Under the use of a two per cent. optochin solution improvement was rapid and marked, then ceased, and the eyes became worse. A second bacteriological examination then showed complete absence of pneumococci and the presence of a virulent streptococcal

infection. Gradle considers it a specific in this form of conjunctivitis.

*Dacryocystitis.*—Stengele considers optochin of great value in this condition, especially when complicated with corneal ulcer. Wiener saw healing of a hypopyon ulcer in the presence of a purulent dacryocystitis occurs in a few days, with a cessation of the discharge in eight hours. Gradle, Posey, Goldsmith, Stengele, and the author all report cases in which the discharge in dacryocystitis was abated. Ring found the drug exceedingly prompt in temporarily clearing up the superficial conditions in chronic pneumococcal dacryocystitis. It had, however, to be withdrawn because of the pain experienced.

*Gonococcal conjunctivitis.*—Puscarin treated eight cases of gonococcus conjunctivitis with optochin. She concludes that this method of treatment produces a rapid cure in recent and receding cases, while in cases in which the disease is at its height, up to fourteen days, treatment must be continued longer in order to get rid of all the gonococci. Wyler employed it in two cases. The first case did well at first. On the seventh day the baby could open its eyes and they remained free from pus for two hours at a time. Later there was a severe exacerbation of the conjunctivitis with perforation of the corneæ. Although the organisms found were Gram negative the reporter expresses a doubt as to their being gonococci. The Crede method had been used at the birth of the child. The second case was improving under optochin, but soon passed from under Wyler's care.

*Streptococcal conjunctivitis.*—The evidence concerning the value of optochin in this form of conjunctivitis is limited to the case reported by Crisp. The patient was a man seventy-three years of age. There was a free purulent discharge which nitrate of silver and other agents failed to check. A rapid recovery followed the use of optochin.

*Vernal conjunctivitis.*—Wyler employed the drug in two cases of mild vernal conjunctivitis, with the result of markedly ameliorating the characteristic annoying itching of this affection.

*Trachoma.*—Wyler claims to have derived benefit from its use in trachoma.

*Blepharospasm and photophobia.*—Because of the persistence of the corneal and conjunctival anesthesia over several days Peterka employed it in the blepharospasm of phlyctenular disease. He found that it relieved both the spasm and the photophobia. Stengele, Grunert, and Wyler also report remarkably good effects upon these symptoms in this disease. The two latter observers both noted that it failed in interstitial keratitis. Stengele believes the benefit to be due, not to the anesthesia but to the bacterial action of the drug.

*Method of using.*—As previously stated the drug is supplied in its basic form and as a hydrochloride. The latter is soluble in distilled water up to five per cent. strength. Clinically, the hydrochloride has usually been employed, in one and two per cent. strengths.

The method which appears to give the best results in the treatment of corneal ulcers is that proposed

by Kümmell. A two per cent. solution is daily applied to the ulcer by means of a small cotton pledget and a one per cent. solution is instilled hourly into the conjunctival sac. Schwartzkopf used to advantage a salve of optochin hydrochloride 0.1; atropin 0.1; amyl 2., vaseline 10., applied every two hours. For the relief of blepharospasm and photophobia a five per cent. solution is instilled, and repeated, if necessary, every two days. As the drug is, in all strengths, painful, it would seem advisable to precede the use of the stronger solutions with an anesthetic. Crisp in treating his case of streptococcal conjunctivitis rubbed into the conjunctiva of the lids a one to 180 solution. In the treatment of gonococcal conjunctivitis Puscasin advises the hourly instillation of a one per cent. solution, previously washing off all secretion with boric acid, where there is profuse secretion and severe inflammatory symptoms. Ten to fourteen instillations are made in twenty-four hours. When the secretion stops and the infant is able to open its eyes, a two per cent. solution is to be used every two hours, preceded by a flushing of the conjunctival sac. The solution must reach the whole surface; to this end the eyelids must be turned and the conjunctiva exposed one minute to the fluid.

*Precautions.*—In view of the fact that Oliver asserts that cases have been reported in which instillation of a one per cent. solution produced rapid destruction of the cornea and that the unfavorable result in Wyler's one case might possibly have this explanation, it is deemed wise to emphasize that the drug should be used with extreme caution and that other methods known to aid in the treatment of the condition under observation should be used in conjunction. The toxicity of the drug should be borne in mind when injecting the solution into the lacrymal passages.

A synopsis of the author's cases of pneumococcal ulcer of the cornea treated with optochin is as follows:

CASE I. Admitted three days after being struck in eye by a piece of rock. Large sloughing ulcer with hypopyon. Ulcer cauterized on admission. Ethylhydrocuprein first used on third day. On fifth day a Saemisch was done. On the seventeenth day the ulcer was clean and a roller bandage was ordered. Discharged on thirty-seventh day with an adherent cicatrix.

CASE II. Admitted two weeks after injury of the eye with a blade of grass. Pneumococcal ulcer with hypopyon. Optochin from first day. On eighth day slight increase of infiltration. On the fourteenth day cauterized with trichloroacetic acid. Discharged one month from admission with ulcer healed.

CASE III. Admitted one week after beginning of inflammation. No history of trauma. Had similar trouble one year ago. Got well without treatment. (Patient's statement.) Pneumococcal ulcer with hypopyon. Optochin first used on second day. On fifth day hypopyon absorbed. On eighth day ulcer clear. Discharged on twentieth day, ulcer healed  $V. = 8/30$ .

CASE IV. Admitted nine days after coal injury. Large pneumococcal ulcer with hypopyon. Dacryocystitis. Optochin from first day. On sixth day ulcer cauterized, with trichloroacetic acid. Optochin stopped one week. On twenty-first day paracentesis performed. On the thirty-third day desemetocle. Discharged on forty-fifth day. Eye quiet. Cornea flat.

CASE V. Admitted three months after inflammation began. No history of trauma. Lower half of cornea involved in ulcer. Hypopyon.  $T. + 1$ . Optochin used from start. Second day ulcer cauterized. On fifth day ulcer

perforated. Discharged on ninth day. Ulcer healing.

CASE VI. Admitted on twenty-sixth day after coal injury. Small pneumococcal ulcer with hypopyon. Optochin from start. Discharged on seventh day; ulcer healed.

CASE VII. Admitted sixteen days after injury by piece of iron. Treated by an ophthalmologist until time of admission. Large pneumococcal ulcer involving middle two thirds of cornea; deep hypopyon. Cicatricial ectropion of both lids from burn of face in childhood. On twenty-third day actual cautery applied to ulcer and base perforated. Optochin from start. Discharged at the end of six weeks with adherent cicatrix. Clear corneal tissue above.

CASE VIII. Admitted three weeks after injury by coal. Incipient panophthalmitis. Ulceration extended to Desemet's membrane. Smear negative. Optochin from start. On sixth day ulcer margins lightly touched with carbolic acid. Thirteenth day eye much more quiet.  $T. + 1$ . Discharged on eighteenth day cornea flat.  $V. =$  hand movements.

#### CONCLUSIONS.

Ethylhydrocuprein (optochin) is a valuable aid in the treatment of pneumococcal infections of the eye. It often acts as a specific in pneumococcal ulcers of the cornea, especially if the treatment is begun before active tissue destruction has occurred. Almost all cases of this type of corneal ulceration under the action of this drug, to use the words of Ramsey, manifested a shorter and conspicuously more favorable course than did those dealt with in earlier days by the well recognized methods formerly in use. The evidence at hand as to its value in diseases of the cornea and conjunctiva due to other organisms than the pneumococcus or to other causes is insufficient on which to base a conclusion.

1819 SPRUCE STREET.

#### RESEARCH IN EPILEPSY.

By HOWARD A. KNOX, M. D.,  
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(Continued from page 310.)

#### PART II. LEPTIN.

Leptin is a name which for convenience has been given to a preparation of organisms obtained from the intestinal flora and blood of epileptics. After making repeated cultures from the stools of my patients I attempted the isolation of organisms therefrom by plating, streaking, and selective media, but it was found that many would not grow when unaccompanied by their fellows. In those first isolated in pure culture, agglutination, bacteriolysis, and other immune phenomena were negative. In order to allow for symbiosis an effort was made to select a medium upon which the maximum number of intestinal bacteria would grow; for this purpose nutrient broth, with one per cent. feces, from the epileptic under examination, was found to be the most serviceable.

In order to isolate a large number of organisms from these feces broth cultures the following method was devised: Twenty 0.5 per cent. bile broth tubes were placed in two racks and numbered from one to twenty. The original culture was shaken gently for one minute and a loopful of this was placed in tube 1; the latter tube was shaken for one minute and the loop flamed in the meantime, after which a loopful from tube 1 was placed in tube 2, and so on through the twenty tubes. From



these tubes cultures were made into other sets. Whenever an organism not readily identified was found it was tested immunologically and some were fed to cats, and I wish to state here that I have not yet found an organism that will cause convulsions in a cat by feeding; no other method was tried. Finally a bacillus was found which morphologically resembled *Streptobacillus epilepticus*, except that it did not occur in chains nor did it occur thus on solid media. At first no immune reactions to the serums of epileptics were obtained, mature cultures having been used. The results were striking, however, when younger cultures were taken; these were agglutinated by the blood serum of eighteen out of twenty-two epileptics in dilutions of from one to 250 to one to 1,000. The microscopic hanging drop method was used with four hours in the incubator at 37° C.; and the macroscopic method with ten tubes and ten controls was also used with the same incubation. Serum of normals shows clumping in low dilutions, which may be due to the presence of proagglutinoids or similar agents or, more likely, to the presence in normals of the same organism toward which there is more defensive activity or natural immunity. Bacteriolysis was present with every serum that produced agglutination. For this reaction epileptic serum heated to 50° C. for ten minutes and diluted to ten per cent. with normal salt solution was used. Normal human serum undiluted was added at the time the live culture was placed in the ten per cent. patient's serum. This experiment was carried on *in vitro* and at body temperature. Controls were used. Lysis of the organism began in about nine hours and was complete in forty-two.

Precipitin reactions and complement fixation were unsatisfactory and inconclusive. Accepting my own opsonic index as 1, to this organism the indices of all patients showing a + dermal test were below this point; in twenty consecutive experiments the phagocytic activity was 0 to 0.8. The next step was the determination of the relationship, if any, between the intestinal bacillus and *Streptobacillus epilepticus*. Cross immunity tests seem to indicate a close relationship if not identity of the two. Epileptics, like other chronic invalids, are always anxious to try new forms of treatment, and volunteers were consequently numerous. It was found that standardized salt solution suspensions of either organism would produce a marked skin reaction when injected intradermally, and subcutaneously, but that neither would produce any reaction when the other had been injected one week before in corresponding dose. In other words, one produced an immunity toward the other.

On three occasions I found a strain of colon bacilli that were clumped in low dilutions by the serums of epileptics and not by the serums of normals, and since we know the deleterious influence that the members of the colon group sometimes exert, I assumed that this organism might play some part in the production of the symptoms, and for this reason I have included this strain in the preparation, leptin, which I am about to describe.

Having determined to my own satisfaction the etiological importance of certain microorganisms in epilepsy, and prompted by a desire to do something in behalf of those who had become my friends, I

decided to take a short cut to attain the object. Nineteen high grade patients volunteered to a man, as they said, to "do anything, try anything, or take anything," regardless of risk, that might offer some hope of stopping the disease in its onward rush; and this was not to be wondered at, for all about them were imbeciles and poor wrecks of humanity that had once been as bright as they.

Leptin is a modified vaccine consisting of three, or perhaps two, varieties of bacilli; each c. c. represents 100,000,000 each of the *Streptobacillus epilepticus* and the specific bacillus from the flora of the intestinal canal—the latter is perhaps identical with the former—and 50,000,000 of the colon bacilli which showed some specificity.

The *streptobacillus*, already in pure culture, was subcultured on the solid medium on which it was first obtained, in the bottom of large conical flasks and it was carried evenly over this in a small amount of distilled water and placed in the incubator at 38.5° C. for forty-eight hours. At the end of this time a luxuriant growth was obtained, which was washed loose with a fine wire brush into normal saline. Care was taken not to abrade the surface of the medium. This suspension was transferred to a sterile long necked flask and shaken with beads for twenty minutes. The bacteria were counted by Wright's corpuscle comparison method and normal saline added until each c. c. contained 500,000,000 bacilli; this procedure was difficult, owing to the minuteness of the organisms. This flask was sealed at the neck and placed in an electrical sterilizer for one hour at 60° C. and then set aside in the ice box.

The specific bacillus from the stools was transplanted from a pure culture in feces broth to flasks of plain nutrient broth, neutral in reaction and grown at 38.5° C. for forty-eight hours. This was agitated with beads, sterilized, and the number of bacilli in each c. c. estimated by a set of graduated comparison tubes.

The colon bacilli were grown on Dunham's peptone for forty-eight hours at 37° C., sterilized, and diluted with normal salt solution until each c. c. contained 300,000,000 bacilli. These three suspensions were now mixed and diluted in such proportion that each c. c. represented 100,000,000 each of the *streptobacilli* and specific intestinal bacilli and 50,000,000 of the special strain of colon bacilli. This mixture was heated in an electric sterilizer until a temperature of 95° C. was reached, and it was kept between this point and 100° C. for half an hour, until disintegration commenced in the organisms. The flask was removed from the sterilizer and cooled in a draught and exposed to direct sunlight for five hours on two consecutive days. It was then treated with phenol until it contained 0.2 per cent., brought up to the boiling point rapidly, then suddenly cooled and placed in the final ampoules. It was subsequently kept in an ice box.

#### DIAGNOSTIC USES.

The anaphylactic skin reaction produced is striking and characteristic. Of the first fifty cases forty-one reacted positively, the remainder may have had an immunity or their symptoms were not due to these bacterial causes. One minim was in-

jected with a fine platinum needle into the skin over the insertion of the pronator radii teres muscle, and the needle was then thrust just through the skin and 0.5 c. c. deposited in the subcutaneous tissues and no deeper. About eight cm. above this one minim of sterile water is similarly injected for control. In about twelve hours soreness begins in and about the spot where leptin was injected, and a pink to light purple areola begins to form, which enlarges in the next ten hours, when it reaches its maximum size and begins to subside. The lesion is sharply circumscribed. Induration is slight. At times there are general symptoms such as nausea, flushing of the face, and a fraction of a degree of fever, but these manifestations are inconstant. No negative phase was observed. The diagnostic value lies in the fact that those showing positive skin reactions are favorable subjects for treatment with the preparation. Normals injected with the preparation sometimes show a slight reaction, but in these individuals there are usually clinical manifestations attributable to absorption from the intestinal canal, or there is definite disease of this structure.

#### SYSTEMIC IMMUNIZATION WITH LEPTIN.

One c. c. was injected subcutaneously and no deeper, and the subsequent doses and length of time between doses were determined by the local symptoms and constitutional results obtained. In general the treatments were given weekly. The point selected was on the dorsal surface of the forearm or thigh or over the deltoid muscle. The treatment should be continued until the skin reaction is negative, and tests made biweekly for a while thereafter to determine the degree of immunity. Should a frankly positive reaction reappear treatment should be resumed and continued at the discretion of the physician, and depending on the seizures and episodes of the patient. One c. c. should be the initial dose in an adult. It seems to be a general rule in using the treatment that the amount injected has to be doubled at the third weekly dose and then increased constantly until the symptoms are brought under control.

Strychnine in tonic doses, saline laxatives occasionally, suitable psychic adjustment, and a low protein diet are valuable adjuncts. Absolutely no deleterious results have been observed from the use of leptin up to date.

Before reporting cases I wish to state that no definite claims are made for the etiological importance of the organisms which I have isolated and used therapeutically; they may have been contributory factors only; I only maintain that they must have exerted some unfavorable influence on these patients, otherwise their symptoms would not improve or clear up after an immunity toward them had been developed.

The positive allergic skin reaction and the presence of lysins and agglutinins toward all three organisms in the same individual are phenomena that I cannot explain.

We must remember that we cannot rebuild a defective nervous system, we can only enable the epileptic to neutralize some of the stimuli that produce his symptoms, and in so doing break up the vicious circle that produces his decline.

Skin reactions (to be abbreviated "S. R.") are designated as follows:

- , Indicates no reaction whatever.
- +, Observable only with slight soreness and sometimes seen in nonepileptics.
- ++ , Pink, sharply circumscribed, and about two inches in width.
- +++ , Darker in color, circumscribed, two to four inches or more in width, considerable soreness, and beginning at from the twelfth to the eighteenth hour and lasting until the forty-eighth hour, and sometimes having a slight pigmentation, which later disappears.

The cases here reported were selected institutional cases. This list is given, however, because it is in every way representative. To save description of symptoms in each case it may be said that the twenty-five cases chosen for report all had seizures of the *grand mal* type, none had definite neurological signs, some had transient episodes, and all were in fairly good physical condition. All are reported at the end of two months from the beginning of the injections.

Case I. Had — S. R., no change for four weeks, then cessation of confused periods and only one *grand mal* over a period in which there were usually six to eight of these attacks.

Case II. + S. R. The most notable result was a change from serial to individual attacks after dietary excesses.

Case III. ++ S. R. Had not had any *grand mal* attacks for several months, but had been having periods of irritability and migraine; the former was less noticeable and the latter ceased.

Case IV. + S. R. Has had *petit mal* attacks at infrequent intervals instead of severe *grand mal* attacks.

Case V. — S. R. Has aura alone instead of *grand mal* attacks with this warning.

Case VI. +++ S. R. Improvement varied directly with the weekly increase of dose, and treatment will probably have to be continued for a long time in this case.

Case VII. +++ S. R. Attacks occur less frequently and patient's personality and conduct showed a change for the better.

Case VIII. +++ S. R. Has acquired an aura from four to eight hours before impending attacks, and these can consequently be aborted. The attacks are lighter, and leave but little stupor afterward.

Case IX. ++ S. R. No change observed in this patient other than an improvement in physical condition and more mental alertness.

Case X. +++ S. R. Shows improvement physically and mentally. The drawing speech defect so constant in epilepsy has nearly disappeared and the reaction time to questions is much shorter than before treatment began.

Case XI. +++ S. R. Seizures ceased but came on again; a second intradermal injection showed a frankly positive S. R.; the trouble here seems to have been timidity in multiplying the doses.

Case XII. ++ S. R. Lessening of symptoms after the third week; the patient had been having seizures as often as once a day.

Case XIII. ++ S. R. Convulsions lessened in frequency and severity. Responses more relevant and prompt. Attention easier to obtain and this can be focussed on work to better advantage.

Case XIV. +++ S. R. A change in mood was here the most noticeable improvement. Chronic depression gave place to a more normal demeanor.

Case XV. +++ S. R. Episodes of negativistic mutism less prominent. Migraine also relieved.

Case XVI. +++ S. R. In this patient seizures became less severe and his chronic hypomanic state has improved.

Case XVII. + S. R. Does not require laxatives, intestinal stasis no longer troublesome.

Case XVIII. + + S. R. Seizural manifestations subsiding; constipation and migraine less troublesome.

Case XIX. +++ S. R. Seizures have disappeared, change in temperament toward normal.

Case XX. ++ S. R. In this case the patient considers himself better, but I have been unable to detect any improvement.

Case XXI. ++ S. R. Seizures come on less frequently and are lighter; hypochondriacal depression clearing up.

Case XXII. ++ S. R. Constipation improved, tendency toward tympanites and flatus less marked. Insomnia and anorexia have subsided.

Case XXIII. ++ S. R. No change observed as yet.

Case XXIV. +++ S. R. Less pugnacious, easier to manage. *Grand mal* attacks have given place to infrequent attacks of *petit mal*.

Case XXV. +++ S. R. Tendency toward status has given place to occasional *grand mal* seizures when constipated.

#### CONCLUSION.

It seems that we have here an agent which is beneficial in epilepsy; the permanency of its effect remains to be demonstrated. It possesses no harmful influence. The above conclusions are facts proven by my investigations. My own opinion, however, extends further. I believe that we can so immunize the system of the epileptic, provided he has sufficient defensive potential, as to raise his threshold of irritability and decrease the specific or nonspecific stimuli below the point of pathological activity, and in so doing finally abolish the seizural and episodic manifestations entirely.

271 AVENUE C.

(To be concluded.)

### IS THE GASTRIC SECRETION ALTERED IN GALLBLADDER DISEASE?

By MICHAEL G. WOHL, M. D.,  
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An important point in the diagnosis of gallbladder disease, which is too often overlooked, is the altered gastric secretion in this condition. It is a

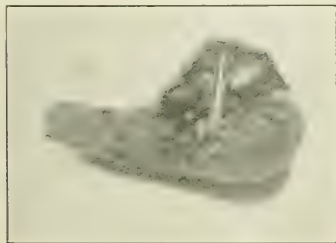


FIG. 1.—Gallbladder completely obliterated by stones. N. S. 1071.

well established clinical fact that a great percentage of gallbladder cases give a previous history of gastric symptoms that are of many years' standing. In a series of 105 cases operated on by Dr. A. P. Condon and Dr. C. H. Newell of the Nicholas Senn Hospital, ninety per cent. gave a history of epigastric distress; there were loss of appetite and nausea in sixty-five per cent. of the cases; gaseous distention was observed in ninety per cent. of the cases. Vom-

iting, which was followed by marked relief, was a less constant symptom.

The conventional explanation of the gastric symptoms is that they are of reflex origin. However,



FIG. 2.—Photomicrograph (low power) showing connective tissue proliferation and distortion of glands.

they can be in a great measure accounted for by the deficiency or total absence of free hydrochloric acid. We are forced to this statement by the fact that more than one half of our cases with badly damaged gallbladders showed either a great diminution or entire absence of free hydrochloric acid.

Forty cases were selected because complete clinical, laboratory, and operative observations were possible. The table herewith represents the findings in these cases. To summarize the findings in the table, eleven cases, or twenty-seven and a half per cent., showed a diminution of free hydrochloric acid and eleven cases, or twenty-seven and a half per cent., showed a complete absence of free hydrochloric acid. In other words, fifty-five per cent. had free hydrochloric acid below normal. In three cases, or seven and a half per cent., there was a hyperacidity; in fifteen, or thirty-seven and a half per cent., free hydrochloric was normal.

The pathology of gallbladders associated with entire absence of free hydrochloric acid consisted of extensive connective tissue changes within the walls of gallbladders, desquamation of mucosa, and dis-

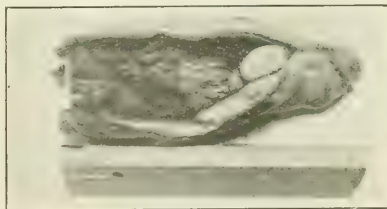


FIG. 3.—Hydrops of gallbladder. N. S. 1532.

tortion or entire destruction of mucous glands. To all intents and purposes such a gallbladder is functionless; i. e., nature has performed an autocholecystectomy (Figs. 1 and 2).



The lumen of the gallbladder was either filled with closely packed stones as in Case XXXIV (see table), or one or two stones embedded in the gallbladder walls, as in Case III. Another class of gallbladders accompanied by loss of free hydrochloric was hy-

ancy. Simintsky's (2) assumption that with retention of bile there is a hyperchlorhydria does not hold good in these cases, since at the time of the gastric analysis none of the patients have been jaundiced. On several occasions gastric contents taken at the

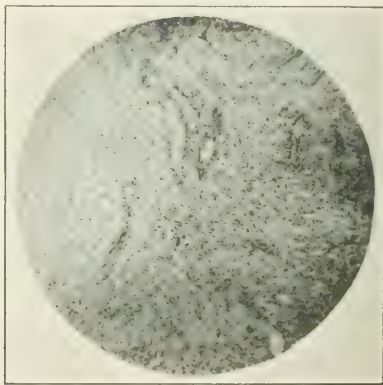


FIG. 4.—Photomicrograph (low power) of section from wall of gallbladder (Fig. 3). Note extensive connective tissue proliferation.

drops of the gallbladder through occlusion of the cystic duct. A gallbladder of this kind is distended and the walls are thick, consisting of connective tissue. The mucosa is destroyed and the mucous glands replaced by connective tissue (Figs. 3 and 4).

Not in a single instance have we seen a loss of free hydrochloric acid with what looked to be a normally functioning gallbladder. In Hohlweg's series (1) eighty-four per cent. of the cases of functionless gallbladders showed a deficiency of free hydrochloric. The pathology of gallbladders associated with a diminution of free hydrochloric consisted in erosion of the apical epithelium of the villi (strawberry gallbladder). The connective tissue replacing the loss of epithelium has not been so extensive as in gallbladders of the first group. An important

feature in the pathology of this type of gallbladder disease is the increase of mucous glands and Luschka spaces. This will probably explain the increased viscosity of bile in this condition (Figs. 5, 6, and 7).

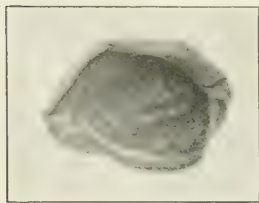


FIG. 5.—"Strawberry" gallbladder. N. S. 1045.

Although in fifteen cases gallbladders of this description were associated with normal free hydrochloric, yet not in one case of diminished free hydrochloric has there been a gallbladder approaching the normal. In three cases, or seven and one half per cent., there was a hyperacidity, although the gallbladders presented marked pathologic changes. We do not know how to account for this discrep-



FIG. 6.—Photomicrograph (low power) showing dilatation of glands.

time when patients were jaundiced failed to show any hyperchlorhydria.

To sum up we conclude that hydrochloric acid in gastric contents bears in some degree the same relationship to gallbladder disease as the polymorphonuclear leucocyte count in disease of the appendix. In eighty-five per cent. of the cases a polymorphonuclear count above eighty per cent. would indicate pus. A leucocyte count below eighty per cent. indicates no pus in ninety-five per cent. of the cases. A polymorphonuclear leucocyte count between eighty and ninety per cent. usually but not always means pus. This has been the experience of

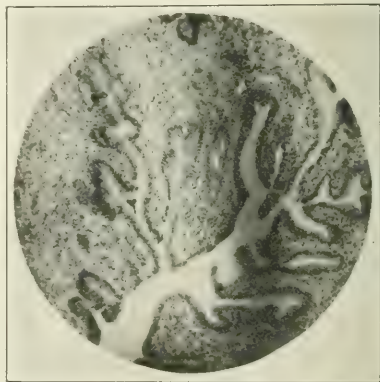


FIG. 7.—Photomicrograph (low power) showing proliferation of glands.

several thousand counts at the Nicholas Senn Hospital (3).

A total absence or diminution of free hydrochloric acid in gallbladder disease would indicate badly damaged, functionless gallbladder in ninety per cent.

of the cases. It was pointed out elsewhere (1, 4) that in sixty-nine per cent. of cholectomized patients the gastric contents examined within one to five years after operation showed a deficiency or total absence of free hydrochloric acid, which would in a great

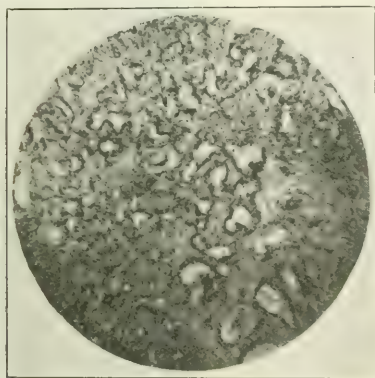


FIG. 8.—Photomicrograph (low power), adenocarcinoma of gallbladder. See Table I, Case XXV, N. S. 1121.

measure account for postoperative gastrointestinal complaints. A normal free hydrochloric acid content does not exclude gallbladder disease, since it may or may not be associated with a diseased gallbladder.

From the above study we would conclude: 1. In a case presenting symptoms of gallbladder disease a diminution or total absence of free hydrochloric acid will not exclude the gallbladder as the source of the symptoms, but rather strengthen the clinical diagnosis. Of course, this is not meant to apply to patients past middle life in whom gastric symptoms with an absence of free hydrochloric is associated, primarily with malignancy of the stomach. 2. The gallbladder is not a functionless reservoir of bile but is related in some way to the secretion of the stomach.

I wish to express my thanks to Dr. F. Kuegle for his aid in the preparation of the illustrations.

NAME	GASTRIC ANALYSIS (Ewald's Test Meal; Time Limit 30 Min.)				OPERATIVE FINDINGS
	Amt. of Gastric Extract (c.c.)	Total Acidity	Free HCl	Combined HCl	
1. Mrs. Az.	10	40	5	30	Gallbladder distended, thick. Thick
2. Mrs. St.	20	70	5	50	Gallbladder thick two plus. Cystic duct thickened and adherent. Stones, one large in cystic duct. Many soft, small in gallbladder.
3. Mrs. Ra.	30	20	0	0	Gallbladder distended, high tension. Tarry bile. Two large stones in gallbladder.
4. Mrs. Me	10	90	55	0	Gallbladder adherent to omentum; it had at some time ruptured into liver substance. Pancreas, twice normal.
5. Mr. Ra.	40	55	15	0	Gallbladder distended two plus; thick one plus. 300 small stones in gallbladder.
6. Mr. Bew	250	80	60	0	Gallbladder distended three plus; one-half buried in liver; tarry bile. Two small stones in gall- bladder.

7. Mrs. Sc	40	70	40	0	Gallbladder not adherent. Three large stones in gallbladder.
8. Mrs. Sc.	20	80	30	0	Gallbladder adherent to surround- ing tissues, thick three plus, long and narrow. Several soft stones in gallbladder.
9. Mrs. Ja	50	60	40	0	Gallbladder distended, thick two plus, adherent at neck. Five stones in common bile duct, three in hepatic duct.
10. Mrs. Li	60	50	0	0	Gallbladder long. Strawberry.
11. Mr. Ru.	20	95	40	0	Gallbladder shrunken, thick three plus. One large stone in cystic duct.
12. Mrs. Si.	50	90	60	0	Gallbladder thick one plus, shrunken two plus. Two stones in gall- bladder.
13. Mrs. Fr.	180	50	.05	.35	Gallbladder size of lead pencil, buried in liver; fistula in stom- ach. Three stones in common duct; three in cystic duct.
14. Mr. Pe.	110	30	15	0	Gallbladder small, thick three plus, half buried in liver.
15. Mrs. Ne.	50	65	25	.25	Gallbladder distended three plus. One large stone in gallbladder.
16. Miss Bu.	80	90	40	0	Gallbladder tense three plus, thick one plus, strawberry. Lymph gland size of bean at cystic.
17. Miss Sc.	150	50	0	0	Gallbladder enlarged two plus, thick two plus, adherent to omentum. Tarry bile.
18. Mrs. Ch.	40	60	.05	0	Gallbladder long, thick two plus, entirely covered by adhesions; too small stones in gallbladder.
19. Mrs. Lo.	45	200	10	.20	Gallbladder white and thick one plus, bile thick. Twenty mulberry stones in gallbladder.
20. Mrs. Ha.	0	55	20	10	Gallbladder distended, wall thick- ened, strawberry appearance. Forty large gallstones.
21. Mrs. Br.	0	0	0	0	Gallbladder tense, normal size, tis- sues around it adherent, wall of gallbladder whitish as seen in hydrops.
22. Mrs. Ry.	0	66	30	6	Gallbladder large, markedly dis- tended, walls not greatly thick- ened. Fifty small stones.
23. Mrs. Ch.	0	30	0	0	Gallbladder completely buried in ad- hesions, inflamed. Third operation. One broken-up stone, very soft.
24. Mrs. Ko.	0	50	10	0	Gallbladder very small and very thick, entirely filled with small stones.
25. Mrs. Gr.	0	40	0	.30	Duodenum and transverse colon ad- herent to gallbladder. Gallbladder deep in liver substance. Adeno- carcinoma of gallbladder.
26. Mrs. Wi.	45	20	0	10	Gallbladder buried in liver, adher- ent to transverse colon. Packed with stones.
27. Miss He.	150	60	25	10	Gallbladder thick two plus, small amount of pale bile, no adhesions. Several large stones. Twenty small stones.
28. Mrs. De.	few	55	30	15	Gallbladder thick. One large mul- berry stone.
29. Miss Ba.	0	55	26	15	Gallbladder thick two plus, straw- berry appearance two plus. One large soft stone.
30. Mrs. Ka.	50	65	40	15	Gallbladder, no adhesions nor thick- ening nor distention. One soft large stone in gallbladder.
31. Mrs. Kl.	0	40	10	20	Gallbladder distended two plus, pale bile, not thickened. Twenty-five small stones in gallbladder.
32. Mrs. Vo.	68	70	35	10	Gallbladder large, tense two plus, thick one plus, appearance of hy- drops. Dozen soft stones in gallbladder.
33. Mrs. Ro.	30	30	40	10	Gallbladder full of dark bile. One large mulberry stone in gallbladder.
34. Mrs. Wi.	0	30	0	20	Completely obliterated by stones.
35. Mr. Br.	few	20	0	0	Gallbladder distended two plus, ad- herent to omentum.
36. Miss St.	60	30	20	0	Gallbladder strawberry three plus. One large gallstone.
37. Mrs. We.	50	45	10	.25	Gallbladder long, thick and dis- tended. One stone in cystic duct.
38. Mrs. Rie.	0	60	10	0	Gallbladder thick two plus. Pancreas very large. Twelve small stones in gallbladder, one in cystic duct.
39. Miss Do.	10	40	0	0	Gallbladder markedly thickened and extremely tense. Filled with soft stones, one stone in cystic duct, stone encrusted in wall of common bile duct.
40. Mrs. Le.	15	55	20	0	Gallbladder looked normal. One stone in gallbladder.

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## THE RADICAL TREATMENT OF POTT'S PARAPLEGIA BY THE ALBEE BONE GRAFT.

BY PRESCOTT LE BRETON, M. D., F. A. C. S.  
Buffalo.

Within the past two years the writer has operated on three cases of Pott's paraplegia at the Buffalo General Hospital, producing fixation of the diseased area, twice by the Albee method and once by the Hibbs method. A short summary of these cases indicates the results:

Case I. Girl, aged thirteen years. Dorsal kyphosis; complete motor paralysis of both legs of eight months' duration; had had no diagnosis made and no treatment except rest in bed. Six weeks after an Albee operation she began to move her toes and the gluteal muscles. Steady gain followed. Three months after operation could walk with



FIG. 1.—Patient with dorsal kyphosis and complete motor paralysis of both legs (Case I), cured by Albee operation.

crutches. Six months after operation practically well with disappearance of increased reflexes.

Case II. Man, aged thirty years. History from childhood of a large dorsal kyphosis with recurring sinuses. For one year past, spastic gait, incoordination, partial loss of bladder control, partial loss of sensation, and increased reflexes. Had been growing worse steadily. Three months after an Albee operation, this patient had regained bladder control, the strength of the muscles had increased, and the reflexes were less exaggerated. Six months afterwards could walk freely with a cane. One and a half years later, ready for work, the only remaining symptom being a quick knee jerk and a subjective stiffness of the lower back and thighs.

Case III. Girl, aged ten years. Under personal observation for four years for Pott's disease. Kyphosis in upper dorsal vertebrae. In August, 1913, began to show signs of paraplegia. Improvement at first at the hospital from treatment by hyperextension and traction to the head. Then followed a complete paraplegia with great spasticity. Six months later, a Hibbs operation was done, and six months after this improvement began and continued stead-

ily. At present in good condition, but the reflexes are still exaggerated.

In tuberculosis of bones and joints we have learned that adequate fixation is the agent which is most valuable in causing a rapid subsidence of the disease. This is well shown by cases of tuberculosis of the knee in adults after excision of the joint, or in ankle joint cases where the bone graft is used. Likewise in the spine, especially in the dorsal region where respiration is a factor, the fixation afforded by a bone graft is of great value. When we are confronted by a paralysis, so serious and prolonged, why not advise as the best treatment, an operation, which promises immediate fixation to stay the progress of the disease, to reduce the pressure on the cord, and to obtain relief?

Two other methods of treatment are to be considered: hyperextension with fixation on the Bradford frame, and the Rollier treatment. Hyperextension



FIG. 2.—Patient with large dorsal kyphosis and partial paralysis (Case II). Albee operation.



FIG. 3.—Patient with Pott's disease of four years' standing. Hibbs operation.



on a frame often gives good results. In time the disease subsides and the paralysis is relieved. But meanwhile the patient, especially if he is an adult, is made most unhappy, and for a long time he requires constant care and nursing. The writer has seen, in his service at the Buffalo Municipal Hospital, many cases of ordinary tuberculosis of bone, where sunshine did wonders for the patient as a whole, and local treatment by plaster or splints was a minor consideration. But this method also takes time and its aim is to improve the patient generally and not to act locally in a direct way. When a serious symptom appears, as beginning paraplegia, it would seem wise to advise a treatment which will act quickly and directly. One might add at a later date the Rollier treatment as an adjunct.

In reviewing the histories of these three cases, there can be no doubt in the first two where the Albee method was used, that the cures were directly due to operation. The first case showed return of power in less than two months and the return to normal was most rapid. In the second case, the man who had been steadily going down hill began to improve in two months and regained his health and is at work. In the third case the writer is not so sure that the operation was responsible because there was an interval of about six months after the operation before improvement was noted. None of these patients have worn any spinal support, except for a short period of three months immediately after operation.

125 ALLEN STREET.

## PRIMARY MYOPATHIES.

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The primary myopathies have resisted interpretation more successfully than almost any other disease. Practically all that we know of their causation today is embodied in the suggestion of Gowers that they are manifestations of an abiotrophy, i. e., that the muscle cells originally endowed with a certain amount of vitality die when this vitality is exhausted. This explanation might be applied to any disease not dependent upon exhaustion, accident, or infection. In reality it does not explain at all.

When the primary myopathies were first described many clinical varieties were delineated, and even today it is customary to speak of the infantile variety or Werdnig-Hoffman type, due to degeneration of the lower motor neurons; the juvenile variety, or scapulohumeral type of Erb; the fascioscapulohumeral type, or Landouzy-Dejerine type; the pseudohypertrophic paralysis of Duchenne, and the hereditary variety, or Leyden-Moebius type. But these varieties, different in their clinical particularities, have the same character of being familiar or hereditary and of developing in childhood or in youth. Therefore it is not unlikely that these are all manifestations of the same disease representing a sole morbid entity.

*Morbid Anatomy.*—Although there are observations which show that the spinal gray matter is not

absolutely normal and others which revealed changes in the nerve muscle endings or in the peripheral endings of the lower neurons, yet the essential anatomic alterations of the myopathies are found exclusively in the muscles.

The muscular fibres become atrophic, while the nuclei of the sarcolemma proliferate. Near the atrophic fibres, however, normal fibres and enlarged fibres are found. Together with the destruction of the muscular fibres, there is often an increase of adipose tissue in the interstitial connective spaces that may reach the degree of lipomatosis, and sometimes an increase of connective tissue owing to which the total volume of the muscle is increased—pseudohypertrophy. There is round cell infiltration, vacuolation, splitting, division, and longitudinal striation of muscle fibres. Sometimes in the simple atrophy there may be found an increase of volume of the muscle, a true hypertrophy or a compensation hypertrophy of the fibres not involved.

The nervous system shows either no changes or slight and transient changes insufficient to explain the muscular alterations. Von Babes has found the muscle nerve plates undeveloped and degenerated. Hoppe has found degeneration of the peripheral nerves and involvement of the anterior pyramidal cells of the cord in the facioscapulohumeral variety. Sachs and Brooks observed universal shrinkage of the posterior root ganglion cells in one case. It is not unlikely, however, that these morphological alterations do not represent the cause, but are merely the manifestation of a protracted functional inactivity of the nervous elements after the muscular atrophy. In any case, even if other morphological changes exist, these still escape our methods of investigation, and it may be that improved technic will discover them.

*Symptoms.*—It is impossible in a brief sketch to enumerate all the symptoms of the different varieties. I shall outline only the general symptoms, the most important of which is the paresis which comes slowly and progressively and ends in complete paralysis. There is no fibrillary twitching, the electrical excitability of the muscles is diminished, but there is no reaction of degeneration, or rarely a slight reaction. Labadie and Denoyes, however, in a typical pseudohypertrophic case, obtained the electrical reaction of degeneration which is supposed to be a characteristic of peripheral motor neuron degeneration.

The muscles antagonistic to the atrophic groups may develop contractures, such as contracture of the biceps after atrophy of the triceps, contracture of the calf muscles after involvement of the peronei. These contractures, called secondary, like the primary, are not frequent.

The tendon reflexes are usually diminished, and when wasting or pseudohypertrophy is apparent, they are commonly abolished. The sphincters are never affected. Sensation is undisturbed. In some cases cerebral phenomena such as infantilism and even imbecility have been observed.

The muscular atrophy advances in a symmetric way and shows great regularity. Certain groups are affected almost constantly, others never. The elected muscle groups are: 1, the erector

trunci, glutei, quadriceps, pelvic girdle; 2, trapezius, serratus anterior, rhomboidei, pectorales and latissimus dorsi; biceps, brachioradialis, triceps, shoulder girdle; 3, muscles of the face, especially the orbicularis oculi and oris.

The muscles of the hand and foot are almost never affected—in contradistinction to what is observed in the neural and spinal atrophies.

The muscles of respiration may be involved and be the direct cause of death, which usually occurs, however, from intercurrent disease. The course is very slow—ten to twenty years—but exceptionally may be more rapid. The prognosis is always unfavorable.

*The scapulohumeral variety of primary myopathy.*—I present a typical case of the scapulohumeral variety, some features of which are most unusual.

CASE.—The patient, a Russian Jew, is a tailor, twenty-eight years old, who when he came to this country eleven years ago was apparently in good health. Aside from an attack of gonorrhea seven years ago he does not recall that he was ever ill. He is married and his wife has borne four children and had no miscarriages. About five years ago, i. e., when he was twenty-three years old, he remarked when washing his hands in the morning that his right hand seemed to be smaller than the left and that it was growing thinner. He cannot be induced to admit that impairment of strength was noticed before he remarked that his hand was growing smaller. Soon, however, he noticed that he could not handle the pressing iron with the right hand as well as he could with the left. He then began to seek relief in dispensaries and hospitals. After the weakness and atrophy had existed in the right upper extremity for about three years, during which time it had manifested itself throughout the entire extremity, he remarked that the left upper extremity began to grow weaker, and during the past six months that the lower extremity has grown weak and that he has difficulty in walking. Since this latter symptom has developed he has complained of pain in the back, especially after walking any considerable distance, which is undoubtedly postural, and of

attacks of palpitation of the heart when he makes effort.

He is the second of three children, the youngest having died in infancy. He knows very little about his relatives, but as far as he knows none of them was paralyzed or had any chronic disease.

The patient presents a rather unusual appearance. He is a little less than five feet in height, his thighs and arms



FIG. 2.—Atrophy of shoulder muscles and wrist drop.

are of disproportionate length to his legs and forearms, and he has an unusually long torso. He stands with feet wide apart, the head thrown back, the chin up, the shoulder blades approximated, the chest thrown forward, the knees slightly bent. He walks with distinctly waddling gait, and when he walks the postural peculiarity is accentuated. The upper extremities hang loosely from the sides, and he is unable to make any voluntary movement in the hands, save as he sways them by moving the arms. There is profound atrophy of the shoulder girdles and upper arms. The right hand is in the position of semiflexion and a left wrist drop exists. *All the tendon jerks of the lower extremities are exaggerated*, and those of the upper extremities are absent. There is no Babinski phenomenon, and no digital reflex. The epigastric and cremasteric reflexes are absent. The right abdominal reflex is present, but the left abdominal cannot be elicited. There is no disorder of the sensory sphere or of the special senses. The sphincters are intact.

Electrical examination reveals the following: To Faradism there is no response in the extensors of the forearms and hands, the triceps on the left and both biceps and deltoids. A very weak response is obtained in the supra- and infraspinatus. The response of the trapezius and pectorales is active on both sides, as is the response of the flexors of the wrist and fingers. To galvanism, reaction of degeneration is demonstrated in the extensors of the fingers of both sides, in the biceps on the left and in the infraspinati and supraspinati. The rhomboids and teres show less definite changes than the triceps and deltoids.

The patient's serum Wassermann is negative, as is also the examination of the spinal fluid. An x ray examination of the skull shows no particular abnormality, in particular no pineal shadow. Likewise the long bones show no abnormality. The patient presents many of the so called physical signs of somatic degeneracy: bullet shaped head, narrow forehead, prognathous jaw, darwinian tubercles, heavy, coarse eyebrows on the inner side, sparse on the outer side, torus palatinus with marked ridges radiating out from it, and the disproportionate length of the long bones that has already been mentioned.

The noteworthy features of this case are: 1, the exaltation of the tendon jerks of the lower extremities; 2, the typical wrist drop. The fact that the patient married after the disease developed and has begot a family is interesting but sad. Exaggeration of the tendon jerks has previously been occasionally remarked in cases of myopathy and in some instances it has been the explanation that the spinal cord participates in the pathological process, i. e., is the seat of the disease, but in this instance there are no other manifestations of pyramidal tract involvement such as the Babinski and Oppenheim phenomena, and it is not at all unlikely that the liveliness of the tendon jerks of the lower extremities



FIG. 1.—Patient with scapulohumeral variety of primary myopathy. Photograph illustrates insecure station and inability to raise the arms.



bespeaks an irritability of the neuromuscular mechanism of the lower extremities, possibly even an exalted irritability of the anisotropus substance of the motor ending and that as this substance becomes more deeply implicated the state of the reflex will diminish until it disappears as it has done in the upper extremities. The wrist drop is naturally dependent upon the disproportion in implication by the atrophy of the extensor and flexor muscles of the hand. Compared with the atrophy of the shoulder girdle muscles (see Fig. 2) it is not more advanced.

37 WEST FIFTY-FOURTH STREET.

## SURGICAL CONTROL OF CARBOHYDRATE TOLERANCE.

### *Report of Two Cases.*

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Since a recent article (1), Carbohydrate Tolerance in Hyperthyroidism, we have experienced a development which has brought us face to face with an unexpected problem. In the article referred to, the hope was expressed that a time was not far distant when many cases of diabetes would go from the internist to the surgeon for treatment if not for actual cure. This paper was read before the Oregon State Medical Society September 10, 1915, but it did not reach publication until February, 1916. Between these dates, however, we added two cases of glycosuria with every symptom of diabetes in association with Graves's disease, which cleared up immediately as soon as the goitre was removed.

In order to establish a thorough understanding of what we wished to accomplish, we deem it best to outline the order in which we were wont to view the theories that appealed to us most favorably, and from which a working basis was most easily obtained. It was not until after our experience with four cases of diabetes associated with hyperthyroidism that we undertook extirpation of the thyroid gland in diabetic cases where no symptoms of goitre or Graves's disease were present. It is our result with the latter of which we wish to speak now in particular. Let us first consider the various glycosurias. The detection of sugar in the urine is always a danger signal. It should demand most serious consideration, particularly when occurring during the years of adolescence. The death rate of diabetes at this period of life is practically one hundred per cent. One is often impressed by the actual tragic character of this disease. The young man or woman or, more often, the girl or boy to whom the physician is called, seems to be enjoying fairly good health. He laughs and talks gayly, is totally unprepared to believe the malady at all serious and often belittles the fears our prognosis brought into the home. Weeks, sometimes months, pass. Dieting and other measures prescribed are faithfully looked after; many improvements will be noted and hailed with delight. The drama goes on and we begin to hope, but death comes unexpectedly and the curtain falls long before it was suspected to be a part of the plot. Call it coma of acidosis, or what you like, it lurks behind the scenes while we applaud the pup-

pets of our own setting. It is the history of this cursed disease. When such an ending is prevented may we not feel that the unusual has happened and may we not with some reason make careful inquiry before regarding it as a mere coincidence? Avoiding statistics compiled from the review of a vast amount of literature, let it suffice to say that a number of deaths in coma from diabetes have been observed in association with exophthalmic goitre. These are the very cases where partial destruction of the thyroid effects a cure. Therefore, when sugar is found in the urine, it is not just to the best there is in medical science if it signifies to the clinician nothing beyond a carbohydrate free diet. Better the question: How has the carbohydrate tolerance been overthrown? For convenience we have arranged seven types of glycosurias according to causal relations: alimentary; hepatic; pancreatic; pituitary; hyperthyroid; glycosuria associated with central and glycosuria associated with peripheral lesions. While this classification is our own and may be viewed askance by some, all we ask for is the opportunity of making our deductions clear.

*Alimentary glycosuria.*—When through any cause, pancreatic or other, carbohydrates as such or in the form of a special glucose are permitted to pass with the chyle into the thoracic duct, upon entering the blood stream through communication with the subclavian vein, it will, as soon as it reaches the kidneys, be thrown out in the urine.

*Hepatic glycosuria.*—This form of diabetes, if it exists, has to do with those deficiencies of the glycogenic function as a direct result of which sugar is no longer retained in the liver. This does not include the glycosuria associated with pigmented cirrhosis, or *diabète bronzé* *vide*, because in these cases the pancreas is always involved, particularly the islands of Langerhans. In ordinary cirrhosis of the liver the pancreas shows no change; this is of interest in that glycosuria has never been found associated with the latter form of the disease. Brault's histological examinations of cirrhotic livers show that the glycogenic function of the liver is well maintained and agree with the clinical findings that glycosuria is very rare. It has, however, been observed that if an excess of syrup is given a patient suffering from hepatic cirrhosis, alimentary glycosuria will be produced. This does not occur in a healthy person. This seems to represent the only conditions under which the liver is capable of causing a glycosuria.

*Pancreatic glycosuria.*—When a glycosuria has its origin in the pancreas two questions may be asked: 1, Is the glycosuria due to an insufficiency of the pancreatic ferments and, 2, Is it due to a lesion of the islands of Langerhans? That a hyposecretion of the pancreas can be responsible for a true diabetic condition is quite beyond our interpretation of the facts as presented. We do believe it possible, at least, for the so called alimentary glycosuria to ensue.

*Pituitary glycosuria.*—Diabetes occurring as the result of hyperpituitarism, with or without the symptoms of acromeglia, has, by some observers, been regarded as closely related to hyperthyroidism. While argument may be advanced to support this belief we incline to the teachings of Cushing and



others who, while admitting analogy between Basedowian diabetes and pituitary diabetes, believe the two represent separate and distinct lesions.

*Hyperthyroid glycosuria.*—According to Sainton and Gastaud, of Paris, diabetes occurring in the course of Graves's disease is manifest in two ways: 1, as a temporary or slight glycosuria with the usual symptoms of diabetes present only in a trifling degree; 2, as a well established condition with all the characteristic symptoms, the latter frequently even dominating the clinical picture as a whole. They mention a case reported by F. Müller, where the patient died in coma.

*Central nervous system glycosuria.*—Glycosurias have been recorded in association with various lesions of the central nervous system. Such glycosurias, however, may be regarded as of secondary importance. The point of particular interest here is the fact that such lesions are capable of impairing the carbohydrate tolerance.

*Peripheral glycosuria.*—Under this heading we have in mind an imaginary condition of the cells of the body's tissues. Briefly, it may be described as follows: We first assume that normally the cells have a given physiology which in part produces the end fixation of digestion. Indeed, it is no stretch of the imagination to assume that within the cells the end product of digestion itself takes place. Now, whatever this end product may be need not concern us for the present; we will assume it is that which is needed to maintain the life of the cell. If now we take into consideration the influence of the whole chain of ductless glands and their intimate relation through the nervous system on the cells of the body we form a working basis which will enable us to understand how, in certain well known lesions, the physiology of these cells may become so perverted that this end product of digestion becomes excluded. Thus the material utilized by the cells when working under normal conditions is compelled to remain in the blood streams until a degree of content forces the kidneys into a sort of safety valve action. This blood content, according to the work of Franklin C. McLean, seems to vary in different diabetic cases. By regarding these cells of the body's tissues as the exact place where carbohydrate tolerance is lost, we occupy a position from which we may clearly view the several routes through which the carbohydrate tolerance was attacked, and this view explains why diabetes in young subjects is so malignant.

Why glycosuria fails to accompany the majority of hyperthyroid cases we are not prepared to say. That it occurs with a few—three in one hundred cases, according to Sainton and Gastaud—we know, and we also know that if the subject is young, death in a coma typical of diabetes is not unlikely.

This brings us to the conclusion that while many causes of lost carbohydrate tolerance can be recognized, the end result of each is the same, namely, failure of the cells' ability to appropriate nourishment from the blood's content.

If too much secretion from the thyroid is at times capable of overthrowing the carbohydrate tolerance, may it not reasonably be asked what effect hypothyroidism may have on the carbohydrate tolerance? Review of the literature in this direction shows that

the opposite obtains. In other words, it is evident that in proportion to the degree of hypothyroidism a corresponding degree of increased sugar tolerance may be expected. Diabetes has not been observed among cretins or others suffering from a lack of the thyroid gland.

From observation of a case of diabetes associated with hyperthyroid goitre which ended fatally in coma (2), together with others reported in the literature, we believe that the thyroid under certain perverse conditions is as capable of precipitating a true diabetes mellitus as is the pancreas through lesions of the islands of Langerhans. We also believe it is equally as fatal in young subjects unless surgical treatment is interposed either by injections of boiling water (Porter) or by partial extirpation of the gland itself.

Our success in establishing a cure in four cases of glycosuria associated with Graves's disease by partial destruction of the thyroid, plus the knowledge that a lack of the thyroid secretion increases the carbohydrate tolerance, tempted us to try thyroid destruction in diabetes where no symptoms of goitre or Graves's disease were present. We were convinced that no direct result of the procedure could affect the first cause of the glycosuria, namely, the disturbed islands of Langerhans. We hoped merely to secure a carbohydrate tolerance compatible with the life of the patient by introducing a counterbalance against the condition, wherever it was, which had brought about the lowering of the sugar tolerance. In other words, we reasoned if a lesion of the pancreas through its internal secretion was the cause of lowering the body cells' tolerance for carbohydrates, and on the other hand if destruction of the thyroid has the very opposite effect of raising the cells' tolerance for carbohydrates, why not destroy the thyroid and balance one against the other? Two cases were so treated, and while the early results were most gratifying the "cure" endured a comparatively short time, both of the patients eventually dying in coma.

For a time, as our records will show, complete tolerance was restored in one, while a very good degree was secured in the other (3). At the time we were fully convinced that a very interesting if not important discovery had been made. When, however, the glycosuria with all the signs of the disease returned, and persisted in spite of all known dietary measures the question was natural: What has happened? Had the removal of the thyroid acted merely as a block between the cells and the impulse of carbohydrate overthrow or had something occurred that was compensation for the loss of the thyroid secretion? Future study and observation must determine the answer, but whatever the answer is, the vital thing is a thorough knowledge of the cause of the destruction of the balance by which we were able for a time to restore the carbohydrate tolerance. With this understood, surgery may yet be given a place in the treatment of cases of diabetes wherein first cause may be traced to disturbance of the ductless glands or their collective or partial influence upon the whole metabolic scheme.

Crile reported (4) having restored lost carbohydrate tolerance in a typical diabetic by: "1, Section

of the right cervical sympathetic; 2, left suprarenal-ectomy, and, 3, excision of the left cervical sympathetic with partial thyroidectomy." While expressing satisfaction with the results obtained, he was unwilling to present them as the net results of his surgery because the Allen treatment had been jointly employed. Our experience inclines us to believe that the results obtained by Doctor Crile were due entirely to the partial thyroidectomy. Indeed, the same article tells us: "I have referred to the lessening of glycosuria by operation in certain cases of exophthalmic goitre. It is well known that in cases of either suprarenal or thyroid deficiency, sugar tolerance is raised, while on the contrary the injections of excessive amounts of adrenaline or of excessive thyroid extract mobilizes sugar. Therefore in intractable diabetes may it not be possible that the diminution of the total mass of the suprarenals and of the thyroid may sufficiently increase the sugar tolerance to mitigate or actually to cure the disease?"

CASE I. Our first case, a young man of eighteen years, came to us early in May, 1915. Within the two months preceding he had lost about eighteen or twenty pounds in weight. His thirst was extreme, as was also his desire for food. No sign of thyroid enlargement or Graves' disease was present. He was excreting approximately 108 ounces of urine in the twenty-four hours with a specific gravity of 1.036 and a three per cent. sugar content. After five days of a carbohydrate free diet the urine was reduced to ninety-two ounces in the twenty-four hours with a 1.5 per cent. of sugar content. The specific gravity was unchanged. May 17th, under local anesthesia, a subtotal thyroidectomy was performed. May 25th the patient was feeling very well with a diet containing one ounce of carbohydrate three times a day. The urine was sugar free. The following table shows in part how rapidly the restoration of his carbohydrate tolerance took place:

Date.	Urine in Twenty-four hours.	Specific gravity of urine.	Sugar per cent. of urine.	Carbohydrates, in ounces.
May 25,	72 ounces	1022	No	One ounce.
May 26,	67 ounces	1021	No	One and a half ounces.
May 27,	70 ounces	1022	No	The same.
May 28,	68 ounces	1024	No	Two ounces.
May 29,	64 ounces	1022	No	The same.
May 30,	60 ounces	1020	No	Two and a half ounces.
May 31,	62 ounces	1022	No	The same.
June 1,	58 ounces	1024	No	Three ounces.
June 2,	60 ounces	1022	No	The same.
June 3,	64 ounces	1018	No	Three and a half ounces.
June 4,	57 ounces	1020	No	The same.
June 5,	54 ounces	1020	No	Four ounces.
June 6,	52 ounces	1018	No	The same.
June 7,	52 ounces	1020	No	Four and a half ounces.

From this time on the carbohydrates were liberally increased. By July 1st the patient was on a regular diet, gaining in weight and feeling well. By the first of September his normal weight of 135 pounds had been regained. He continued sugar free until November. A slight reduction in his carbohydrates brought immediate results, when again he continued sugar free until the earlier part of January, 1916. Glycosuria, together with other signs of diabetes, from this time appeared and disappeared with dietary regulations until the following month, February. One month before death in coma, which occurred February 23rd, his carbohydrate tolerance was lost, the diabetes recurring severely toward the end.

CASE II. Our other case was that of a young lady of twenty-two years. She came under our care October 15, 1915. On October 26th a subtotal thyroidectomy was done. While general improvement followed and she gained in weight from 119 to 132 pounds, her carbohydrate tolerance was at no time completely restored as in the first case. Nine ounces of carbohydrates in her diet in twenty-four hours was the highest attained. Even this amount was of very short duration, death occurring March 25th. She, too, I understand, died in coma.

While two cases are too few for scientific deductions, it seems the reestablishment of the carbohy-

drate tolerance following the thyroidectomy, even for so short a time, is of sufficient interest to warrant further serious study in this direction.

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#### GUARDING THE PORTALS OF ENTRY.\*

BY FRANKLIN W. BOCK, M. D.,  
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No associated group of organs is of more practical importance to the growing child than the nose and mouth. They are frequently subject to all sorts of use and abuse, and when trouble arises we have little commendatory to say for them. It is remarkable how little thought until quite recently has been given to these organs which have such an important bearing upon the life and wellbeing of the child. Not only do the great quantities of fuel and nutrient enter the body by these portals, there being partially prepared for use, but here also enter and begin most of the infections and ills to which the young child is heir. It is not possible to discuss in detail all the phases of this subject which have a bearing upon the preservation of the child in health and his care during illness. I shall, therefore, confine myself to the broad discussion of the nose and mouth of the child from four points of view: their functional, pathological, and esthetic importance, and their relation to the special senses.

While the size and shape of the mouth and the integrity of the muscle groups which enter into its structure are of importance in the preparation of food for its entry into the stomach the mucous membrane with its associated glandular system is the most important part from the functioning and the pathological point of view. The secretions of these tissues are essential in the chemical changes which take place in early digestion, and under normal conditions they probably inhibit the growth of disease producing bacteria. A normal condition may be said to exist only when nothing but the normal secretions of the mucous membranes and glands are present in the mouth. This state of affairs unfortunately seldom obtains in the mouth of a human being after birth, for the products of the partial digestion and decomposition of food are usually present to greater or less extent, forming conditions which stimulate the growth of pathogenic germs. These, with the products of chemical change, sooner or later have a deleterious effect upon the integrity of mucous membranes and the underlying glands leading to almost any degree of functional or pathological change. The products of these varying degrees of pathological change enter the circulation through the stomach or lungs or directly through the submucous glandular system, producing far reaching and often obscure systemic effects.

I believe the only practical way of preventing these local and general ill effects is by keeping the mouth as free as possible from the products of chemical or bacterial activity. Cleanliness of the

\*Read before the Rochester Academy of Medicine, November 8, 1916.

mouth is a fundamental principle in maintaining the young child in health, and this is best accomplished by the free use of pure water both as a drink and as a mouth wash. Pure water and plenty of it is quite as important to the young child as the quality of its food.

At about the first year a complicating element enters the child's mouth in the first teeth. These make cleanliness a more difficult problem, but it should be solved nevertheless by tender and watchful care. Food should be washed from between the teeth after each meal and great care should be taken not to injure the delicate tissues around the teeth. I do not believe it is necessary, nor do I believe it is wise, to use the popular so called antiseptic mouth washes in a child's mouth. Plain water, or at most a normal salt solution, is all that is necessary to preserve the mouth of the child in a healthful condition.

While the membranes of the mouth have a wide range of accommodation probably without deleterious results, I do not believe it is wise to subject a child's mouth to too great extremes of temperature or to food which is too strongly seasoned. Irritation of this kind keeps up a low grade of congestion which finally has a bad effect upon the nutrition of the membranes. The introduction, however, of such fruits as lemons, oranges, and grapes into the dietary of the young child will go far toward keeping the mouth and teeth clean. If during the first two years of life decay appears in any of the teeth they should, of course, be attended to immediately, for each point of decay forms a focus of local or general infection. If cleanliness is a first principle in keeping the mouth of the child in a healthful condition, it is a paramount principle in diseased conditions, local or general, and it should be secured in the gentlest possible manner.

The function of the mucous membrane and the underlying erectile tissues of the nose and throat is to warm, moisten, and filter the air before it enters the lungs. If the air we breathe was clean I believe the nose would accommodate itself to great extremes of moisture and temperature without injuring its functioning ability to any great extent or producing pathological conditions, but unfortunately air is usually laden with irritating and infected dirt and dust, and the tissues of the nose are unable to handle this continuously without sooner or later becoming the victim of a low grade of inflammation with all the attending functional and pathological changes, which in common parlance we call catarrh. This condition of the mucous membrane of the nose and throat is to my mind the inevitable result of requiring it to filter more irritating and infected dirt than it is able to. How best to relieve this continuous overstrain is a problem of great importance, especially to the young child.

Many foolish things are done with young babies which better sense should interdict. A baby is not many months old before he is set down on the floor, where he cannot fall. And then we wonder why the baby's nose seems irritated and why he takes cold. The surprising thing is that babies stand the strain as well as they do. Young babies should not be allowed to creep around on the floor, not so much because of the draughts, but because of the

dust that we and they stir up and then they inhale. Even under the best conditions babies have to inhale more dust and dirt than is good for their delicate membranes, and it is a good practice to wash it out of the baby's nose once in a while with a little normal salt solution.

This practice has been objected to by some on the ground that it will injure the delicate ciliated membranes. This may be so, but it would seem to be a matter of choosing the lesser of two evils, for certainly the washing cannot be nearly so harmful as the dirt mixed with mucus, which would otherwise pile up in the corners to form a splendid culture medium for the rapid growth of virulent germs. A few drops of normal salt solution from a medicine dropper will soon be tolerated by most babies, and it keeps the nose in better condition and helps to prevent infection.

Young children should be taught early to blow the nose properly, with both nostrils open, and not violently with one or both nostrils closed tight. The increase of intranasal pressure caused by improper methods of blowing the nose may force infected matter into the Eustachian tubes with disastrous results. Again, as in the mouth, the so called antiseptic washes should not be used in a small child's nose. Warm normal salt solution is the remedy *par excellence* both in preventive and curative practice to use in the baby's nose. Where the turgescence of the tissues is so great as to entirely block the nose, an astringent, such as adrenalin, should be used first, so the washing may be done more effectively. Astringents of any kind, however, should be used with the greatest care.

The prophylactic hygiene of the nose is not complete without mention of the ill effects which rapid extreme variations in the temperature of the body, general and local, have upon the child's nose and how best to guard against them. Chilling of the body, especially local chilling, almost instantly causes a sympathetic compensatory hypertrophy or engorgement of the erectile tissues of the nose and throat, producing what might be called a reflex cold, with difficult nasal respiration, excessive secretion, irritation, and sneezing. In children in normal health and vitality the moment the equilibrium of body temperature is reestablished the tissues of the nose and throat return to normal and no lasting ill effects are produced. If, however, the equilibrium is not reestablished within a time which varies in individuals, conditions are produced which make the rapid development of the germs always present in the nose and mouth more possible and probable, and added to the reflex cold we have an actual infective condition with all its possible far reaching and dangerous results.

It is this very rapid response to changes of temperature that makes it advisable during acute infective fevers to keep the child in as equable a temperature as possible. It matters little whether it is cool or warm as long as it is reasonably constant. Obviously the way to prevent chilling of the body is to pay more attention to the manner of clothing young children, especially the feet, legs, and arms. It is all very well to talk of the "hardening" process to parents, but if a child loses his hearing during the



"hardening" there is little satisfaction in the result. I believe the actual fact is that a child cannot be "hardened." If he manages to live through it without serious mishap it is usually in spite of it and not because of it.

The care of the baby's nose and mouth in pathological conditions has been hinted at in the methods outlined for preserving the functional integrity of these organs. Cleanliness I believe, is the paramount consideration, and except in rare cases nothing stronger than normal salt solution should be used to secure it.

The effect of infectious diseases upon all the mucous membranes of the body, and especially of the nose and throat, is well known; very often they involve the middle ear, going on to abscess formation almost surely resulting in more or less reduction of hearing, and even sometimes ending in brain abscess and death. Even if the inflammation does not result in abscess or an immediate permanent reduction in hearing, conditions originate during infectious fevers and common colds which sooner or later surely bring on progressive middle ear deafness.

While I am not prepared to say that every case of middle ear involvement occurring during an infectious fever is the result of improper care, for it will sometimes come in spite of the best of care, I do believe that we would have less trouble of this kind and certainly fewer disastrous results if more attention were given to the cleanliness of the nose during acute infections. During the infectious fevers the ears should be examined daily or oftener for the first indications of trouble, and when it comes, if in doubt, always incise. Do not stop at treating the ear; keep the nose clean if it has not been attended to before.

We should not forget that both in prophylaxis and in cure we probably have a very powerful adjunct to our armamentarium in the vaccines. Only experience will demonstrate their correct value. However, it is my opinion that they should be used as an adjunct and never as the only treatment.

In discussing the pathology of the nose and mouth of the child one is drawn irresistibly to the problem of the enlarged and diseased faucial, pharyngeal, and lingual tonsils. While there seems to be doubt in the minds of some as to their function, it is inconceivable that the Almighty should have put them there just to make trouble for the child. In their normal state they are probably very efficient sentinels guarding these two great portals of entry against infection. Unfortunately, under the average present day personal and public hygiene they do not long remain normal. Under the strain of violent and often overwhelming chemical and bacterial irritation they first enlarge to meet the extra work and finally and inevitably break down under the strain and themselves become diseased. In this state they affect the child deleteriously in two ways; by mechanically obstructing the respiration and circulation, producing more or less serious congestive conditions, and further by being culture beds for all grades of acute or chronic local or systemic infections.

Young children should be watched carefully for the first symptoms of these conditions, and when

they occur, if not improved by treatment the tonsils should be removed by surgical means. Age is not a contraindication for the operation when it is needed. It should always be treated as a major operation and done as carefully and with as little loss of blood as possible.

Earache or loss of hearing during colds is a positive indication for radical measures. A persistent postoperative system of mouth and nose hygiene will most certainly enhance the good results of operation or treatment.

Inherited and acquired syphilis may produce terrible havoc in the child's nose and mouth, and when discovered it should be treated quickly and vigorously.

The functional integrity of the special senses of taste and smell depend very decidedly upon a healthful condition of the mouth and nose, but one of the great economic social problems of the day is how best to safeguard the special sense of hearing. This, I believe, can only be done by keeping the mouth and nose in as healthful a condition as possible, by persistent and careful attention during acute local or general infections, and I include in this common colds.

The esthetic value of a healthy mouth and nose presents a subject of great interest. Every parent wants a good looking child, but how few parents and how few doctors realize that the regular or irregular development of the face in later childhood depends in large measure upon the care which the nose and mouth have received during the first few years of life, and especially during the first years of dentition?

A slight preventable or easily remediable irregularity of the first teeth may become an exaggerated and unfortunate deformity of the face or jaw, often ending in a high palatal arch with deformity of the nasal septum, producing a nasal deformity or obstruction to easy nasal respiration or both. While tonsils and adenoids are not entirely blameless, I believe faulty dental conditions are most often the chief causative factor. However, there is a vicious circle here which can most certainly be broken into by proper mouth and nose hygiene during these early years, or by the institution of simple orthodontic procedures at the proper time.

The maintenance of the child in health and the prevention of the spread of infection calls imperatively for a comprehensive system of mouth and nose hygiene. What this system is eventually to be is hard to tell, but I believe it will contain some at least of the following means of public and personal attack upon the problem: Young children should not be put upon the floor to play or creep. Next to the floor thousands of our children have no place to play but the street; hence have our streets kept in better condition. Young children should not be allowed to fondle domestic animals and pets. Cats and dogs might well be eliminated from our family life. Young children should be trained to drink more pure water. They should be trained to keep their hands clean and to keep their hands and fingers out of their nose and mouth. They should be trained to keep things out of their mouth. They

should be trained always to wash their hands before eating. They should be taught early to tolerate and use a simple system of mouth and nose toilet.

These things are more easily said than done, but they should be done if the problem of keeping the young child well is to be solved, and that is the work of the medical man.

133 SOUTH CLINTON AVENUE.

## INTERPERITONEAL ADHESIONS AND THEIR PREVENTION.

BY GEORGE GELLHORN, M. D.,  
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Under the above title, Doctor Behan and Doctor Nealon, of Pittsburgh, published (1) a method of prevention of postoperative adhesions. They assume that postoperative adhesions are due to abrasions of peritoneal surfaces coupled with a mild type of infection, and that both these factors can be eliminated by the local application of a paste of five per cent. boric acid, in woolfat. Their preliminary animal experiments were carried out on one dog, which was laparotomized six times in nine and one quarter months, and, encouraged by the results of these experiments, they used the woolfat boric acid paste in the human abdomen in fifteen operative cases. "None of the patients experimented on have complained of symptoms which could be traced to adhesions, though it is not long enough since the first case to determine whether the danger or the tendency to adhesive formation has been entirely obliterated," and, therefore, they now use the method as a routine procedure in all cases where there is a possibility of postoperative adhesive formation.

Their paper introduces several questions which should not be passed over without discussion. The complete absence of bibliographic references must needs create the impression that the procedure recommended is original with the authors. It, therefore, becomes necessary to point out that almost eight years ago I (2) published my experiments with lanolin (woolfat) which were conducted in 1907, and that about a year later the investigations on the same subject by Busch and Biebergel (3) appeared in print. Our results were at variance in so far as the two German authors reported failures in the five dogs upon which they had experimented, while I observed more encouraging results, at least in a number of my experiments. The first case, in particular, was a splendid example of the efficacy of the lanolin treatment. There was a complete absence of adhesions despite a very severe arrangement of the experiment, which, in a control dog, had led to most extensive formation of adhesions. A hasty generalization at this stage of my researches would probably have led to an enthusiastic and unequivocal recommendation of the local application of lanolin as a routine method. But subsequent experiments showed very soon that lanolin did not limit the formation of adhesions in all cases, though it seemed to restrain their extent and firmness. Combination of lanolin with irritating substances

such as boric acid resulted regularly in extensive adhesions.

When I reported these results before the American Gynecological Society in 1909, I had performed sixteen experiments, including control experiments, yet I felt that they were neither numerous nor decisive enough to permit of any definite conclusions, but that they were suggestive of possible results and encouraging. Application of lanolin to serous surfaces was therefore suggested only tentatively "*provided further experiments shall prove the harmlessness to the human organism, and efficacy as to the prevention of adhesions.*"

Have Doctor Behan and Doctor Nealon fulfilled this postulate? To begin with, their experiments were limited to one single dog. True, they have operated upon this one dog *six times* in thirty-eight weeks, but even if their results had been exceptionally brilliant, one would have wished for additional proof on a larger number of animals. As it is, the dog in question does not seem to me any better off after the sixth than after the first operation. From the experimental record I can only infer that the abdomen of that animal is filled with the most extensive and dense adhesions. Here and there a small area of peritoneum has escaped the process of conglutination, but convincing proof is lacking that this freedom is due to the protective influence of the boric acid lanolin paste.

It is more natural to assume that the extensive formation of adhesions in this dog results—not altogether, but to a certain degree—from the irritating action of the boric acid. Pathologists and surgeons are fairly generally agreed that the peritoneum does not bear chemical irritants well. Hence the strict relegation of antiseptic features in abdominal operations. The employment of iodine, iodoform, corrosive sublimate, alcohol, etc., for purposes of general peritoneal disinfection would nowadays impress us as crude and antiquated as well as futile, if not to say, harmful. Boric acid belongs in the same category. Doctor Behan and Doctor Nealon are not quite positive as to its action, for they classify it once as an inert substance and again as an antiseptic. We know, however, that chemically it is not altogether indifferent to the peritoneum, and, as a matter of fact, in the three experiments where I have used it in connection with lanolin, I have observed exceptionally dense adhesions.

It is not quite permissible to apply observations made on animals to the human species without reserve, and even though Doctor Behan's patients have not suffered soon after operation, he himself realizes that the symptoms of interperitoneal adhesions may appear at a later time. But even if the claims made for the harmlessness and efficacy of a boric acid lanolin paste were true, there remains the fact that postoperative adhesions are due to such a multitude of causes, even in the same individual, that no single preventive measure can possibly be counted upon with security. As these lines are intended solely as an objective critique of another medical publication, I can not enter here into an enumeration of the various causes and methods of prevention of postoperative adhesions. They have been dealt with in detail in my paper mentioned above. With re-

spect to the method under discussion, I believe, as I did nine years ago, that lanolin has a place in our armamentarium, but its field is quite limited. It should be applied in very small quantities and in a most gentle manner, perhaps by means of a camel hair brush, but not "rubbed in" as Doctor Behan and Doctor Nealon advise, and, above all, it should not be combined with boric acid or any other antiseptic substance. The best protection against infection in the abdominal cavity is not a germicide but the peritoneum itself.

METROPOLITAN BUILDING.

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## Abstracts and Reviews

### STUDIES IN CHEMOTHERAPY AND IMMUNITY OF SYPHILIS.\*

By JOHN A. KOLMER, M.D.,  
Philadelphia.

Doctor Kolmer presented a summary of researches conducted during the past two years in the Dermatological Research Laboratories of the Philadelphia Polyclinic in association with Dr. Jay F. Schamberg and Dr. George Raiziss, and in the laboratory of Experimental Pathology of the University of Pennsylvania, on the chemotherapy and immunity of syphilis.

The chemotherapeutic studies were conducted with both mercury and arsenic compounds, and these and the immunity studies were summarized as follows:

1. The object of chemotherapeutic research is to discover or build up chemicals that have a greater parasitotropic than organotropic activity, that is, a greater affinity and destructive power for a certain microparasite than for body cells; the greater the difference between these values, the more valuable do the substances become.

2. The toxicity of various mercurial salts is, in a general way, proportionate to the amount of pure mercury contained in the salt.

3. The organic mercurial compounds are not perceptibly less toxic than inorganic salts.

4. The mercury contained in the insoluble salts of mercury as the salicylate, calomel, and gray oil, is just as poisonous as in the soluble salts, but it is yielded up to the circulating fluids at a very slow rate. A large percentage of the mercury of an insoluble salt may persist in the muscles unabsorbed for several weeks. The effect of weekly injections tends, therefore, to become cumulative, and physicians should be on guard for evidences of renal irritation.

5. Mercury may produce severe forms of tubular or tubuloglomerular nephritis.

6. In chemotherapeutic studies the trypanosome of horse syphilis (*Trypanosoma equiperdum*) was

used. This trypanosome kills white rats in five to seven days. The drugs were administered intravenously and according to the body weight of each rat. The effects of the drug were studied according to the influence upon the trypanosomes and duration of life of the animals as compared with the untreated control rats. In chemotherapeutic work in syphilis it would be better to use the spirochete of this disease, but the experimental lesions in the rabbit are not constant, and rabbits tend to recover spontaneously. The results of comparative experiments tended to show that trypanosomes could be used instead, although experimental trypanosomiasis is more difficult to influence and spirochetes are more easily killed.

7. Ordinary mercurial compounds were found without effect upon experimental trypanosomiasis.

8. If the mercurial is mixed with the trypanosomes in the test tube and then injected into white rats, a slight trypanocidal influence is noted.

9. Weight for weight mercury compounds are less trypanocidal than salvarsan, but if larger doses of mercury could be given a greater trypanocidal effect would follow.

10. One of the objects of our studies is to lower the toxicity of mercury compounds. At present two new compounds have been produced which are of lower toxicity, have a well marked trypanocidal activity and are more than thirty times more germicidal than the bichloride of mercury in all tests, including the presence of large amounts of organic material.

11. Salvarsan and arsenobenzol (Dermatological Research Laboratory) are the most powerful trypanocides and spirocheticides known.

12. Salvarsan and arsenobenzol are from two to four times more active than neosalvarsan.

13. The toxicity of salvarsan and arsenobenzol seems to be due to an inherent toxic substance in some lots of these drugs and also to individual differences in susceptibility in man and the lower animals.

14. Water plays but a minor role in the toxicity of these drugs.

15. Acid solutions are most toxic; neutral solutions are least toxic. A few drops of a solution of fifteen per cent. sodium hydroxide to 100 c. c. of fluid does not appear to increase the toxicity.

16. Concentrated solutions of salvarsan and arsenobenzol (0.6 gram in thirty c. c. of water) are likely to prove more toxic than dilute solutions (0.6 gram in one hundred and twenty c. c. of water).

17. Rapid injection into rabbits appears to increase toxic effects; the drug should be administered slowly.

18. Actual immunity in syphilis never reaches a high degree of development. The syphilitic never tends to recover spontaneously. It is probable that the syphilitic is susceptible to reinfection, although he may not manifest a second chance.

19. Spirochetal antibodies for a pure culture of *Spirochæta pallida* could not be demonstrated in the fresh sterile blood serum of syphilitics in various stages of the disease.

20. Small amounts of agglutinin for a culture of *Spirochæta pallida* are to be found in the serums of

\*Abstract of an address delivered before the Rochester Medical Society, Rochester, N. Y., January 3, 1917.



syphilitic persons, especially in the tertiary stages; also in experimentally infected and immunized animals.

21. The Wassermann reaction, when properly conducted, is an invaluable diagnostic aid and therapeutic guide.

22. Efforts should be made to increase the delicacy of the Wassermann reaction.

23. Wassermann reactions conducted with alcoholic extracts of syphilitic liver are not sufficiently delicate and give a large percentage of falsely negative results. Extracts of acetone, insoluble lipoids, and alcoholic extracts of human heart reenforced with cholesterin are superior extracts. The discrepant reports from different laboratories with the same blood are largely due to the different extracts in use. Efforts are being made at present to standardize the Wassermann reaction.

24. Cholesterinized extracts are the most sensitive known; with proper technical knowledge they may be used with only a very slight percentage of pseudo or false reactions.

25. It is probable that a persistently positive Wassermann reaction indicates the presence of active spirochetes in the tissues. Treatment should be continued until the Wassermann becomes negative and remains so for at least two years. Some "Wassermannfast" persons seem to be uninfluenced by treatment; they should be kept under close surveillance.

26. The Hecht-Gradwohl reaction was found to be a very delicate control test. It is more likely to yield falsely positive results than the Wassermann reaction and possesses, therefore, a greater negative than positive value. A negative Hecht-Gradwohl reaction appears to be the best serological evidence of the absence or cure of syphilis.

27. The cerebrospinal fluid should be examined for total cells, globulin, and Wassermann reaction in cases suspected of having a syphilitic infection of the cerebrospinal system if the blood Wassermann is negative. Provocative stimulation with salvarsan or mercury is frequently of value in doubtful cases or reactions.

28. A negative Wassermann reaction immediately after vigorous mercurial or salvarsan treatment or acute alcoholic debauch, may be a falsely negative result. The test should be repeated some weeks later.

29. Luetin reactions are readily influenced by iodides and bromides. Normal nonsyphilitic persons taking these drugs may give falsely positive luetin skin reactions. Physicians should carefully bear in mind this possibility and rule out the possible influence of these drugs before conducting any skin test.

## Contemporary Comment

**Importance of Time and Technic in Röntgenology.**—Success or failure from the employment of any measure will depend invariably upon the thoroughness with which the technic is carried out with the proper measure employed, says the *American Journal of Electrotherapeutics and Radi-*

*ology*, for January, 1917. The time element in the treatment of patients by electricity is of supreme importance, and it is from its conscientious observance that failure or success may result, or the method be condemned by those who in their haste accord too short time to the treatment of their patients, or are slack in some of their methods of employing combinations of methods which are often necessary to obtain the best results.

It can be readily seen that the general practitioner who has a large round of calls to make and limited office hours, which are frequently interrupted, may shorten treatments in order to treat a larger number of cases than would be possible under correct methods. It is better to administer no treatment than to administer it in an unscientific manner; because one patient cured by the employment of a correct technic counts for future prestige; whereas, five improperly treated condemn the method and lower the prestige both of the physician and the method.

**The Standardization of First Aid.**—A selected group of about five thousand surgeons is at present receiving requests to supply data for the use of the President's Board on First Aid Standardization. *The International Journal of Surgery*, for January, 1917, in explaining to its readers just what this board is, how it is working, and what it proposes to do, says:

Largely through the agency of Dr. Joseph Colt Bloodgood and Surgeon Generals Gorgas, Braisted, and Blue, there was held an American First Aid Conference in Washington on August 23, 1915. As the result of a resolution adopted by this conference, the President of the United States appointed a Board of Standardization of First Aid Methods. The personnel of the board is as follows: Dr. Richard H. Harte, of Philadelphia, Pa., chairman; Colonel Louis A. LaGarde, Medical Corps, U. S. A., Washington, D. C., vice-chairman; Assistant Surgeon General W. C. Rucker, U. S. P. H. S., Washington, D. C., secretary; Dr. J. P. Kaster, of Topeka, Kan.; Dr. Samuel C. Plummer, of Chicago, Ill.; Surgeon A. M. Fauntleroy, of Washington, D. C.; Dr. J. Shelton Horsley, of Richmond, Va.; Major R. U. Patterson, Medical Corps, U. S. A., Washington, D. C. The province of the board is to set standards for first aid materials, methods, and teaching which will be applicable alike to the conditions of peace and war.

When the board shall have completed its report it will be submitted to the President. This will be followed by an endeavor to teach, through the medium of the public press, the principles of first aid to the lay public. This will mean in future that wounds will arrive at the hands of the surgeon in far better condition than at present. It is to be hoped that it will put an end to the meddlesome officiousness of the "shop doctor" and the interfering busybody who insists upon introducing his private stock of bacteria into the wound of an injured person. This is really a big movement and the character of the men who are behind it guarantees that it will be carried forward with saneness and farsightedness.

# Dietetics, Alimentation, and Metabolism

## Food and Food Preparation, in Health and Disease

### FOOD HABITS OF DELICATE CHILDREN.\*

BY WILLIAM R. P. EMERSON, M. D.,

Boston,

Professor of Pediatrics, Tufts College Medical School.

The following observations are based on an intensive study of 420 delicate children referred to the Nutrition Clinics at the Berkeley Infirmary, New England Home for Little Wanderers, and the Massachusetts General Hospital.

These children on admission to the clinics were given a complete general examination, supplemented by special examinations of the nose, throat, eye, ear, and other parts of the body as indicated. Laboratory work was done on the blood, urine, and stools. Two hundred were examined mentally according to both the Binet-Simon and Bridges Xerkes scales for intelligence. About half of the whole number were problem cases treated by the class method. The remainder reported direct to the clinic.

The children were followed to their homes in order to learn the essentials of their lives pertaining to health. The work was medical, social, and psychological. In this study an attempt was made to disabuse the mind of preconceived ideas and to learn as much as possible from the child himself.

All children who are ten per cent. or more underweight for their height are delicate. Children do not become underweight to this degree except for adequate causes, which in many cases are easy to find—in others the discovery of the cause presents one of the most difficult problems in all medicine. These children become easily fatigued physically, and are able to sustain mental exertion for a short time only. They are restless and nervous, finicky in their likes and dislikes, and not infrequently difficult to manage. About ten per cent. of all children in an out patient clinic are delicate.

The food habits of all children are fairly constant, that is, most children habitually take a proper amount of food in twenty-four hours, or too little, or too much. Their habits become established to such a degree that a child may not vary his total twenty-four hour amount by even the value of one egg (100 calories) for a number of days. Therefore a record of food taken for forty-eight hours shows very accurately his customary food habits. Delicate children invariably take too little food. It is not uncommon to find a child of eight or nine years who habitually takes less than 900 calories in twenty-four hours, an amount less than that required by a normal infant of twelve months. These children all show signs of malnutrition. Weight is affected more than height. The nervous system is unstable. The mental development may or may not show retardation. The food habits of these children are markedly modified by physical causes, by fatigue, and by mental disturbances.

The average underweight child has from two to

ten physical defects which may be discovered on examination. The most common of these is nasopharyngeal obstruction. This includes adenoids and tonsils, deviated septa, and sinus infection. Such obstruction acts mechanically by interfering with respiration, causing mouth breathing, and inflammatory processes in the nose, throat, and ear. Acid secretions dripping into the pharynx affect digestion and impair the appetite, especially for the morning meal. Toxins from diseased tonsils and other subacute infections impair the child's assimilation of food. The weekly gain of children in the group whose adenoids and tonsils were removed was greater after operation on less food than was taken

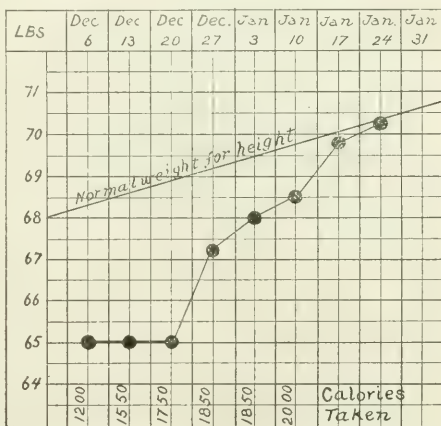


CHART I.—Too little food. G. K. (B. Inf.) 1915, aged ten years, six months, weight sixty-five pounds. Chart shows rapid gain in weight with increase in amount (1,200 to 2,000 calories) of food taken. This child, as is frequently the case, improved in general appearance with the increase in food before there was actual gain in weight.

before operation. Carious teeth occur in over fifty per cent. of all cases. Eyestrain, when severe, causes nausea and loss of appetite. Syphilis affects the power of absorption more than the appetite. Arrested tuberculosis apparently does not greatly influence absorption. Children clearly tuberculous gain as rapidly as the nontuberculous.

Overfatigue lessens the child's ability to digest food. Too large a meal at such times may cause acute indigestion of a serious character. Nature tries to assist by diminishing the appetite. The child is in reality "too tired to eat." The constant expenditure of more energy than is created can lead to only one result, namely, lowered vitality and impaired nutrition.

Mental disturbances such as are caused by school examinations and by discipline will arrest gain and even cause a sudden loss in weight. Such loss is not adequately explained by the smaller amount of food taken. This depressed state of mind inter-

\*Read at a meeting of the Medical Association of the Greater City of New York, December 18, 1916.

feres with absorption as demonstrated by Cannon. Peristalsis is slowed and internal secretions modified.

The following habits affect the child's nutrition: Too small a part of the twenty-four hours spent in outdoor air. A record of time spent daily out of

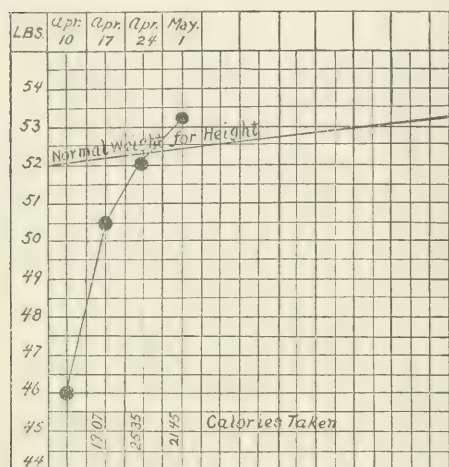


CHART II.—Sugar habit. M. D. (L. W. H.) 1916, aged eight years, one month, weight forty-six pounds. Took candy before meals with consequent loss of appetite. The chart shows her rapid gain in weight after omission of the candy, seven and one-quarter pounds in three weeks.

doors in some cases showed as small a proportion as one hour in twenty-four. Children considered too delicate to play hard games are apt to be kept indoors. This cause alone prevents gain. Those who sleep out of doors or under window tents gain twenty to forty per cent. faster than the children who sleep indoors, even though the windows are open. Children making a good weekly gain invariably stop gaining on their return to public schools, unless they are open air schools.

Fast eating will prevent gain, irrespective of the amount of food taken. This habit is often formed by allowing the child to return to play the moment he has finished his meal. In other words, many children would rather play than eat. Eating and drinking at the same time also helps to form the habit. Candy and sweets taken before meals do harm in destroying the appetite for other foods. When taken in moderate amounts directly after meals no harm results. The effect of stimulants, as tea and coffee, on the growing child, is especially pernicious. The most extreme cases of malnutrition belong to this group. Improper cooking has little bearing on the food habits of children in the large cities because of the excellence of baker's bread, and because both cereals and desserts are purchased either wholly or partially prepared.

Delicate children in general and especially delicate girls often have fixed ideas as regards certain foods, notably milk and cereals. These ideas may be the result of the mother's conceit—it pleases her that her child does not like the things she herself does not like, accordingly suggestion assumes a role to such effect that essential foods are eliminated from

the diet. If the child takes no milk or cereal it is practically impossible to keep the twenty-four hour amount high enough for continued gain. Aversion to form, taste, odor, or the association of certain foods with unpleasant events act in a similar manner. Such aversions are apt to be to foods of high value, therefore they seriously affect the child's nutrition. Medicine given in food as a vehicle causes aversions which may persist for years and which may never be completely overcome.

The most frequent questions asked by those interested in the treatment of these children are: How are you to get a child to eat more than he wants? If you overfeed him, how can you prevent indigestion? Also how can he be persuaded to take food which he dislikes and at which he rebels? The answer to these questions is found in ascertaining the causes of his small appetite, in measured feeding, and in an analysis of his state of mind.

The first step to be taken is the correcting of physical defects, especially nasopharyngeal obstruction and carious teeth. The child must have a free breathing space and be free of toxic absorption from all infectious processes. Out of door air does little good to a child who cannot breathe it freely into his lungs. Forty per cent. of the children studied required operations on the nose or throat.

The diet of these children should be controlled by measured feeding. A preliminary forty-eight hour list of his food should be kept before any suggestions are made. This list shows the likes and dislikes of the child. Changes can then gradually be

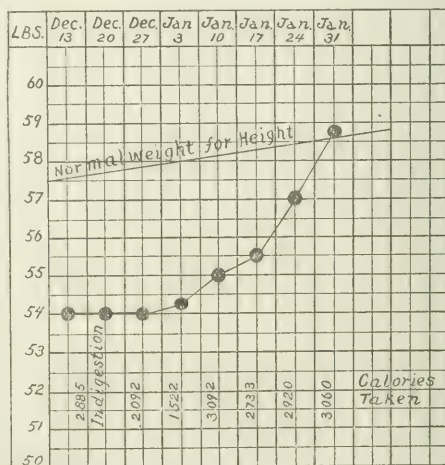


CHART III.—Fast eating. C. P. (L. W. H.) 1915, aged eight years, seven months, weight fifty-four pounds. Was nearly ten pounds underweight. He looked pale and sickly, was thought to be tuberculous, giving positive reactions to tuberculin tests. He stopped gaining at fifty-four pounds because of fast eating. The chart shows his rapid gain in weight, following the correction of this habit.

made in his diet list to increase his twenty-four hour intake along lines of least resistance. In this manner the daily amount of food may be doubled and often quadrupled without disturbance of digestion, as shown by repeated examination of the stools. Lunches at regular appointed hours should



be given, but not large enough to destroy his appetite for the next meal. These lunches should have a value of 200 to 400 calories and should be easily digestible. It is necessary that a diet record be kept at least two days in the week and the child weighed at the end of each week. If the diet record is not kept he stops gaining because he lapses into former food habits. Most underweight children re-

the tea or coffee habit should be suspected. Sleeping in an ill ventilated or overheated room also accounts for it, and sometimes a postnasal discharge may be the cause.

Ill nourished children should sleep out of doors or under window tents. Care should be exercised that they be kept warm, as in many instances there is a subnormal temperature. This out of door sleeping insures their living at least half the time in the open air.

To guard against overfatigue, rest periods of one half to a full hour are necessary, preferably before lunch and before the evening meal. If taken after exercise and bath the good effect is increased. The

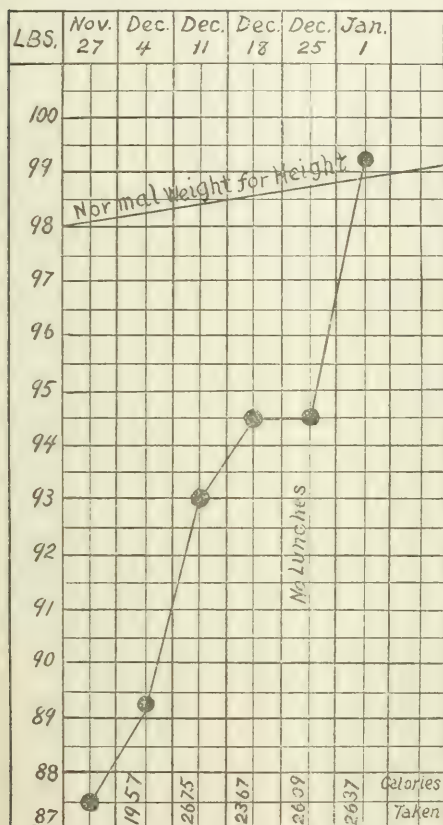


CHART IV.—No lunches. B. R. (L. W. H.) 1916, aged fourteen years, weight eighty-seven and one-half pounds. Was given no lunches during the week of December 25th, causing her to make no gain in weight, although the number of calories taken was 242 more than on the week previous and nearly the same number as the week following when there was a gain of four and three-quarters pounds. Assimilation is better with these underweight children if meals are taken five times a day rather than three.

quire more than 2,000 calories per diem. If they show no gain the cause should be found.

Children on measured feeding require no delicacies to bring the twenty-four hour amount to a gaining point. Delicacies do harm in tending to cause a child to take too high a food value at a given meal. Fancy cooking does not make delicate children strong.

When a child's diet is controlled by measured feeding, taste usually regulates the proportion of protein, fat, and carbohydrate necessary for correct nutrition. If the child has no appetite for breakfast

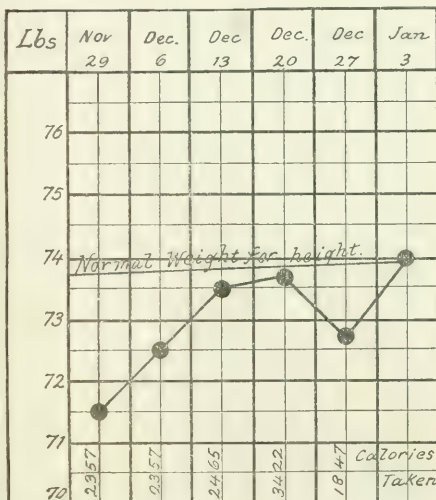


CHART V.—Apple week. G. P. (L. W. H.) 1915, aged nine years, five months, weight seventy-one and one-half pounds. Gained steadily for four weeks; the fifth week he lost one pound. Investigation showed that he had been allowed free access to a barrel of apples. The result was that the boy changed his diet from foods of high value to those of low value, with consequent loss in weight. All other children having free access to the apples showed similar results.

rest should be taken in bed, facing away from the light. The clothes should be loosened and windows opened. They should not be allowed to talk, play or read. Fifteen minutes of complete rest in this manner are of greater value than a much longer time of partial rest. In extreme instances, absolute rest in bed may be useful for several days until gain begins. Shortening the day by having the child take his breakfast in bed and not rising until ten or eleven o'clock is sometimes a useful procedure. These children should not attend school unless in the open air. All study requiring close concentration, competition, or worry should be avoided.

The pernicious habit of fast eating is one of the most difficult to correct. The following method if carried out thoroughly will meet with success. All liquids should be placed out of reach of the child. He may be allowed to drink before and after meals —also once or twice during the meals provided his mouth is empty. The carbohydrates require the most time in the mouth; complete mastication is

therefore necessary. He should be taught to chew his food as long as there is taste in it. The use of a coffee spoon requires the child to take small mouthfuls and prevents bolting. If these measures are not successful, the child must be persuaded to allow himself to be fed by the nurse or mother for a week, at the end of which time his habit is broken. Milk should be taken with cereal, bread, or crackers rather than drunk.

Notions and aversions may be corrected by counter suggestion, for example, impressing on the child's mind that such food will help him excel in sports or improve his general appearance. Such no-

twice a week. One and a half pounds of chopped meat for twenty-four adults is seasoned, mixed with boiled rice to make sufficient quantity, and made into meat loaf. When there is meat a second time five pounds of lamb are cut into small pieces, seasoned, and potatoes, onions, carrots, and parsnips added. Fish is given twice a week, as creamed codfish or fresh baked fish. Baked apples, apple sauce, prunes, stewed fruits, cereals, bran, oatmeal, corn meal and wheat are allowed. The daily dietary includes the following:

Breakfast—Cereal, bran muffins, whole wheat bread, coffee with half milk and tea half milk.

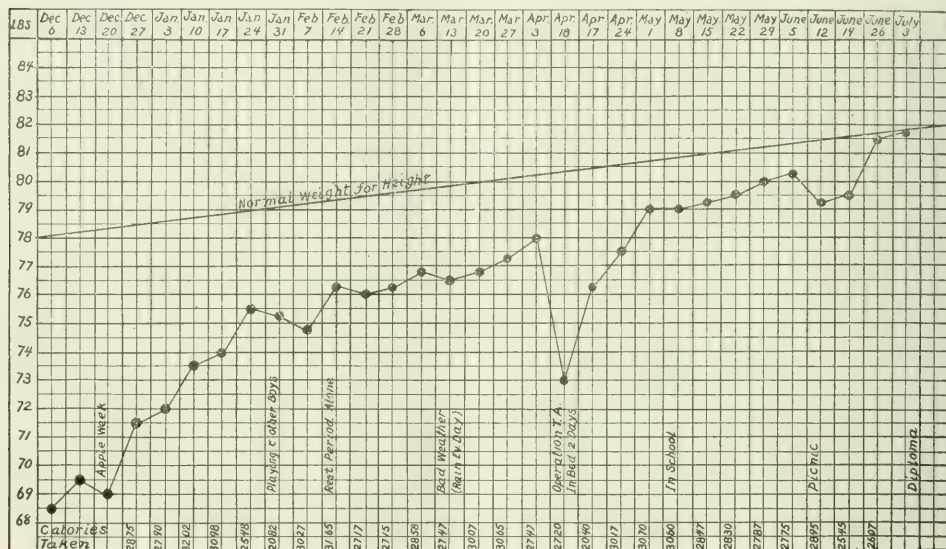


CHART VI.—Nutrition chart. P. C. (L. W. H.) 1015, aged thirteen years, nine months, weight sixty-eight and one-half pounds. The above chart shows a number of the most common disturbing causes which affect nutrition. This boy was under constant observation at the New England Home for Little Wanderers. Record of his diet was kept for two days only in each week, which may explain the rather wide variation in number of calories taken. His first failure to gain occurred December 20th. A number of barrels of apples were sent in to the Home for Christmas week. The boy helped himself, with loss in weight. January 31st and February 7th he failed to gain because of playing with other boys during rest periods. February 21st was a week when lunches were omitted. March 13th was a week of such bad weather he could not go out. All others in the class failed to gain for the same reason. As he had made no marked increase over a normal gain from January 24th to April 3rd, it was decided that his tonsils, which were cryptic, might be the cause. Operation was done, with a marked loss in weight because he was kept in bed only two days. May 8th shows no gain, the result of returning to school. June 12th shows result of overeating at a picnic. July 3rd this boy reached normal weight. His general appearance and health had become excellent.

tions are best eliminated by the class method of caring for these children. Evidence that tonics are useful in these cases is not convincing. Cod liver oil has a fuel value, but cream and butter are more readily taken. Iron and arsenic occur in sufficient quantities in foods. A child properly fed requires no laxatives.

657 BOYLSTON STREET.

**Prenatal Feeding and Education.**—A. Mabel Parker (*Indianapolis Medical Journal*, January, 1917), who has given much attention to this subject, recommends the following dietary: Milk one quart per diem, taken either plain, in cocoa, or in soups; one cup of coffee, half milk, and one cup of tea, half milk, per diem. Three quarts of fluids a day, including the quart of milk. The diet is practically vegetable. Meat should be eaten once or

Luncheon—Vegetable soup, split pea soup, tomato bisque, corn soup, rice soup, clam broth, oyster stew, rice pudding, baked apples, stewed prunes, peaches, bananas, sliced oranges, homemade bread, whole wheat, oatmeal or bran, milk, tea, half milk, cocoa, corn muffins, scalloped potatoes, cup custard with prunes, egg salad, and vegetable salad.

Dinner—Meat loaf, baked fish, lamb stew, fish cakes, spaghetti with cheese, vegetable loaf, potatoes, onions baked, tomatoes baked, baked beans, corn, lima and string beans, beets as often as possible, turnips and cabbage, carrots and peas, lettuce and celery, oysters, spaghetti, and cheese omelet.

The station where the observations were made is situated in a district of congested poverty and ignorance, and the whole thought was to save the unborn child. The results were noted with great satisfaction.

# Editorial Notes and Comments

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

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Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, FEBRUARY 24, 1917

## EXPERIMENTS ON MAN.

Certainly the truest and most useful physiology is the physiology of the entire animal, and the knowledge we may obtain of the working of any organ is most complete when the organ works in connection with its fellows. As Pembrey has expressed it, while experiments on isolated structures are of value if the results "be properly appraised," these organs are not units of life, for "the unit is the living organism." If this is true for physiology how much more true it would seem to be for pharmacology. The action of drugs upon organs separated from the body must be accepted with much conservatism as applying to the intact structure, especially when the organ is from an animal other than human.

It would seem that the ideal method of study in pharmacology would be by application of drugs directly to the student and his observation of the results. This method is now being tried in some schools, but with rather unexpected and disappointing results to the mechanist, owing to the fact that the human animal's mind influences his organs. The psychical state of the recipient is anything but that of the sick man who swallows everything with confidence and hope of the

outcome. The medical student, strange to say, is not only lacking in confidence in, but is often oppressed by fear of, the results. Sometimes he rebels against even trying a dose that he would, and will, prescribe without hesitation for his patient, and because of the dread of the consequences a substance which, under ordinary mental conditions, should reduce his blood pressure several pegs, promptly sends it up as many points, and a drug which, according to the books, should slow the heart, apparently causes it to beat faster.

Because this emotional disturbance brings about a perplexing contradiction of the teachings of the authorities, some instructors have had their enthusiasm for this method very much dampened, and yet the variety of reactions among members of a class are in themselves of great value. The student learns also by personal experience of the general properties of drugs, of which he too often remains in ignorance, and he gets some idea of the undesired effects that often accompany or follow the desired effects, a knowledge that should cause him to hesitate when otherwise he would be too lavish in their use.

Of course the medical student is not ill, in the somatic sense at least, but neither is the animal upon which he experiments. The chemical makeup of the student's body is, however, nearer that of his patient than is that of the animal, and, moreover, there is much more variety in the chemistry of human than of animal bodies. The variety of results following the application of drugs to the human subject, sick or well, arises, provided the compositions of the drugs are constant, largely from this cause.

The personal experience of the effect of drugs ought at least to impress the student with the very important lesson of the influence of psychological states on physiological functions, an influence which it is evident enough can quite annul the expected results when a drug is taken in the usual therapeutic dose. Even though the results may not agree with the books, pharmacological as well as physiological experiments should be carried out as far as possible on the human subject. The physician should be as fearful of the effects of drugs upon others as upon himself and not less so.

## THE LEGAL LIABILITIES OF HOSPITALS.

We are all familiar with the fact that in dealing with patients in hospitals the relatives are often more difficult to handle than the patients themselves; this amounts almost to a truism. One of the most disagreeable features in this connection is what might be called the litigious character of so many of these relatives. No matter what benefits may have been re-



ceived, what careful, unremitting attention the nurses may have given their relatives, let any untoward occurrence mar the recovery, a sprained ankle or a burn from a hot water bottle, and the slogan is: "Make the hospital pay for it." Mrs. Jones tells Mrs. Smith she knew of a case where a woman was burned with a hot water bottle and her husband got \$10,000 damages; another man slipped on the hardwood floor of a ward, broke his leg, and lived in comfort for the rest of his life from money wrung from the hospital, of course.

We confess that a review of the suits entered against hospitals would be apt to fill the mind of the layman with dismay. He would probably feel that should he ever enter a hospital and be fortunate enough to avoid asphyxiation at the hands of the anesthetist, emerge from the operating room with a peritoneal cavity innocent of sponges, fail to fall down the elevator shaft when returning to his room, escape ether pneumonia, and survive unscathed the scalding ministrations of the nurse with the hot water bottle, the chances are about even that he will either acquire a stitch abscess or a postoperative hernia, or at least tumble down the steps as he leaves and shatter his acromial process.

It seems strange to the medical man that if a drayman delivering goods at the back door of a hospital falls into an excavation in the yard and injures himself, he can recover damages from the hospital; if a visitor to a patient is in the hospital elevator when it breaks and is thereby hurt, she can bring suit; if a pedestrian is run over by a hospital ambulance, the hospital is liable; if a nurse in a hospital is not warned of the contagious nature of a disease she is attending, and contracts it, she can be recompensed; but if a patient undergoing treatment in a hospital is injured, even if by negligence of the hospital employees, no damages can be recovered.

Of course, this is speaking very generally. The courts hold that there are three main reasons for this legal principle. First, it would be contrary to public policy to allow institutions as necessary to the welfare of society as hospitals to be molested. Second, hospitals as a rule are supported wholly or in part by trust funds and these should not be diverted from the original intent of their founders, as would be the case if they were levied upon to pay damages. Third, a patient in a hospital receives inevitably certain benefits of a tangible and peculiar nature and in so doing there is an implied waiver of any claims against the source of these benefits.

Looking at these three reasons from a logical standpoint, however, we find that the first two of them are not so sound. It would be still more opposed to public policy to establish a favored class of institutions as would be the case if hospitals were

held irresponsible for negligence. The service which hospitals render to society is proportionate to the efficiency with which they are conducted and the feeling that there was no penalty for failure in this regard would inevitably tend to a demoralization, subtle but sure. The second principle is unsound for much the same reason as the first. The only strong reason of the three is the one dealing with implied waiver. In connection herewith there seems to be a general impression that pay patients do not partake in this waiver. This is not true. It has been held repeatedly in the courts that the sum which a patient pays for maintenance and treatment in a hospital, no matter how large it may be, it is not adequate compensation, for benefits received. In other words, a hospital is a vast eleemosynary institution and all who enter its gates partake of its charity. In so doing, they consent to receive the ordinary care and treatment given all patients, together with the attendant risks. The law does not encourage any individual to "bite the hand that feeds him." Were this not so many hospitals must fall by the wayside, preys to ingratitude and mercenary schemers.

#### MOONSHINE AND MEDICINE.

Bret Harte's Heathen Chinnee has lost a good deal of his former prestige since the subtleties of the unconscious life have been brought to the stage of consciousness. "For tricks that are dark and ways that are"—well, after all, from the point of view of what man wants, the ways are not always "vain," nor, should we judge, are they always shrouded in darkness. We are led to believe that the moon, for instance, sheds considerable light over them.

From the standpoint of Webster's recent extensive study of the influence of lunar phenomena upon man's thought and social regulations in the days when the historical unconscious was being laid down, the moon is a much more important factor than moderns have schooled themselves to think. Its light seems to have attracted unconscious impulses, to have incited their activity, and to have guided through these the energy of life into useful paths of culture.

It would take us too far from its practical bearing on the definite problems of the physician, if such a complete study of humanity can do that, to examine the material which Webster has gathered in its relation to various branches of culture. Just enough, however, may be touched upon to suggest that our static scientific attitude toward practical medical questions loses its vitality and pragmatic value unless we plunge, as Bergson says, back into the stream of becoming and find again that essential unity

which marks the magic thought of early man. What if, after all, there does exist a dynamic connection between man and his environment which, through the past preserved in the unconscious, as well as through his present reactions based upon and colored by this, keeps up a continuous interaction with which the physician must definitely deal, or fail in his task?

Various modern studies are familiarizing us once more with that which was first crowded out by science, the intense and activating reality upon developing man of each feature of his environment. It was not strange nor yet for naught that man observed the temporal relationship of the menstrual period and the course of the moon. What matter if early attempts at explanation attributed to a moon Being the embrace which caused the flow? Early logic could also easily transfer this idea and extend it to conception, pregnancy, and conception of twins as a punishment for too protracted staring at the moon god. The gradual attenuation of grosser beliefs still attributed to the moon beneficent influence over childbirth, over early childhood, and in Brittany even today the belief continues that its rays can grant impregnation to an exposed maiden. All people in all time have extended its fruitful influence to vegetation, so that even now the onions which come to our city market owe their excellence to the farmer's careful conjunction of planting time with the phases of the moon.

Such a review of man's beliefs is not idle when we remember that we succeed or suffer from our mode of reaction to environment, the latter especially when we still rely upon false interpretation based upon emotional significance. It is very important then to learn to discover in the conversion methods of the unconscious wish which underlies the protean disturbances of menstruation the emotional reactions which in the most enlightened still partake of the past, and have their origin in the past. All the striving after creative power which meets with thwarting because it seeks inadequate ways based on archaic expression, and when thwarted must create further substitutes for itself in morbid symptoms can only be understood if we are willing to know what factors out of the past constitute so large a part of man's and woman's nature.

One is emboldened to seek such practical values in this anthropological study in the face of certain studies made by Sadger of Vienna upon some somnambulist patients, who under the influence of moonlight are recalled to times and scenes of active childish wishes, which are likewise eloquent, through their psychosexual content, of this demand for power expression. The moon calls them in deep sleep to act out dream wishes. These patients re-

veal, as Sadger shows, merely a fact which the intuitive insight of folklore and artistic literature has spoken in myth and tale, the refinement of the savage's cruder belief in moon impregnation.

If, then, moon lore contains a key to sleep walking and other kindred disorders of childhood and later life, linked inseparably with the more common and obvious hysterical gynecological disorders, it cannot be scornfully passed by. Webster's study has a very definite value to the broader conception of medicine which seeks to comprehend in order to heal. Medicine cannot exclude itself from the deeper intuitive knowledge of folklore, but is driven rather to recognize this all embracing interaction of all forces within and without man.

### CONJUNCTIVITIS.

Have you not occasionally heard a physician say, "I do not know much about the eyes, but I do know conjunctivitis when I see it"? Perhaps you have made that remark yourself. Did you ever realize that the specialist in diseases of the eye wishes that he could speak as confidently? He knows that it is very easy to make a mistake. At least he has found it easy, and the more experienced he is the more positive he feels. Take for example a case that is not very uncommon. An elderly patient is awakened during the night by a pain in his eye, and consults his physician in the morning; the latter finds the eye slightly reddened with some lacrymation, perhaps a little discharge, but not very much, the iris bright, the pupil normal, the tension normal, the cornea unaffected. What is there about such a case to suggest anything worse than a mild attack of conjunctivitis, except the history of the acute pain during the night? And who would think of questioning with regard to such an occurrence, or pay much attention to it if volunteered by the patient? Yet if the physician prescribes argyrol and boric acid he should not be surprised when the patient returns a few days later and shows him an eyeball with a deep red injection close to the cornea, and a small pupil with its edges bound down to the anterior capsule. The diagnosis of iritis is now easy, but valuable time has been lost.

The author of one of our best textbooks, Roemer, says frankly that in such a case as this the diagnosis commonly is not made until harm has been done. The appearance of the eye is such as to deceive the best specialist, but the better he is the more wary does he become. He knows that the differentiation of conjunctivitis from other diseases sometimes is difficult. He knows that not only iritis, but also glaucoma or keratitis may be mistaken for conjunctivitis, and he can probably recall cases of conjunc-

tivitis which were erroneously supposed at first to be those of a more serious disease. He has learned by experience that he has to be constantly on guard if he would avoid such mistakes himself, so he exercises great care in his examination. It does not do to diagnose conjunctivitis because an eye is reddened and no gross symptoms of any other disease obtrude themselves on our observation. We need to look carefully at such an eye, and looking, see, observe, and consider the bearing of each symptom noted. The presence or absence of any swelling of the lids, the character of the redness of the eyeball, whether it is densest immediately around the cornea or diffused evenly over the surface, the presence or absence of any defect in the cornea, the ratio the discharge bears to the intensity of the other symptoms, the condition of the pupil and of the iris, and the history of the case, all of these have to be taken into account before we are justified in making a diagnosis of conjunctivitis.

#### POLIOMYELITIS.

Doubtless we shall learn not a few valuable lessons from our experience with poliomyelitis in the United States during the past summer. The outstanding fact to us now is the vastly increased importance of this affection. In round numbers it may be quite conservatively stated that we have had this year not less than 35,000 cases of this disease in the United States, which is the largest epidemic—or pandemic—ever recorded. This means that in one year the number of cases equals perhaps more than half of all the cases hitherto recorded in this country; indeed, this statement is too modest.

The case fatality rate has also been high this year, and has perhaps closely approximated an average of twenty per cent. New York City with about 9,500 cases gave a rate a little in excess of twenty-five per cent.; Newark, N. J., with about 1,500 cases, gave a similar figure, and some places gave even higher figures. An average of twenty per cent. is hardly excessive. The disease has generally shown high virulence.

In estimating the gravity of this disease we must, of course, also consider the paralyses. It is difficult to say how many people will be left crippled as a result of this malady during the past year. From experience, however, it may be estimated that one third of the survivors will suffer from residual paralyses more or less severe.

Leaving out of consideration the so called abortive cases which have not been recognized—and their number is large—we may say, then, that in round numbers our tribute this year to infantile paralysis

represents about 35,000 cases with 7,000 deaths, and some 9,000 or more cripples. Truly this is a showing which elevates to a position of real importance a disease which we have been rather inclined in the past to regard as a more or less negligible quantity, at least from a public health standpoint.

No one knows what the future may hold, but it seems hardly too much to say that poliomyelitis in the years to come is likely to prove a disease of increased rather than diminished importance. This is a matter all the more grave, since, for the present at least, our knowledge and our methods are totally inadequate either for its prevention or for its control.

Of far more immediate interest, of course, is the question as to whether we are to have another epidemic next summer. Such a question cannot, of course, be answered satisfactorily. At least we may hazard the opinion, based on past experience, that New York City and its vicinity is very unlikely again to suffer at any early date. Communities visited by epidemics of poliomyelitis one season usually escape such visitations again for a period of time more or less prolonged.

#### THE AMERICAN JOURNAL OF SYPHILIS.

A new magazine with the above title has been issued by the Mosby Company, of St. Louis. It is a quarterly journal devoted to the study and prevention of syphilis.

The first number is a striking and almost formidable affair of 260 pages, filled from cover to cover with most important and timely material bearing on a disease with which society will have to deal more efficiently in the future than it has in the past if it hopes to avoid most serious mutilation if not annihilation.

This opening volume contains sixteen original articles and some forty pages of abstracts of the world's literature on syphilis. All departments of syphilography are represented. The responsible editors are Dr. Loyd Thompson and W. A. Deadrick, both of Hot Springs, Ark. Department titles are Parasitology, Pathology, Therapy, Dermatology, Neurology, Ophthalmology, Serology, Urology, Internal Medicine, Gynecology and Obstetrics, Social, Surgical, and Röntgenological Aspects of Syphilis.

Among the more noteworthy contributions to this number are those on the Chemotherapy of Mercurial Compounds by Schamberg, Kolmer, and Raizias; Unusual Forms of Nervous Syphilis by Collins; Spirochetal Content of Spinal Fluid of Tabes by U. J. Wile; Sanitary Attack on Syphilis by Pusey; Importance of Knowledge of Syphilis in Medical Diagnosis by Barker; Syphilis and the Thyroid by Thompson, and Rabelais's Conception of Syphilis by Montgomery.

The new quarterly is well conceived and well born. We wish it a hearty success.



## DR. SMITH ELY JELLIFFE.

It is with great pleasure that the publishers announce that Dr. Smith Ely Jelliffe, of New York, has joined the editorial staff of the *NEW YORK MEDICAL JOURNAL*.

Doctor Jelliffe will need no introduction to many of our readers, as he was editor of the *Medical News* for four years before that journal was consolidated with the *NEW YORK MEDICAL JOURNAL* and was associated with Dr. Frank P. Foster on the editorial staff for two years after the consolidation was affected. While Doctor Jelliffe has devoted special attention to nervous and mental diseases and has built up a large consultation practice in this line, he has at no time lost touch with the general practice of medicine, and brings to the work which he is undertaking a wide knowledge of medicine and of men, a varied and valuable experience, a sound judgment and lofty ideals, which will make him an important acquisition to the staff. It is with pleasure that we reproduce below an excerpt from his letter of acceptance which sets forth his views on the possibilities and the duties of the position which he is accepting:



DR. SMITH ELY JELLIFFE.

"It is a mark of high commendation that you should ask me to associate myself with your staff in the editing of the *NEW YORK MEDICAL JOURNAL*. Notwithstanding the urgent demands of an arduous practice, I have always wished to contribute my bit towards the spreading of that concept in medicine which views the disorders of the human body, not as happenings isolated in this or that organ, but as a failure of the body as a whole successfully to carry on its functions, and in which the particular cell groups, which show the defect, do so for specific reasons. This, I know, is an old Hippocratic ideal, too frequently overlooked in an era of absorbing specialistic investigation. I am in heartiest sympathy with the trend of this mass of analytic research; but what I especially prize is the opportunity to assist in the synthesis of this invaluable material and to make it available for practical purposes.

"In trying to present to your readers from week to week the most profitable and productive work which is going on I would seek to avoid a narrow and dogmatic materialism on the one hand and an equally dangerous diffuse and mystic spiritualism on the other. Matter without spirit is dead; spirit without matter means nothing for human beings. A living medicine must consider both.

"Your willingness to have me continue my regular practice, and to relieve me of many mechanical details in the editorial office, permits me to accept your generous offer. I wish to remain in the world of action and to be in touch with sick people, for only by so doing can I know at first hand the problems of the profession and thus help to make the *NEW YORK MEDICAL JOURNAL* of value to others who are practising medicine."

Doctor Jelliffe is a native of New York and took his degrees as Master of Arts, Doctor of Medicine, and Doctor of Philosophy at Columbia University. He was a teacher of *materia medica* in that

institution, later occupied the chair of psychiatry at Fordham University, and since 1911 has been Associate Professor of Diseases of the Mind and Nervous System at the New York Postgraduate Medical School and Hospital. Doctor Jelliffe has spent four years in the medical clinics of Munich, Berlin, and Paris, devoting his time to the study of diseases of the nervous system, in which he has specialized and has built up a large practice as a consultant.

Being a son and a grandson of teachers, Doctor Jelliffe was early led to take advantage of the printed page in furtherance of the teachings in that branch of medicine

with which he has been particularly identified and for the past fifteen years has been the publisher of the *Journal of Nervous and Mental Disease*. With Dr. William A. White, of Washington, D. C., he founded in 1907 a series of monographs on nervous and mental diseases, twenty-five separate monographs having been published in the series. These have been of increasing interest and value and several of them have gone through many editions. In conjunction with Doctor White he founded the *Psychoanalytic Review*, which is now entering its fourth year and which has been of much service in bridging the gap between matter and mind in medicine. His contributions to literature have been numerous and diversified, embracing many shorter articles, translations of books, and larger treatises. Among the latter are *Modern Treatment of Nervous and Mental Diseases*, by White and Jelliffe, published in 1913; *Diseases of the Nervous System*, a Textbook of Neurology and Psychiatry, which appeared in 1915, and *Appleton's Medical Dictionary*, published in 1916.

These literary and journalistic activities have all been carried on subsidiary to Doctor Jelliffe's main work in clinical and hospital practice. For fifteen years after his graduation he devoted every afternoon throughout the week to laboratory, hospital, or clinical work, thus laying a broad foundation of clinical experience, which has been invaluable to him in both his literary and his professional work, and which will add much to his value as a member of the editorial staff of the *NEW YORK MEDICAL JOURNAL*.

The publishers are particularly gratified that they now have on their editorial staff two such eminent practitioners as Dr. Charles E. de M. Sajous, of Philadelphia, and Dr. Smith Ely Jelliffe, of New York, both of whom through their work as teachers and as consultants are in constant and close contact with the everyday problems of the practitioner of medicine. Under such editorial direction and with the help of our twelve assistant editors, we feel confident that the *NEW YORK MEDICAL JOURNAL* will continue to improve in the character of its contents and to approach more closely the ideal which its editors and publishers have always held of making it a journal of the utmost value to the men engaged in the active practice of medicine.

## News Items

**Philadelphia Obstetrical Society.**—The following officers were elected recently to serve for the ensuing year: President, Dr. Frank C. H. Hammond; vice-president, Dr. F. Hurst Maier; secretary, Dr. Edward E. Schumann; treasurer, Dr. William E. Parke; council, Dr. John M. Fisher, Dr. George M. Boyd, Dr. Richard C. Norris, and Dr. Daniel Longaker.

**Society of Normal and Pathological Physiology, Philadelphia.**—This society recently elected the following officers to serve for the year 1917: President, Dr. Paul Lewis; vice-president, Dr. O. H. P. Pepper; secretary, Dr. A. N. Richards; treasurer, Dr. E. B. Krumbhaar; additional members of council, Dr. M. H. Jacobs and Dr. H. H. Donaldson.

**Personal.**—Dr. B. C. Crowell, professor of pathology and bacteriology, University of the Philippines, has been appointed director of the Graduate School of Tropical Medicine and Public Health of that university. This school gives courses which in one year lead to the degree of Doctor of Tropical Medicine and in two years to Doctor of Public Health.

Dr. Lawrence G. Hanley has been elected president of the staff of the Buffalo Hospital Sisters of Charity, Dr. Emil Tobie, vice-president, and Dr. Charles Abbott, secretary.

**County Medical Society Opposed to Mills Bills.**—At a meeting held at the New York Academy of Medicine, Wednesday evening, February 14th, the Medical Society of the County of New York went on record as being opposed to the Mills bill providing for compulsory health insurance. The following resolution was introduced by Dr. Eden V. Delphey and adopted by the society:

*Resolved,* That this society disapproves of the medical provisions of the bill for compulsory health insurance and the appointment of a designated committee to study the subject, and directs its Committee on Legislation as delegates to the Medical Society of the State of New York, to take proper measures to oppose its passage in the Legislature.

**A Medical Officer at the United States Embassy in Mexico.**—An unusual step has been taken in the assignment of Major Howard H. Baily, of the Medical Corps of the United States Army, to duty with the United States Embassy in the city of Mexico. This step has been taken probably because of the report which has been received of the prevalence of epidemics in that capital.

**A Medical Unit for Asia Minor.**—Announcement is made that a medical unit of ten physicians, ten nurses, and a supply of drugs and medicines will be sent soon to Asia Minor, to fight an epidemic of disease which has caused many deaths. An organization of Jewish women have started a campaign to raise \$100,000 to finance the expedition, and the Navy Department will transport the workers and material to Asia Minor.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, February 26th, Section in General Medicine of the College of Physicians, North Branch of the County Medical Society; Tuesday, February 27th, Academy of Stomatology, West Philadelphia Medical Association; Wednesday, February 28th, County Medical Society; Thursday, March 1st, Obstetrical Society, Southeast Branch of the County Medical Society; Friday, March 2nd, Kensington Branch of the County Medical Society.

**Occupational Disease Must Be Reported.**—The Health Department of the City of New York, having observed that in a number of instances physicians have under their care patients suffering from occupational disease caused by various chemicals but have failed to report them to the Department of Health, as required by Section 92 of the Sanitary Code, has issued a notice that failure to report cases of occupational disease constitutes a violation of the law. Special postal cards for the reporting of occupational diseases may be obtained upon application to the Division of Industrial Hygiene, Bureau of Preventable Diseases of the Department of Health.

**Labor Unions Organize a Sanitation Committee.**—At a special meeting, held in New York on Sunday afternoon, February 18th, for the purpose of discussing questions relating to industrial hygiene and healthful conditions for workers, delegates elected by more than fifty labor unions were organized into a permanent labor sanitation committee. Among the speakers were the Honorable Royal Meeker, United States Department of Labor; Dr. Alice Hamilton, special investigator for the United States Department of Labor; Mr. Hugh Frayne, organizer for the American Federation of Labor; Dr. George M. Price, medical director of the joint board of sanitary control of the cloak and suit industry; Dr. Louis I. Harris, chief of the division of industrial hygiene of the Department of Health.

**Public Health Activities of the Academy of Medicine.**—A summary of the activities of the Public Health Committee of the New York Academy of Medicine, which has just been issued, shows that the committee is carrying on an investigation of the police department medical service, at the request of the police commissioner and is making a study of health districts at the request of the commissioner of health. The committee also has under consideration bills to amend the present State narcotic law and the medical practice act, has taken steps to bring to the attention of the government the necessity for guarding against an influx of undesirable emigrants at the close of the war, is making a study of sewage disposal, and has appointed a subcommittee to study poliomyelitis.

**Medical Society of the Missouri Valley.**—The semi-annual meeting of this society will be held at Keokuk, Iowa, March 22nd and 23rd, under the presidency of Dr. C. R. Woodson, of St. Joseph, Mo. The members of the Tri-State Medical Society of Missouri, Iowa, and Nebraska have been invited to attend, and a merger of the two societies will be discussed. The Hotel Iowa will be headquarters for the meeting, and scientific sessions will be held in the Masonic Temple. Interesting features of the program are symposia on Exhaustion Psychoses and Focal Infections and an address on Cancer of the Rectum and Colon, by Dr. Jerome M. Lynch, of New York. On Friday afternoon, at a public meeting, a lecture on the prevention of tuberculosis will be given with motion pictures. Dr. F. B. Dorsey, Jr., is chairman of the committee of arrangements.

**Women to Be Admitted to Long Island Medical College.**—At the last meeting of the faculty of the Long Island College Hospital, Brooklyn, it was voted to make the medical college coeducational by opening it to women students.

**Ohio County, W. Va., Medical Society.**—The regular meeting of this society was held in Wheeling, Friday evening, February 16th, at the Hotel Windsor. Dr. J. A. Lichty, of the Western University, Pittsburgh, Pa., read a paper on the Clinical Consideration of Peptic Ulcer. Forty-three members were present.

**Anthrax in Camden, N. J.**—Two cases of anthrax, one of which resulted in death, were reported in Camden, N. J., last week. Both of the victims were workers in leather in Camden factories. The disease is believed to have been caused by handling the hides of diseased animals imported from South America.

**American Life Convention.**—The seventh midyear meeting of the medical section of this convention will be held at Excelsior Springs, Mo., March 7th, 8th, and 9th. Dr. F. W. Foxworthy is chairman of the convention, Dr. J. P. Turner is vice-chairman, and Dr. F. L. B. Jenney is secretary. Dr. F. L. Truitt is chairman of the program committee.

**Exit the Backyard Fence.**—The Tenement House Committee of the Child's Elevation Society of New York has undertaken a campaign for the elimination of the high board backyard fence and the substitution of a light iron fence in its stead. Some of the disadvantages of board fences are that they require constant repairs, increase fire danger, furnish shelter for thieves and rubbish, and shut out light and air.

**To Join Army Medical Corps.**—Six additional names have been added to the list of applicants for appointment in the Medical Corps of the United States Army as having successfully passed the examination held during the week of January 2d. These candidates will be ordered to attend the Army Medical School for the term beginning March 1st. On the completion of this course they will be commissioned about July 1st in the Army Medical Corps. The names of these successful candidates are as follows: Dr. Clarke Blanco, of Norridgewick, Maine, a graduate of the University of Vermont; Dr. Leon Alexander Fox, of Nogales, Arizona, a graduate of the University of Cincinnati; Dr. Charles Elias Hyde, of Southport, Conn., a graduate of Yale Medical School; Dr. David Dare Paulus, of Oklahoma City, Oklahoma, a graduate of the Northwestern University Medical School; Dr. Rowland Daniel Wolfe, of Fort Monroe, Va., a graduate of the George Washington University; Dr. Max Riebenack Stockton, of Swarthmore, Pa., a graduate of the Hahnemann Medical College and Hospital.

**Vital Statistics of New York State.**—The annual report of the New York State Department of Health for the year 1916, issued recently, contains a summary of vital statistics for the State outside of New York city. This summary shows a continued reduction in the number of deaths from scarlet fever, typhoid fever, diphtheria, and tuberculosis, the death rates from these diseases being the lowest in the history of the State. The tuberculosis death record shows that there were 114.2 deaths per 100,000 living persons, a reduction of 2.3 under 1915, and that the actual number of deaths from tuberculosis, approximately 5,250 in the State, remains the same as it has for the last ten years, notwithstanding an increase of 600,000 in population during this period. There were 378 deaths from typhoid fever, which is 64 less than the number in the State outside of New York city for any one year since the records of the department have been maintained. The death rate was 8.0 per 100,000, the lowest in the history of the State. The so called minor communicable diseases, measles and whooping cough, were responsible for a larger number of deaths last year, due to a widespread epidemic of both these diseases occurring in the late spring of 1916. The deaths from infantile paralysis—881 in the State outside of New York City—made a marked difference in the total death rate, not wholly offset by the reductions in other communicable diseases.

**New Jersey Physicians Double Their Fees.**—At a meeting held on February 20th the physicians of Bayonne, N. J., adopted a resolution to double the fees which they have charged heretofore. This step has been taken on the ground that it is necessary in order that the physicians may meet the increased cost of living due to advances in every direction.

**Gifts and Bequests to Hospitals.**—It is announced that the bequest of the late T. Morris Knight to the Philadelphia Home for Incurables will be fully \$300,000, instead of \$10,000 as first reported. Sums amounting to \$55,000 go to other charities.

By the will of the late Jane L. McConnell, of Philadelphia, the Presbyterian Hospital of Philadelphia will receive \$10,000.

**Oculists Needed in the City Service.**—As announced in last week's issue of the JOURNAL, the Municipal Civil Service Commission will hold an examination for the position of oculist, Grade 2, in the city service. From the list of eligible persons obtained from this examination, appointments will be made in the health department. The time for receiving applications for this examination has been extended to Friday, March 2nd, and no application delivered at the office of the commission, by mail or otherwise, after 4 p. m. on that date, will be accepted.

**Drug Addiction Not a Habit.**—The joint legislative committee on narcotic addiction of the New York State Legislature has arrived at the conclusion that drug addiction shall be defined as a disease symptom, not a habit. This statement is made in the report submitted by this committee to the Legislature on February 19th. The report says that one of the first duties of the State is: "To establish a supply of narcotic drugs, to which the confirmed addict shall have access, under proper State regulation, pending the establishment of a rational and scientific treatment for this disease." The report says that "The committee believes that at least 100,000 people are now suffering from this disease. Your committee is inclined to criticize the medical profession for its lack of study of this increasingly important subject."

**National Committee for Mental Hygiene.**—The ninth annual meeting of this committee was held in New York on Wednesday, February 7th. Mr. Otto T. Bannard, treasurer, announced that gifts amounting to more than \$30,000 for general expenses had been contributed during the past year by four donors, one of whom had pledged \$100,000 toward an endowment fund that is being raised. The Rockefeller Foundation has contributed \$34,000 for special purposes, such as surveys of conditions among the insane and feeble-minded.

Short addresses were given by Dr. Walter E. Fernald on Supervision of the Feeble-minded in the Community; Dr. William A. White, Influence of Mental Hygiene upon Methods of Dealing with Crime and Criminals; Dr. William L. Russell, Some of the Indirect Results Which May Be Expected to Follow Our Surveys of the Care and Treatment of Mental Diseases; Professor William H. Burnham, The Role of Mental Hygiene in Education; Dr. E. E. Southard, The Community as a Unit for Mental Hygiene Work; Dr. Henry R. Stedman, The Teaching of Mental Hygiene in Medical Schools.

Dr. Thomas W. Salmon, medical director, Dr. Frankwood E. Williams, associate medical director, and Mr. Clifford W. Beers, secretary of the committee, reported on the work of the past year. Surveys have been completed in the States of California, Colorado, Connecticut, Georgia, Louisiana, Pennsylvania, South Carolina, Tennessee, Texas, and Wisconsin, and are now in progress in the cities of Chicago and New York. State societies for mental hygiene are now organized in sixteen States, while steps have been taken toward the organization of societies in several other States. During the coming year emphasis will be laid upon the educational work of the committee. A feature of this work will be the publication of a quarterly journal, *Mental Hygiene*, the first number of which was issued during the past month.

The following officers for the ensuing year were elected: Dr. Lowellys F. Barker, of Baltimore, president; vice-presidents, Professor Charles W. Eliot, and Dr. William H. Welch.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE TREATMENT OF LEAD POISONING.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 322.)

Complete prophylaxis of any disease state demands not only the exclusion, in so far as possible, of the causative factor, but also the detection of the earliest signs of actual injury, that the ultimate, more severe effects of the harmful agent may be prevented. In the case of lead and other forms of industrial poisoning, this secondary phase of prophylaxis assumes an importance greater than that obtaining in general medical practice owing to the possibility of constant supervision of many workers exposed to lead in the more or less extensive industrial establishments in which they are employed.

For the early detection of harmful lead effects, various features or peculiarities of lead intoxication are to be borne in mind by physicians charged with the periodic examination of lead workers. While the blue line on the gums, colic, anemia and basophilic degeneration of the red cells, anorexia, loss of weight, metallic taste, foul breath, headache, and slow pulse may all be included among the earlier signs of lead disease, the aim should be to discern intoxication before a diagnostically convincing combination of two or more of these signs has presented itself. Again, certain of these manifestations of lead absorption may occur and be maintained for an indefinite period without being followed by additional more distressing symptoms of plumbism. Thus, according to Oliver, normal ruddiness of the skin is soon lost upon engaging in work in lead, the face becoming pale and sallow, the expression altered, and the number of red cells reduced by about one third; yet no further signs of lead intoxication may appear. In some, facial fullness and body weight are gradually reduced to a certain point, an equilibrium being then apparently established, which is maintained for months or years without further signs of lead disease. Basophilia, while considered by Charteris the earliest symptom of harmful lead action, seems indistinguishable, according to this well known observer, from that seen in pernicious anemia and leucemia, and has been noted in slight degree by Nägeli in twenty-one per cent. of healthy persons. Sir Thomas Oliver states that he "could hardly recommend the suspension from work in a lead factory" of any person with basophilia, and asserts that in a large number of patients in whom one would expect to find the earliest signs of lead poisoning basophilia is absent. The blue line is likewise frequently wanting in early cases, especially in lead workers who rinse the mouth and brush the teeth at the close of their working periods. Some cases have the blue line for twenty years (Scully), without necessarily manifesting further symptoms at any time during this period. The unreliability of such symptoms as abdominal pain, anorexia, loss of

weight, foul breath, or headache, when occurring alone, from the standpoint of conclusive diagnosis, is obvious, in view of the wide variety of conditions other than lead poisoning which might underlie each of these symptoms. Slow pulse is not a particularly early sign, occurring in marked form mainly during acute attacks, the saturnine origin of which is unmistakable.

On account of the uncertain significance of these various symptoms and signs when isolated, an early diagnosis of lead intoxication often can be based only on presumptive evidence, viz., the history of exposure to lead and a single symptom or sign suggestive of the condition. It is the general impression that examination of the urine for lead, at least by the methods now in vogue, is of no assistance in early diagnosis. That shortness of the period of exposure to lead before the appearance of symptoms does not exclude lead as the cause of these symptoms seems clear from the case reported by Hamilton, in which exposure for only three days was followed by lead symptoms. Scull circumvents the difficulty attending recognition of the proper moment for instituting special prophylactic measures in the individual case by giving all workers who complain of colic a high enema. If the man recovers in a day or two, the case is not considered one reportable as suffering from lead poisoning. If, however, discomfort continues for two or three weeks, with anorexia and slow recovery, the case is considered one of true lead poisoning, whether the blue line is to be found on the gums or not. Occasionally, in suspicious cases he administers a dose of potassium iodide. In most instances the patient is found well when seen a week or two later.

Prophylaxis against subsequent severe lead disease in the early, tentatively diagnosed cases of lead intoxication may not require very radical measures. As suggested by F. D. Patterson, transference of the worker to some other part of the industrial plant, in which lead bearing dust is less abundant or absent, may prove sufficient to reduce the "lead stream" in his system below the danger point. Remembering the case reported by Erlenmeyer (referred to in the preceding issue) in which a reduction of the working period from ten and a half to eight and a half hours—after an intervening period of rest—kept the patient free indefinitely from severe lead symptoms previously manifested, it will readily be understood that, in some instances at least, simple measures, the effect of which is limited to a slight reduction in the amount of lead absorbed or a slight increase in that eliminated, will preserve the patient in the long run from lead disease, except possibly, in the form of nephritis. In the very mild cases, mere strict enforcement of the prophylactic measures detailed in the first installment of this article may suffice to turn the scale, and subsequent maintenance of the added precautions to prevent all further trouble. In any but the mildest

cases, however, an interval of complete freedom from lead absorption through rest at home—or exclusively outdoor work not involving contact with lead compounds—is undoubtedly the safer course. In view of the slowness with which lead is eliminated this period should, as a rule, be of not less than a fortnight's duration, and meanwhile the emunctories should be stimulated to normal or supernormal activity. Before resumption of work the patient should again be medically examined. In some instances, in which fairly strict prophylactic measures have proven insufficient and circumstances prevent transference of the patient to work involving less exposure to lead, reduction of the daily working period to a point at which the "lead stream" will cease to be dangerous in the individual case would seem advisable.

(To be continued.)

**The Drug Treatment of Morphinism.**—Frank H. Carlisle (*Boston Medical and Surgical Journal*, February 8, 1917) groups the various forms of treatment under three heads: gradual, rapid, and immediate withdrawal of morphine. At present he prefers the rapid withdrawal, and has found scopolamine to be a useful drug. Treatment is divided into two periods, first that of withdrawal; second, that of convalescence. His routine is as follows: A mixture containing scopolamine hydrobromide gr. 1/150 and morphine hydrobromide gr. 1/6, is given hypodermically on the evening of the day of arrival and repeated at intervals of six hours during the first twenty-four. The early effects of scopolamine usually make their appearance during this period, and are manifested by marked dryness of the throat, difficulty in swallowing, dilated pupils with blurred vision, and difficult, rather jerky speech. Mild hallucinations may appear now, or not until the following day. On the second day the interval for injection is increased to eight, on the third day to twelve hours. In typical cases the depressant effect of the scopolamine presents itself at about this time, continuing as a rule through the third and fourth days. This stage is characterized by a sensation of great fatigue and drowsiness; the patient seeks his bed and should obtain sleep for from four to eight hours. On the fourth day there may be some nervousness and gastric disturbance, but usually no craving for morphine. At bedtime the final dose of the mixture is given, together with fifteen grains of trional. This is almost invariably followed by a comfortable night's sleep of six or eight hours.

Active purgation is obtained during this withdrawal period through the liberal use of compound cathartic pills, cascara sagrada, and salines. It is of vital importance that the bowels be made to act thoroughly every day. Modifications in this scopolamine morphine treatment have to be made to meet indications in individual cases. About two per cent. show an idiosyncrasy to scopolamine, which makes it necessary to discontinue its use and resort to treatment by gradual reduction, but in the majority of cases the morphine can be removed

from the addict's system with reasonable comfort in about four days, leaving him in fair general condition. There is no specific treatment for morphinism, and no treatment can be successful unless followed by a prolonged period of convalescence. For several weeks after the withdrawal the individual is nervous, troubled with insomnia, is impulsive, lacks selfcontrol, and, if not restrained, may suddenly disappear. Improvement in bodily health progresses rapidly under tonic treatment, regulated daily routine, proper diet, and out of door exercise, so that in a few weeks the patient appears and acts more like a normal individual. He is now given opportunity and assistance to build up his resistive powers, strengthen his will and selfcontrol, and readjust his mental attitude toward the use of drugs. A spirit of cooperation should exist between himself and his adviser, who should have his entire confidence. At the end of from six to twelve weeks the individual may leave the hospital with some assurance of success, but he should be kept in hand for some time longer so as to prevent relapse if possible by timely assistance and advice.

**Epidemic Poliomyelitis.**—Simon Flexner, Haven Emerson, John Ruhrah, and Theodore Le Boutillier (*American Journal of the Medical Sciences*, February, 1917) contribute four papers which together present about all that is known concerning this disease. Concerning the treatment Emerson says that there is no specific treatment of established value. During the persistence of the acute symptoms the most important principles are rest in bed, symptomatic relief, and passive support for the prevention of deformities. Active measures during this stage are not only useless, but are apt to cause serious, often permanent injury. The patients should be placed in hospitals when possible. The best chances of recovery from residual paralysis demand skillful aftercare, often long continued, under the direction of a physician familiar with the neurological and orthopedic principles of treatment. The provision of such aftercare often becomes a community problem.

Le Boutillier states that the treatment during the preparalytic stage is that of any acute illness plus isolation; a cathartic, rest in bed, fresh air, and care of diet. Lumbar puncture should be used not only for diagnosis, but also as a therapeutic measure, as it removes the excess of fluid and relieves pressure on the cord. Adrenalin chloride has been used with apparent success at this time by injection into the spinal canal, following lumbar puncture, of one to two c. c., depending on the age of the child. After its administration the buttocks should be kept elevated. If immune serum be available its use at this time would seem more effective, but as most cases were not seen until paralysis had developed no definite conclusions could be reached regarding the value of serum during the preparalytic stage. During the acute paralytic stage rest and quiet should be enforced, with plenty of fresh air, but not too much direct sunlight. Hot baths, if moving the child to the bathtub does not cause too much pain, improve the condition and at times relieve pain. Great care must be exercised in feeding, keeping the nutrition

up to the point of tolerance without overfeeding, as digestion and assimilation are greatly weakened in some cases. Pressure on the affected parts by bed clothes is avoided by the use of cradles, and light splints may be applied to early deformities. No drug seems to give marked benefit. Lumbar puncture is a valuable therapeutic measure, when done as often as indicated by the condition of the patient. It is needed every twelve to twenty-four hours in some cases, every three or four days in others, or only when increased pain and restlessness or irritability point to pressure by an increased amount of the spinal fluid. The results obtained from adrenalin chloride were rather questionable. Some good was obtained from immune serum, the intravenous use of which is especially indicated when a severe toxemia is present. Another procedure when the toxemia is marked is the intravenous use of a hyperisotonic salt solution, following the removal of an equal or smaller quantity of blood, the quantity removed varying from five to thirty c. c., depending on the age and condition of the patient.

**Treatment of Adrenal Insufficiency.**—O. Josué (*Paris médical*, January 6, 1917) recommends that latent or masked adrenal insufficiency be looked for in many abnormal states owing to the marked therapeutic possibilities accruing from its detection. The essential symptomatic triad of adrenal insufficiency is asthenia, low blood pressure, and Sergeant's white line. Around it may be grouped such manifestations as cardiac disturbance, pseudo-peritoneal or pseudomeningitic phenomena, and neurasthenic conditions. In some cases adrenal insufficiency constitutes the entire clinical picture and seems primary; yet often close examination reveals a causative infection, at times very slight, e. g., a mild throat inflammation or intestinal infection. Other forms comprise the "adrenal overstrain" of soldiers; the adrenal insufficiency of infections, such as typhoid, diphtheria, and tuberculosis; that due to alimentary or other forms of intoxication; that of cardiac dilatation with low blood pressure, asthenia, and the white line (the "adrenal astylosy" of Josué and Belloir), and that of Addison's disease, associated with the "solar syndrome" (skin discoloration and lumbar pains), the latter due to involvement of the pericapsular nerve ganglia. Extracts of the whole adrenal gland, while in some ways disadvantageous—especially when improperly prepared—are indicated in adrenal insufficiency of mild or intermediate intensity with marked evidences of auto-intoxication, e. g., profound asthenia, nervous disturbances, and digestive disorders. In such cases, good extracts sometimes prove distinctly superior to the pure adrenalin otherwise used. Both these products, repeatedly given, exert a regenerating action on the adrenals. Their hypodermic and oral administration is free from the danger of causing arterial atheroma. Adrenalin by mouth gives good results provided it is used in sufficient amounts—one to four and even five c. c. of the one in 1,000 solution a day, divided into two to five 0.5 c. c. doses, to be taken at approximately equal intervals. Three c. c. may be thus given daily for a month or more without harm. For hypodermic use the dose is 0.5 to two c. c. a day, 0.5 c. c. being preferably not exceeded as the single dose. Such injections

are generally more or less painful. Slow absorption of adrenalin is secured by injecting under the skin 250 to 500 c. c. of normal saline solution to which one c. c. of adrenalin solution has just been added. The skin is usually blanched at the point of injection and the adrenalin is only with extreme slowness absorbed through the contracted vessels. The pain attending this procedure is prevented by adding 0.01 gram of novocaine to the solution. The injections may be continued for several days. Extracts of the whole adrenal may be given orally in daily amounts of 0.2 to 0.4 gram, divided into 0.1 to 0.2 gram doses, or hypodermically in a daily amount of 0.1 gram. With a good preparation such injections are painless and cause little or no reaction, and can be kept up for a month or more.

**Epidemic Vaginitis in Children.**—B. K. Rachford (*American Journal of the Medical Sciences*, February, 1917) states that during the long experience he has had with this disease he has never known of a case in which it was contracted by adults, and that the manner of transmission is not by sexual contact. He has found that irrigating the infected parts once a day with two quarts of a normal saline solution followed by the injection of two or three ounces of a one per cent. solution of silver nitrate, is the best local treatment, and that the intractability of cases in hospital wards is largely due to reinfection. Although he considers such local treatment advisable, as it undoubtedly shortens the course of the disease, he has been much impressed with the evils that may follow it when long continued. Not only were children found to be masturbating, but also imitating physicians by introducing instruments into the vaginas of younger girls, and serious social problems have developed in the treatment of these cases at their homes. He believes that vaginitis should be made a reportable disease.

**Acute Bacillary Dysentery.**—J. B. Fisher (*British Medical Journal*, January 13, 1917) states that he obtained gratifying results in all forms of the disease by the following general plan of treatment. The diet is restricted to albumin water, barley water, and lemon water for the first forty-eight hours; four grams of magnesium sulphate are given three times daily for the first few days and subsequently reduced as the stools decline in frequency; and multivalent antidyenteric serum is injected intravenously or subcutaneously in a dose up to eighty mils. This latter injection is followed by further injections of forty to sixty mils each as the course of the case may demand. As improvement progresses the diet is increased by the addition of eggs, jelly, arrowroot, chocolate, beef tea, milk pudding, custard, tea, cocoa, biscuits, malted milk, and bovril. The injection of antiserum is usually followed by a rise in the temperature for a few hours and then by a lasting fall. Serum disease is not infrequent, but it is not usually severe. If good effects are not observed after four doses of eighty mils each of the serum its further use had better be abandoned. After the acute manifestations have been thus controlled it is necessary for the patient to undergo a long period of convalescence, which cannot be hurried without danger of relapse or the development of chronic intestinal disturbance.



**Lumbar Puncture in the Fetus in Breech Extraction.**—Romolo Costa (*Annales de gynécologie et d'obstétrique*, November-December, 1916) finds lumbar puncture practical on the fetus, thus removing some of the cerebrospinal fluid, a useful procedure in that it permits of reduction of the size of the head and diminution of the pressure exerted on the whole central nervous system, in particular the respiratory and cardiac centres. The procedure is easily and rapidly carried out because the spinous processes in the fetus are horizontal and relatively shorter than in the adult and the tissues penetrated are thinner and less resistant. As soon as the breech appears at the vulva, it is held by an assistant and slightly curved to bring the spinal column in view. A needle of medium size is then introduced between the fourth and fifth lumbar vertebrae. Diminished resistance shows that the needle has entered the spinal canal, and it is now withdrawn without aspirating the fluid. The latter is driven out spontaneously when the fetal head is subjected to the usual compression in passing through the birth canal. Lumbar puncture, thus carried out, is indicated whenever, in extraction of the breech, difficulty in delivering the head is anticipated because of pelvic deformity or insufficient cervical dilatation. Further experience will show whether it is also at times indicated, in certain cases of pelvic deformity, as a substitute for version to facilitate delivery.

**Continuous Extension for Amputation Stumps.** André Binet (*Presse médicale*, December 18, 1916) recommends this procedure because it permits of reducing the amount of bone removed at amputation, prevents adhesions of the skin to the subjacent layers in the event of suppuration, and often obviates secondary amputations. In cases of infected stump the extension should be instituted as soon as the wound has been cleaned and is no longer too painful, usually the fourth or fifth day. In the case of an ulcerated stump without skin covering, a freshening of the margins of the sluggish wound, excision of the entire weakened scar, and liberation for some distance of the adherent muscles will often restore some mobility to the skin flap, and exert efficacious traction on the flap. Four bands of leucoplast three to four centimetres wide are fastened to the skin along the axis of the stump. At the two ends of these longitudinal strips two cross strips about five centimetres wide are carried round the stump. Strips of gauze impregnated with Unna's soft paste may be substituted for the leucoplast: Glycerin, twenty-five parts; gelatin and zinc oxide, of each fifteen parts, and water, forty-five parts. This combination melts at 37° C. To the end of each longitudinal strip is attached a curtain ring, and the four rings are joined, in the form of a cone, to a fifth ring by means of a single piece of ribbon or rubber drain, thus equalizing the tension on the different rings. A pillow is placed under the stump, which, however, projects beyond it. The traction cord is fastened to the fifth ring with an S shaped piece of strong wire. The weight at the end of the cord ranges from 500 grams, when the stump is still tender, to 1,500 grams or more. Traction sufficient to cause an increase of pain is, of course, to be avoided.

**Serum Treatment of Cerebrospinal Fever.**—H. D. Rolleston (*Lancet*, January 13, 1917) draws his conclusions from an experience of 104 cases occurring during the period of one year and from 170 cases of the preceding year. The results from serum treatment during the first of the two years were not good, owing to the inability to obtain an effective serum. During the second period serums of high therapeutic value were secured from several different sources and the total mortality was kept below thirty-two per cent. as compared with sixty-one per cent. for the preceding year. A very large proportion of the cases received no other form of treatment than the administration of serum and showed as good results as the group in which other remedial measures were used. It was noted that a very large proportion of the patients treated with serum manifested serum rashes at about the tenth day from the first injection. None of these patients showed any ill effects from the serum of a more serious nature.

**Bronchoscopic Treatment.**—Robert F. Ridpath (*Journal A. M. A.*, January 27, 1917) says that the introduction of the bronchoscope has made it possible to diagnose accurately a much larger number of conditions within the air passages than previously, and this has increased the possibilities of treatment almost proportionately. Tracheitis or tracheal bronchitis is a very frequent occurrence and either of its forms can be treated satisfactorily through the bronchoscope. In the form with acute inflammation, congestion and profuse secretion of mucus the direct application on tampons of glycerite of tannic acid is ideal and should be made every other day. In the form with crust development the first step should be to remove the crusts and then to touch the underlying ulcerations with silver nitrate or other silver salt, or with a ten per cent. alcoholic solution of iodine. The direct local application of the ultraviolet ray promotes healing. In many cases of bronchial asthma the condition causing it will be found to be one which is readily remediable, either by surgical removal, or by medical treatment through the bronchoscope. The direct application to the tracheal mucosa of epinephrin or epinephrin combined with novocaine may give good results in many cases in which the etiologic factor cannot be found. The application of equal parts of compound tincture of benzoïn and boroglycerin, or a silver solution, are also helpful, and may well be aided by the use of a spray of one per cent. ichthylol in pure liquid petrolatum. Laryngeal papillomas can be treated bronchoscopically by fulguration, radium, x rays, or medicinally. For the latter the direct application of solutions of alcohol of increasing strength from fifty per cent. upward, a saturated solution of salicylic acid in alcohol, or pure fresh pineapple juice are all available. One of the greatest advances that has been made is in the treatment of laryngeal tuberculosis by electrical or chemical cauterization. Local applications of glycerite of tannic acid or two per cent. silver nitrate relieve catarrhal conditions of the trachea, and various other adaptations of bronchoscopic methods of treatment may be made to meet specific indications. The treatment is limited by certain mechanical factors, which prevent the safe passage of the tube.

**A Modified Method of Tuberculin Therapy.**—William Meyer (*Medical Record*, January 27, 1917) describes his method as consisting of the simultaneous administration of three different tuberculins: Koch's old tuberculin (O. T.), bacillary emulsion (B. E.), and Denys's bouillon filtrate (B. F.). The injections are made twice a week, alternating the three tuberculins. The average case requires from seventy to ninety injections, and the combination is better tolerated than the single tuberculin. Gland, bone, skin, or eye cases are usually all suitable, but patients with high fever, advanced heart or kidney disease, diabetes, or epilepsy are not good subjects for this form of treatment. Pulmonary cases in the first and second and some in the third stage are suitable. The initial dose of B. E. is 0.000,000.1 and the maximal dose is 0.20, whereas the initial dose of the B. F. and O. T. is the same as of B. E., the maximal is 0.25.

**Appendectomy for Trifacial Neuralgia and Other Nerve Pain About the Head and Face.**—M. I. Rosenthal (*American Journal of Obstetrics*, December, 1916) states that it has not been uncommon in his experience to note cure of a migraine or "sick headache" after removal of a diseased appendix. One of the seven cases he reports is of this type. The remaining six are instances of neuralgia of the trifacial, or one of its branches or of pains previously treated unsuccessfully as due to sinus disease. In all but one case there was present almost symptomless chronic appendicitis of the obliterating type; the other was a symptomless pus case. In this case a gradual reduction of the pain followed the operation, and the nerve condition present was deemed to have been a neuritis. In the other six cases the pain ceased promptly with the operation, and the pain is asserted to have arisen through nerve irritation from selective toxins evolved by the appendix.

**Treatment of Hookworm Disease.**—A. H. Thornburgh (*Journal of the Missouri State Medical Association*, February, 1917) states that the teniafuge must be preceded by a brisk purge to remove the thick mucus and detach the worms from the intestinal mucous membrane in which they are partially embedded. Thymol is the favorite remedy, but must be used with care for fear of ill results and must never be given in oil as it is soluble therein and may produce toxic symptoms. Dock and Bass direct the patient to fast the day preceding the treatment and to take one ounce of sodium sulphate at 6 p. m. The next morning on an empty stomach he is given twenty grains of thymol every hour for three doses and two hours after the last dose he is given one ounce of sodium sulphate and he is allowed nothing to eat until evening, remaining in bed to avoid collapse or other effects of the thymol. Keith, of the Singapore Medical School, has treated over one thousand cases of the disease with oil of chenopodium without a single bad result. He gives a ten minim capsule of the oil on a fasting stomach for three mornings in succession, following the last dose in two hours by castor oil. After-treatment consists of fresh air, simple, nutritious diet, and such tonics as are indicated by the anemia or other conditions present.

**Bone and Joint Affections Treated by Heliotherapy, with Special Reference to Tuberculosis.**

Willis C. Campbell (*American Journal of Orthopedic Surgery*, January, 1917), reports in all, the results of fifty-one cases receiving a modified Rollier method of treatment, thirty of which had tuberculosis of bone or joint and the remaining twenty-one had some other affection. The writer finds that the treatment with the aid of orthopedic apparatus, etc., is effective in both the white and black races if the individual undergoes deeper pigmentation; that the treatment is especially satisfactory in tuberculous sinuses and abscesses; and that it is successful in other miscellaneous affections, especially in those of acute sepsis.

**Blastomycosis of the Tongue.**—Gordon B. New (*Journal A. M. A.*, January 20, 1917) reports an advanced case of this rare infection in which there were many large tumors at the base of the tongue and in the region of the epiglottis which prevented the taking of solid food and caused much respiratory distress. Treatment was undertaken with the internal administration of increasing doses of potassium iodide, the local application of tincture of iodine, and direct exposure to tubes of radium. After several months of more or less interrupted use of radium and more constant application of iodine and taking of potassium iodide the patient was entirely cured and all of the tumor masses were removed.

**An Improvement in the Carrel Irrigation Technic.**—Tuffier (*Presse médicale*, December 28, 1916) points out that one of the inconvenient features of the intermittent irrigation of wounds by Carrel's method is the injection of fluid every two hours into tubes leading into the wound, thus not only disturbing the patient but placing a considerable burden on the attendants. He has found it possible to overcome these disadvantages by the use of an intermittent syphon device which can be regulated at will to discharge fluid at definite intervals of one to three hours. The device consists of a glass cylinder with inlet tube above, into the bottom of which is fixed a smaller receptacle situated below. From the top of this small receptacle there extends up in the cylinder a glass tube, which curves downward upon reaching the top of the cylinder and opens near the bottom of the latter. The irrigating fluid being passed into the cylinder from the inlet above at a definite rate, rises in the cylinder and one limb of the tube until the bend in the latter is reached and syphon suction in the opposite limb is established, the entire contents of the cylinder then passing out into the smaller receptacle below and thence into the wound. For proper functioning of the device the syphon tube within must not be too large, or the syphon action will never come into play; again, the tip of the syphon tube must open obliquely—not transversely—otherwise the syphon action, once started, will continue indefinitely. The interval between discharges is regulated by adjusting the flow into the cylinder from above. The device is also available for intermittent aspiration of suppurating foci, constituting a species of pump which may be adjusted so as to come into action at intervals of any desired length.



# Miscellany from Home and Foreign Journals

**Ectopic Pregnancy.**—Frank R. Oastler (*Surgery, Gynecology, and Obstetrics*, February, 1917) states that the pathological conditions found in 105 cases investigated by him lead to the following conclusions: 1. That ectopic pregnancy occurs about as often on one side as the other. If a previous inflammatory condition of the tubes was the sole cause, we would expect the condition to be more prevalent on the left side. 2. That the pregnancy is located about as frequently in the inner half of the tube as the outer, and that interstitial and ovarian pregnancies are of rare occurrence. 3. That tubal abortion is the variety of rupture most commonly found, whereas of the other varieties erosion of the tube is very much more common than rupture from overdistention. Severe hemorrhage may occur from tubal abortion and erosion of the tube. It is uncommon for the ovarian artery to be eroded. Rupture into the broad ligament is conspicuous by its absence. 4. That double ectopic pregnancy is very uncommon; that ectopic may be associated with normal pregnancy; that interstitial ectopic may push its way into the uterus and continue to grow; that it is possible for ectopic pregnancy to occur twice on the same side. 5. That the termination of ectopic pregnancy usually occurs in about six weeks, pregnancies later than three months being uncommon. 6. That most ectopic pregnancies die and are discharged into the abdominal cavity and absorbed; they become a tubal mole and are absorbed, or the fetus disintegrates and forms an abscess in the abdominal cavity.

**Pneumococcal Infections among African Troops.**—G. Boyé and G. Clarac (*Paris médical*, December 30, 1916) states that they have observed 164 cases of croupous pneumonia, 129 of bronchopneumonia, and ninety-four of pulmonary congestion, all due to the pneumococcus, in colored troops from West Africa. The cases were specially characterized by low systolic and diastolic blood pressures and by unusual weakness of the pulse, which at times became impalpable. The low pressures continued during convalescence. Seeking some special cause, such as alcoholism, for the low tension in these cases, the writers soon found it to be due to habituation of these men to the kola nut, the demand for which, transferred from their African abode to the war front, had led to the establishment of shops where they regularly obtained it while in camp. Further observation of the men revealed an abnormally frequent pulse even in healthy troops at rest, and also a rapid and marked depression of the cardiovascular system upon exertion—presumably effects of the chronic kola intoxication. The habituation of these men is so general as to render it advisable not only to administer the drug to them when ill to avoid the depressing effect of sudden withdrawal, but to permit its use by healthy individuals, especially when they are to be called upon for unusual exertions and spirit. In the treatment of pneumonia among these patients, administration of two or three fresh kola nuts a day by mouth was very effectual in raising the blood pressure.

**The Path of Involvement in Ascending Infection of the Urinary Tract.**—Eisendrath and Schultz (*Journal of Medical Research*, January, 1917) in reviewing the literature call attention to the widespread belief that infection from the lower urinary tract to the renal pelvic and parenchyma travelled either by the epithelium or in the urinary stream. They hold that the infection is most likely to be along the lymphatics, and therefore conducted various experiments to prove their contention. Their work shows that both motile and nonmotile organisms are easily transported from the bladder to the kidneys by the lymphatic stream in the urethral wall. The studies conducted demonstrate the presence of an anastomosing network of lymphatics in the wall of the bladder and of the ureter, communicating above with a similar lymphatic network in the renal pelvis and parenchyma. At its lower end this communicates also with the lymphatics of the pelvic structures, in both the male and female. In order that infection may take place by ascent along the lumen of the ureter it is necessary that there be an almost complete obstruction to the free passage of urine. It is also held that pyelitis and pyelonephritis, not secondary to cystitis, may also be the result of lymphatic transport of infection from the pelvic organs in the male and female, and from the lower intestinal tract.

**Nontuberculous Pleural Reactions in Acute Catarrhal Bronchitis.**—Petzetakis (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, October 26, 1916) states that he found fluid in the pleura in thirty-eight out of fifty-one cases of acute bronchitis. In fourteen cases the effusion was bilateral. The amount of fluid obtained ranged from one to fifty or more mils. Usually of serous or serofibrinous character, it was sometimes slightly hemorrhagic or turbid. The cell content consisted of many endothelial cells, isolated or grouped, with a variable number of polymorphonuclears and mononuclear leucocytes, and a few erythrocytes. Later the lymphocytes sometimes gained ascendancy over the polymorphonuclears, or they so increased as to render the fluid turbid. In the latter event, a distinct increase of eosinophiles was noted, followed after a time by eosinophilia in the blood. Culture and inoculation tests were negative. These effusions exert little or no influence on the general condition of the patient or the symptomatology. Dullness is usually lacking, though in some instances slight impairment of resonance and diminished excursion of the inferior lung margin in deep inspiration are noted. Occasionally there are distinct physical signs, with dullness and lessened vesicular murmur and fremitus. Bronchial breathing and egophony are, however, exceptional. These effusions are easily reabsorbed and the prognosis is good. They are not of tuberculous nature, though macroscopically they might be confounded with serofibrinous tuberculous exudates. Their cause is toxic irritation, together with circulatory disturbances resulting from the inflammation of the subjacent bronchial tree.



**Vitamine in the Nasal Secretion.**—Cresswell Shearer (*Lancet*, January 13, 1917) gives an abbreviated report of a series of experiments which seem to prove the presence of some form of accessory food substance in normal nasal secretion which materially aids in promoting the growth and multiplication of such pathogenic organisms as the meningococcus, pneumococcus, *Bacillus coli*, *Bacillus typhosus*, and some streptococci. This substance was found to be readily soluble in water, less so in alcohol, nearly insoluble in ether, and very resistant to heating and acids, withstanding boiling in strong hydrochloric acid for twelve hours.

**Vaginal Delivery after Cæsarean Section.**—Nathaniel R. Mason (*Boston Medical and Surgical Journal*, January 25, 1917) states that he does not believe that the scar produced in the uterus by a Cæsarean section weakens the wall to such an extent as to make rupture of the uterus a grave danger in the event of a subsequent pregnancy and labor. On the contrary, he reports a number of cases in which pregnancies subsequent to Cæsarean sections were terminated by normal labors, and maintains that the patient who has had that operation properly performed for some cause other than a pelvic indication may be subjected to a future pregnancy, labor, and vaginal delivery with safety, so far as the Cæsarean scar is concerned, provided that her convalescence has been afebrile and free from uterine infection.

**X Ray Examination in Sprains.**—L. Delherm and G. Boileau (*Presse médicale*, January 4, 1917) lay stress on complete x ray examination in sprains of the ankle. At their hospital numerous cases have been admitted with a diagnosis of "old sprain," and complaining of constant pain or of tenderness upon pressure, standing, or walking. At times there is some swelling, deformity, or even a mild degree of "traumatic flat foot." Many of these cases had been subjected to radioscapy, with negative results. Yet a subsequent more complete radiologic examination usually showed bony injury at the external malleolus, which had gone unrecognized and accounted for the slow recovery. Radioscapy alone is, indeed, insufficient in doubtful cases of malleolar injury. Actual x ray plates, while more time consuming and expensive, always afford better detailed information of the condition, and while the making of such plates may, if necessary, be dispensed with in clear cases, it should at least be regularly availed of whenever recovery is delayed beyond the usual time for repair in a sprain. The usual anteroposterior and lateral views should be taken, remembering, however, that in the lateral view the tibia may mask the fibula, and that other views may be required, especially where in radioscapy an abnormal condition has been suspected upon examination from a given direction. Destot recommends placing the inner aspect of the leg against the plate and directing the tube ten cm. anteriorly to the part, thus affording an oblique projection which throws the fibular shadow behind the tibial and exaggerates bony defects in the perineal region. Certain malleolar fractures get well rapidly under massage; others require prohibition of walking for a long period.

**Intestinal Obstruction Due to *Ascarides Lumbricoides*.**—J. Maxime Perret and H. Theodore Simon (*Journal A. M. A.*, January 27, 1917) report the case of a girl eight years old who manifested signs of acute intestinal obstruction which were not relieved by the oral administration of castor oil. Following the administration of a purgative enema a mass of forty round worms was passed and followed by complete recovery from the symptoms of intestinal obstruction. They cite the records of several other cases of intestinal obstruction due to masses of round worms which have been reported in the literature, and call attention to the frequent failure of relief from the oral administration of purgatives while the use of an enema may bring about relief.

**The Thyroid in Pregnancy.**—Greer Baughman (*Virginia Medical Semi-Monthly*, January 12, 1917), reviewing available data on this subject, lays stress on deficiency of thyroid secretion as an unfavorable factor in pregnant women who are "doing badly." He advises the obstetrician to be constantly on the lookout for hypothyroid symptoms in cases of pregnancy and promptly to institute thyroid treatment where symptoms are noticed. Thyroid deficiency in pregnant women has an important bearing upon their general feeling of well being as well as upon the liability to toxemias. Baughman reports in particular three hypothyroid cases of phantom pregnancy. Two of these women thought themselves in the sixth month of pregnancy, and the third, when seen, was attempting to deliver herself of a phantom tumor. Each of these cases had cessation of menstruation, distended abdomens, and breast changes, but normal uteri. All three were relieved of the enlargement of their abdomens and selfdeception by a course of thyroid treatment. In a fourth case of phantom pregnancy menstruation, which had been absent for along period, was similarly restored and the phantom enlargement dispelled.

**Choleraic Symptoms from *Lamblia*.**—Reiner Müller (*Medizinische Klinik*, December 10, 1916) cites the history of a man who suddenly became ill with diarrhea and vomiting, which were repeated at intervals of ten to twenty minutes. The intestinal movements were watery, slightly turbid and not fecal in odor. There was very little abdominal pain and after a period of less than eighteen hours both the diarrhea and vomiting ceased. Their cessation was followed by rapid recovery and the patient was able to leave his bed on the fourth day. Examination of the movements proved negative for causative organisms other than *Lamblia intestinalis*, which were present in enormous numbers in every specimen. Opinion is divided as to the pathogenicity of this parasite for man, but the present case seems to lend weight to the view that this organism may prove pathogenic, at least under some conditions. It is suggested that its production of symptoms may be due to its presence in extremely great numbers—sufficient to cover a large part of the intestinal wall—and thus prevent the normal process of digestion. In the case here reported no further *lamblia* were to be found in the stools after the fourth day, suggesting that the otherwise normal intestine had been able to accomplish their complete elimination.

**Serobiologic Reactions.**—Charles R. Ball (*Journal A. M. A.*, January 27, 1917) draws his conclusions from five years' experience with the Wassermann reaction. He believes that this reaction should be regarded as giving only a part of the desired information, being analogous to the symptoms in a clinical picture. It should be weighed in connection with all of the facts, and when the other facts fail a positive Wassermann reaction may give the clue to the correct diagnosis. The reverse is also true—a negative reaction in the presence of symptoms indicative of syphilis—in which case dependence should be placed on the other symptoms. A spinal fluid Wassermann is the surest means of discovering latent syphilis, and should also be done in every case in which suggestive nervous symptoms are present, unless their etiology is definite. In the absence of other evidences the Wassermann reaction gives the best index as to when it is safe to discontinue treatment. The test should be made on the spinal fluid in all cases of syphilis before their discharge from further treatment. In the absence of other symptoms in cases of nervous syphilis a normal spinal fluid indicates a good prognosis and a pathologic one a latency which may become active at any time. No relation could be found between the number of positive reactions or their degree of intensity and the remainder of the symptoms in syphilis.

**Exploratory Curettage in the Diagnosis of Uterine Cancer.**—M. Muret (*Annales de gynécologie et d'obstétrique*, November-December, 1916) presents an analytic study having for its purpose the exact diagnostic value of curettage, cases having not infrequently been met with in which the results obtained in this procedure were seemingly misleading. The study leads to a conviction that a curettage of the uterine cavity carried out as completely as possible, with subsequent histologic examination by a competent pathologist, remains the best means of diagnosing uterine carcinoma, even at the outset of the condition. In quite exceptional cases, the curette may remove wholly a circumscribed and shallow cancer growth, or a carcinomatous polyp the base or pedicle of which is uninvolved. The possibility of an apparent or complete cure after a positive curettage, not followed by radical operation must therefore be admitted. In the event of operation, the uterus may show no trace of carcinoma even upon complete examination of the organ in serial sections. There occur, however, intermediate cases in which the apparently uninvolved uterus contains a few small areas of malignant neoplasm, more or less difficult of detection. In spite of the seemingly favorable outlook in such instances, the patients are not insured by the operation against later metastases in other organs. A positive curettage, therefore, must always be taken as a positive indication for radical operation, even if subsequent repeated curettage should prove negative. In a few exceptional cases a beginning epithelioma may be so situated as to escape even a most thorough curettage. In the presence of a negative or doubtful curettage, combined with suspicious clinical symptoms, the latter must be alone relied upon as an indication for operation.

**The Chemical Changes Produced by Addition of Lime Water to Milk.**—Bosworth and Bowditch (*Journal of Biological Chemistry*, January, 1917) point out certain changes that should be taken into consideration when lime water is added to milk. It is added, primarily, to decrease the acidity of the cow's milk, which is erroneously held to be higher than that of human milk. It is also used for the reason that it, in sufficient amount, inhibits the curdling of the casein by rennin, and in that way prevents certain digestive disturbances in the infant. They find that when milk used for infant feeding is treated with lime water and finally diluted to such an extent that it has twice the volume of original milk or more, the soluble calcium and phosphorus may be reduced by precipitation to amounts less than those which are present in human milk.

**Presentation of Cases Demonstrating Some Factors in the Early Diagnosis of Insanity.**—Max A. Bahr (*Medical Sentinel*, January, 1917) gives this summary of his conclusions: 1. A mental diagnosis should be made with a view to represent disease entities, rather than purely symptomatic phenomena. 2. The differentiation between sanity, mental disorder, and insanity is more or less arbitrary. 3. Alcohol intoxication or drunkenness is to be differentiated from those cases in which distinct structural changes are brought about in the brain in consequence of long continued use of the drug. 4. In postfebrile exhaustion psychoses it is necessary to eliminate the immediate effects of such autotoxic factors as uremia, or the immediate response of septic toxemia of an infection. 5. The early development of hallucinations with early progressive mental deterioration, with greater disturbance of motility, and delusions less elaborated and connected, speak for paranoid dementia praecox rather than a true paranoia. 6. In all suspected cases insist on an early laboratory examination to determine a psychosis of an organic nature of unfavorable outcome from a recoverable, so called functional disease.

**The Fate of Micrococcus Aureus Introduced into the Blood Stream of Dogs.**—Bartlett and Osaki (*Journal of Medical Research*, January, 1917) state that they undertook to determine by histological examination the manner in which bacteria are disposed of after entering the blood. For a long time it has been known that bacteria disappear very quickly from the blood stream, but there has been little known concerning the method. In the animals used the micrococci were injected directly into the left ventricle of the heart. At the desired time the dogs were killed instantly by injecting strychnine into the heart. The tissues were fixed, imbedded, stained, and examined for bacteria. It was found that the micrococci were stored up almost immediately in relatively large numbers in the lung capillaries. They were at first extracellular, but were rapidly taken up by phagocytes. Shortly after injection they were taken up by the liver and spleen, the increase in number being coincident with the decrease in the lung. In forty-eight to seventy-two hours they disappeared from these organs. Few or no cocci were found in the blood, bone marrow, lymph nodes, intestinal wall, or skeletal muscle.

# Proceedings of National and Local Societies

## MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

*Forty-second Annual Meeting, Held at Indianapolis, Indiana, October 10, 11, and 12, 1916.*

The President, Dr. WILLARD J. STONE, Toledo, Ohio, in the Chair.

*(Continued from page 335.)*

**Fractures of the Hip.**—Dr. P. M. HICKEY, of Detroit, Mich., said that in considering the practical benefit to be derived from Röntgen studies, such as were presented in the paper, he would feel that its importance lay primarily in the establishment of an accurate diagnosis. The mechanics of the fractures had not assumed its proper place. While the cardinal symptoms of fracture, disability, and localized area of tenderness, might serve to establish the presence or absence of a fracture, the question of the treatment would of necessity be based largely on an accurate recognition of the type of fracture and the position of the broken parts. If the röntgenogram told us exactly the part of the bone which was broken, and our knowledge of anatomy told us which way the fragments were displaced by muscular pull, the art of the surgeon would be much helped in solving the problem of proper measures for the mechanical reposition and retention of the displaced fragments.

**Concerning the Diagnosis and Operative Treatment of Vesical Diverticulum.**—Dr. FILIPP KREISSL, of Chicago, stated that diverticula of any appreciable size situated close to the lower part of the ureter would eventually displace the ureter or by pressure give rise to dilatation of the renal pelvis, resulting in hydronephrosis, eventually atrophy of the parenchyma, and if infection should supervene, pyelitis, pyelonephritis, and kidney abscess. Rupture of the overdistended sac, extra- or intra-peritoneally, with serious or fatal consequences had also been recorded. Since it was of more importance to ascertain the presence of a diverticulum than to settle the question whether all or some were congenital or secondary, a consideration of the gravity of these lesions should make an early diagnosis imperative and early treatment desirable. By an early recognition of the anomaly most, if not all, of the enumerated complications might be prevented and the opportunity given to render a radical operation more simple before infection and inflammation had resulted in dense adhesions between the sac and important pelvic and abdominal structures. Furthermore, better functional results might be expected from an early operation, since the breaking down of dense or extensive adhesions was always followed by the formation of new unyielding tissue which interfered with the free mobility of the bladder wall.

In the early stage frequent and fractionary urination should at least arouse suspicion, but we would not be justified to diagnose a diverticulum from this one point alone since pollakiuria was also a symptom of lesions of spinal or cerebral origin.

With conservative and palliative operative procedures, such as drainage of the sac, enlarging the diverticular opening, curetting or cauterizing its

wall, nothing could be accomplished. Better and more lasting results would follow radical surgery of the sac. The available records of the reported cases clearly proved this contention. In all the radical operations, about twenty altogether, including two of his own cases, there were three cases of death, one due to sepsis after a transperitoneal operation, and two which occurred some time after the operation, and were due to secondary lesions in the corresponding kidney. In the other cases the results were highly satisfactory, some being completely relieved from all symptoms, others retaining the tendency of voiding in several phases.

**The Operative Treatment of Tuberculous Spine.**—Dr. HENRY B. THOMAS, of Chicago, stated that the Hibbs technic had the following advantages: It copied nature in her preparation for the fixation of the vertebrae. It required operation only in the posterior region of the spine itself, making unnecessary the removal of bone from the leg. The technic, though difficult at first, became simple with repetition. It immediately reduced the kyphotic deformity by the length of the spinous process, usually one half to one inch. Ankylosing the articular processes greatly aided in the fixation. Welding the opposed laminae was an additional link in the chain of ankylosis.

The most important suggestion regarding the after-treatment concerned the mechanical fixation after the patient was kept in bed for six weeks; either a cast or a brace was worn for from six to ten months, with constant observations of the position and progress.

Dr. JOHN RIDLON, of Chicago, said that in these operations of Hibbs and Albee for the treatment of tuberculosis of the spine, he still used braces. It was asserted that it shortened the duration of the sickness. Perhaps it did, but sometimes it certainly did not, because all these cases were not perfect restorations, despite Albee. Some of the patients died as the result of the operation, some of the grafts came out, some of the grafts broke, and a great many of them that were put in were put into spines already ankylosed through the course of time and by the grace of God. These were the best results that were to be had when a graft was put into a spine that was already perfectly solid. There was no doubt that in selected cases this operation had a place, and he was of the opinion that the Hibbs operation appealed a little more to one's judgment of what was right than the Albee. On the other hand, he had seen many of these operations, and he had assisted in some; he had done none himself, and he never would.

Dr. CHARLES DAVISON, of Chicago, stated that any procedure which would shorten the duration of anything so serious as Potts's disease should be entitled at least to consideration. The probabilities were that the real benefit could only be decided by a large series of cases collected for many years. He had been very much interested in Doctor Thomas's work at the Cook County Hospital, and he had had the honor to see some of the cases of Albee which he did, collected through quite a period of time.



He was most interested in what happened to the transplant. He made experiments also along other lines and along lines of bone grafting. With a transplant taken from the same individual and opposed to the same kind of bone, for instance, a contact bone of the tibia to a contact bone of the spine, if it was done in an esthetic manner and with absolute immobilization of the transplant, a primary union resulted similar to the primary union of one of the soft parts. For the time being at least the transplant felt a succulent pabulum between it and the host when it went on and became an integral part of the bony framework. As long as it had function it would remain; when the function ceased it would deteriorate to a certain extent.

In the Hibbs method of bony repair it seemed to be different. The bone was taken from the same neighborhood, but instead of being kept in a mass it was largely minced or broken up in particles. Some of the pieces might be intact so that they would heal promptly and become incorporated, but largely the bone was broken up, the bony cells were liberated, the lining of the bone cell was given up, and a new growth of bone developed there much like a callous. That continued to immobilize as it became osseous as long as there was function; when function ceased it gradually absorbed and went to the compensation between strength and bone.

Dr. JOHN D. TRAWICK, of Louisville, said that he had seen Doctor Thomas operate and he must say he was just a little enthusiastic about the method of his operation. He would be very glad if he would discuss the question of the anesthetic for these little patients. Was the risk of the anesthetic the ordinary risk that was to be expected in any capital operation for a child? Was there a choice of anesthetics? If there were any particular points he could bring out in his closing discussion bearing on the mortality as it pertained to the anesthetic, he would be very glad to have his view.

Dr. W. B. OWEN, of Louisville, thought we made a great mistake in using the word "cured" for these cases. In tuberculosis of the spine, or pulmonary tuberculosis, no matter what part of the body might be involved, it was a mistake to use the word "cured." The first reports were really almost too good to be true. He thought they had proven not to be true; that is, they had not lasted. Two hundred and fifty operations for bone transplant with 100 per cent. cure was hard to swallow at one time. He had had a good many of these cases and did not feel the operation itself was a serious one. The shock that resulted from it was very slight. In many cases an opiate was not necessary. He did not think it made any difference what anesthetic was used, as long as we used the best that was known for any surgical procedure.

As to the two operations that Doctor Thomas discussed, while he had very little experience with the Hibbs operation, it seemed to him very simple and in some respects a more feasible procedure, although he thought there would be one objection, and that was the point that was first advanced in its favor—the flexibility of the spine produced by the Hibbs rather than the autogenous splint. If we allowed motion in the spine the cure was not so apt to take place. One splint would probably be re-

tained in place more satisfactorily than several splints, and in the breaking down of the spinous process that was what it meant—it was made up of a number of pieces of bone.

DOCTOR THOMAS, in closing, said that in regard to the anesthetic, he thought Doctor Trawick probably asked the question because he saw a fatal result he had. He had had two deaths on the table. He thought both of them were from the anesthetic, or the way the anesthetic was given. At one of the cases he lost Doctor Trawick was present, and he had made it a rule ever since to attempt to do no operation on the spine unless he had a professional anesthetist. He wanted no intern to give the anesthetic for him when he operated on tuberculous spines. There was no trouble, the children got along nicely, especially if kept in the hospital for a few days beforehand and familiarized with their surroundings, so they went to the table without fright. They did well so far as the anesthetic went.

**Tumors of the Breast.**—Dr. J. GARLAND SHERILL, of Louisville, Ky., considered proper palpation the most valuable of all the means at our command for determining the character of a mammary tumor. If not properly employed, however, it might be worthless. Very little could be learned by pinching the breast between the fingers; the proper plan was to place the palm of the hand flat on the breast and gently press the gland against the chest wall. This would reveal any abnormal mass, show whether it was indurated or not, determine its mobility over the chest wall or pectoral muscle, also its mobility under or attachment to the skin, its outline elasticity, and whether or not it was encapsulated. The observer would also note the amount of pain produced by pressure and manipulation. By gently sliding the breast over the pectoral muscles with the palmar surface of the examining finger its attachment could be readily made out, and dimpling of the skin with slight fixation occurring early in cancer could be detected. Palpation also enabled one to determine the enlargement of the axillary and cervical glands. Recently a case came under his observation where the patient had a malignant tumor of considerable size in the breast, which could scarcely be detected by flat palpation over the breast, but was readily made out by lateral compression. He had also seen a case where there was a malignant growth of supernumerary glandular tissue lying some distance above a normal mammary gland.

Certain characteristics were present in benign enlargements, whether of cystic or solid type. They occurred at any age, more often in the young. They grew slowly or not at all. They were usually encapsulated and never infiltrated the surrounding tissues; they were mobile, showed no glandular enlargement and were usually painless, but in certain neuralgic patients might be quite painful. They occurred in unmarried and nulliparous women especially. Malignant growths usually developed after thirty, but sometimes as early as eighteen years of age. They were likely to grow slowly but constantly if carcinomatous; fast but spasmodically if sarcomatous. They were encapsulated, with the possible exception of certain cases of sarcoma. They became attached to the skin and fascia quite early. Early glandular involvement was shown in

carcinoma. Pain was a late symptom, but always present in the later stages. These growths usually occurred in parous women.

An irregular outline and induration gradually merging into surrounding tissue is characteristic of scirrhus. It was not always easy to differentiate between adenoma, adenocystoma, cystoma, and a cystosarcoma; and adenocystocarcinoma of the proliferating type was always difficult to distinguish from the above types.

There was also a borderline condition where pathologically the tissue was benign in one portion and malignant in another, seen in cases of chronic cystic mastitis of Koenig. In such cases histological examination at operation was imperative to determine the best line of operative procedure. In rare instances abscess and suppurative cysts of the breast had been mistaken for a malignant growth. In order to verify the clinical diagnosis every mammary tumor should be subjected to microscopic examination.

1. The public should be brought to understand the value of early and radical removal of all suspicious tumors of the breast. 2. The physician should make a most careful examination of such cases when once presented, and if in doubt should ask for consultation. 3. Radical removal of the breast with the axillary contents was the best method of treatment, followed or preceded by the employment of the x ray. 4. Pathological examination should be made at the time of operation if the diagnosis was doubtful. 5. Radical removal if the case was certainly malignant, without preliminary examination. This procedure should be urged with all possible force. Even in cases too far advanced for a cure much could be added to the patient's comfort by the employment of radical operation as a palliative measure.

**The Surgical Treatment of Internal Hemorrhoids under Local Anesthesia.**—Dr. LOUIS J. HIRSCHMAN, of Detroit, stated that the technic was very simple and was efficacious for the following reasons: 1. The anesthesia was complete and satisfactory. 2. There was no necessity of damaging the sphincter by dilating or divulsing it by mechanical means. 3. By the everting forceps the use of specula which only obstructed the view was obviated. 4. The method of placing the ligature at the junction of pile and healthy mucosa by shutting off the blood supply from the branches of the superior hemorrhoidal vessels rendered the operation almost bloodless. The only hemorrhage came from the lower portion of the wound which was largely supplied by the inferior hemorrhoidal vessels and was of no consequence. 5. By tying the ligature with a long and short end the long end of the ligature was used as a suture and when tied to the short end and at the top of the wound, brought the edges together so that good hemostasis was assured. 6. By excising the hemorrhoid and removing all diseased tissue below the mucosa level and down to the sphincter all of the pathology was eradicated and recurrence was impossible. The clamp and cautery or clamp and suture operations were often followed by recurrence because only the top of the hemorrhoid was removed. All under the bits of the clamp was left

behind and that very often was the major part of the hemorrhoid. By the open operation and the excision, nothing could be left behind and all of the hemorrhoid was accounted for. If the average surgeon who used a clamp would remove the clamp before he sewed or seared, opening the wound, thus discovering what he left behind, the author was sure there would be no more clamp operations performed for the removal of hemorrhoids. 7. Postoperative anesthesia was so satisfactory when quinine and urea were employed that the patient was able to be up and around after the first day or two, and many of them refused to stay in bed at all. 8. The lateral position prevented sacroiliac strain often caused by the lithotomy position.

**Fat as a Hemostatic in Renal and Prostatic Surgery.**—Dr. IRVIN S. KOLL, of Chicago, said that the clinical experience at this time was sufficiently extensive to warrant the conclusion that the method could be considered of practical value. The fat was preferably obtained from a dog, under strict aseptic precautions. Placed in an airtight, sterile container, in salt solution on ice, it could be kept indefinitely. Should it not be possible to obtain it from a dog, the fat could be taken from the patient at the time of operation. There was usually sufficient perirenal fat for the kidney work, but the patients were often not sufficiently adipose to obtain enough fat from the site of the incision in suprapubic prostatectomy.

Following the enucleation of the prostate, the bleeding was checked either by hot water irrigation or tamponing the cavity tightly for a few moments with gauze. The cavity was then well fitted with fat, and several interrupted catgut sutures were tied over the edges of the cut mucous membrane of the bladder to hold the fat in place; enough of an opening was left for drainage. The fat would slough out in two or three days after it had served the purpose for which it was intended. The efficiency of this method of hemostasis was indicated by the cessation of the oozing, as noted by the rapid clearing of the urine.

When doing a pyelotomy, two sutures were placed longitudinally at either side of the pelvis before it was incised. After removal of the calculus and exploration by the finger, a piece of fat, preferably perirenal, was placed over the incision and the opposite ends of the two sutures were tied over the fat. This made a perfect closure and required no further suturing. Should it be necessary to cut into the cortex of the kidney for the removal of the stone, the cavity thus left was plugged with a piece of fat, another piece was placed over the incision, and the sutures were then run through this plug and tied over the other piece. Lacerations were repaired by using a large piece of fat and including it in the suture. This prevented tearing through the kidney at the same time it held the fat in place. The rapid clearing of the urine and recovery of nineteen suprapubic prostatectomies, together with the satisfactory use of the above method in twenty kidney operations, the writer felt, should place the use of fat as a hemostatic in renal and prostatic surgery upon a sound surgical basis.

(To be concluded.)

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Hygiene in Mexico.* A Study of Sanitary and Educational Problems. By ALBERTO J. PANI, C. E., Member of the Geographical and Statistical Society; Member of the Engineering and Architectural Association; ex-Subsecretary of the Department of Public Instruction and Fine Arts. Translated by Ernest L. de Gogorza. New York and London: G. P. Putnam's Sons, The Knickerbocker Press, 1917. Pp. xii-206.

The tension which exists between the United States and Mexico and which has necessitated the patrol of the Mexican border by American troops has directed attention towards the question of sanitation and hygiene in Mexico as one which may become of prime importance, particularly to our military surgeons. The appearance of this work by Mr. Pani is, therefore, particularly appropriate at this time. The author was formerly Director General of Public Works in the City of Mexico, Director General of the Constitutionalist Railways, and Executive President of the Nationalist Railways of Mexico, and is therefore in a position to speak with authority on the subject of which very little is known in the United States. All who are interested in hygiene and sanitary problems will find much of interest in this volume which will be invaluable to students of Mexican conditions.

*Water Supply.* (Considered Principally from a Sanitary Standpoint.) By WILLIAM P. MASON, Professor of Chemistry, Rensselaer Polytechnic Institute. Member of the American Philosophical Society, the American Chemical Society, the American Society of Civil Engineers, etc. Fourth edition, rewritten. First Thousand. New York: John Wiley & Sons, Inc. London: Chapman & Hall, Limited, 1916. Pp. 528. (Price, \$3.75 net.)

An increasing interest in the subject of water supply as a factor in the health of the community is manifested by the increase in literature on the subject. The constant additions which are being made to our knowledge of the subject of water supply makes necessary the frequent revision of our views on this subject. There is, therefore, a sound reason for the appearance of the fourth edition of the work by Professor Mason, which has been rewritten by him so as to include the results of the most recent studies of the water supply from a sanitary standpoint. All who have to do with this question of water supply, and the majority of physicians come in touch with it at some stage of their work, will find in this fourth edition, a comprehensive review of the questions involved.

*The Essentials of Chemical Physiology for the Use of Students.* By W. D. HALLIBURTON, M. D., LL. D., F. R. S. Fellow of the Royal College of Physicians, Professor of Physiology in King's College, London. Author of Text-Book of Chemical Physiology and Pathology. Ninth Edition. With Colored Plate. London, New York, Bombay, Calcutta, and Madras: Longmans, Green and Co., 1916. Pp. 234.

Doctor Halliburton presents in the ninth edition of his standard work on chemical physiology in a concise form those phases of chemistry which are essential to a full understanding of nutrition. Chemical physiology differs from physiological chemistry in that it deals with the chemical composition of the body and the part played by the various substances found therein in carrying out the phenomena of life. Physiological chemistry on the other hand treats of the chemical composition and the physiological requirements of substances. The two subjects are so closely interwoven that to treat of one involves to a certain measure the treatment of the other phase of this branch of chemistry, but in this particular work it is the chemical composition of the body itself which is specially dwelt upon. The work should be of much value to the student. It should also be of use to the practitioner who has been out of school for many years and who may feel the need of informing himself as to the later developments in a field in which much has been learned within the last few years.

*The Nerve-Muscular Mechanism of the Eyes and Routine in Eye Work.* By G. C. SAVAGE, M. D., Author of New Truths in Ophthalmology (1893); Ophthalmic Myology (1902-11); Ophthalmic Neuro-Myology (1905), etc. Three full page plates and four cuts. Nashville, Tenn.: G. C. Savage, M. D., 1916. Pp. 70. (Price, \$1 net.)

This volume of seventy pages incorporates two papers written by the author. The study of the ocular muscles and the nerve centres controlling them is gone into in detail, their different actions being carefully considered. A careful routine examination of a patient presenting himself to the ophthalmologist is outlined, special attention being paid to the movements of the eye. The author strongly recommends the use of the monocular phorometer in the determination of muscular disorders. After reading this small volume one cannot fail to be impressed with the importance of myology in the study of ophthalmology and a desire to become more fully acquainted with this, up to the present time, rather neglected field.

*Rules for Recovery from Pulmonary Tuberculosis.* A Layman's Handbook of Treatment. By LAWRASON BROWN, M. D. Second Edition. Thoroughly Revised. Philadelphia and New York: Lea & Febiger, 1916. Pp. 184. (Price, \$1.25.)

The treatment of the tuberculosis patient involves so much of personal hygiene and requires such careful attention to details of the personal regime of the patient that Dr. Lawrason Brown, who has devoted himself for years to the study of pulmonary tuberculosis, found it advisable for the benefit of his own patients to write out in a succinct, clear, and easily comprehensible manner the rules for recovery from pulmonary tuberculosis which he wished his patients to follow. This book is now passing into the second edition and can be recommended as a layman's handbook of treatment to be placed in the hands of the patient by the physician. Under its instructions the patient will undoubtedly respond much more quickly to the therapeutic method which the physician may employ.

## After Office Hours

The best thing in *McClure's* for February is "On the Sourness of Grapefruit," by Carolyn Wells.

"Remarkable Remarks," in the *Independent-Harper's Weekly* for February 5th has some good things.

*Current Opinion* for February is full of interesting matter. The articles on music, literature, and the drama are especially good.

If you are going hunting next fall, don't buy a knife with an eight inch blade. Read the *Field and Stream* for February, "Knives for the Outer."

The *Metropolitan* for February has a good story of a silly, pretty girl, "Four Y— 10," by Ring W. Lardner. That and the picture of Theda Bara are the best things in the magazine.

Dr. Fu-Manchu, the elusive Oriental, is still at his devilish tricks. In *Collier's* for February 17th he is seen for a few thrilling moments in "The House of Hashish," and disappears in fire and smoke.

A really good negro story, by a man who knows the race, is "The Left Hind Tail," in the *Pictorial Review* for February. In the same issue is a little verse, "Solitaire," which will call up many an association in the doctor's mind.

*Collier's* for February 10th has a good love story, the protagonists being a boy and a dog, "The Mission of McGregor," by Walter A. Dyer. The editorial pages are always the best thing in their magazine. No, we take that back. We remember a war story, "The Parisien." But anyway, reading *Collier's* editorials is like watching a clean



hitting boxer's right hook, uppercut, corkscrew (only corkscrews are in disfavor in *Collier's*), solar plexus, kidney punch, and knockout. The editor is always counting over the prostrate form of John Barleycorn. When he is finally counted out, what will they put in that upper right hand corner?

\* \* \*

The *Saturday Evening Post* for February 10th has one good story, "Grandpa Makes Him Sick," and one, "The Second Apple Blossoms," which would be good except for the unjustifiable use of coincidence. The February 17th issue has one of Mary Roberts Reinhart's stories. Need we say more?

\* \* \*

In the *Masses* for March is an interesting account of the activities of the censor in Paris journalism, written by Gelett Burgess, than whom there is no one more competent. There is a gripping poem in the same number, "Propaganditti." There is also a very silly and delightful one called "Incredibles." In fact, there is a lot of good verse in this magazine.

## Meetings of Local Medical Societies

MONDAY, February 26th.—Medical Society of the County of New York.

TUESDAY, February 27th.—New York Academy of Medicine (Section in Obstetrics and Gynecology); New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union (annual); New York Otological Society; Onondaga Medical Society, New York; New York City Riverside Practitioners' Society; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York; Woman's Hospital Society, New York; Therapeutic Club.

WEDNESDAY, February 28th.—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Surgical Society; New York Society of Internal Medicine; Schenectady Academy of Medicine.

THURSDAY, March 1st.—New York Academy of Medicine (stated meetings); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society.

FRIDAY, March 2nd.—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn; Practitioners' Society of New York; Corning Medical Association; Society for Serology and Hematology, New York (annual); Alumni Association of Roosevelt Hospital.

SATURDAY, March 3rd.—Benjamin Rush Medical Society, New York.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending February 14, 1917:*

ALLEN, R. L., Assistant Surgeon. Relieved from duty in connection with pellagra investigations at Spartanburg, S. C., and ordered to proceed to Philadelphia, Pa.

BANKS, C. E., Senior Surgeon. Ordered to proceed to Madison, Wis., to deliver an address on February 8th, before the Dane County Medical Society on Community Health Efficiency.

BROWN, B. W., Surgeon. Relieved from duty at Marine Hospital, Boston, Mass.; ordered to proceed to Augusta, Ga., for duty in connection with the Southern Sociological Congress.

GRUBBS, S. B., Surgeon. Granted five days' additional leave of absence from February 11, 1917.

LLOYD, B. J., Surgeon. Ordered to proceed to Vancouver, B. C., for reexamination of a detained alien.

MACCAFFRY, WARD B., Acting Assistant Surgeon. Ordered to proceed to Fisherman's Island Quarantine Station to inspect buildings, quarters, grounds, and public property.

MATHEWSON, H. S., Surgeon. Relieved from duty at Quarantine Station, Portland, Me., and ordered to proceed to Boston, Mass., and assume charge of Marine Hospital.

RIDLON, J. R., Passed Assistant Surgeon. Directed to deliver addresses on tuberculosis and pellagra at the Farmers' Conference to be held at the Georgia State Industrial College, Savannah, Ga., February 21-23, 1917.

SPRAGUE, E. K., Surgeon. Relieved from duty at Ellis Island, N. Y., and ordered to proceed to Portland, Me., and assume charge of the quarantine stations.

WATKINS, J. A., Passed Assistant Surgeon. Granted three days' leave of absence on account of sickness from January 29, 1917.

WHITE, M. J., Surgeon. Directed to deliver addresses on rural sanitation and industrial hygiene at the meeting of the Illinois Academy of Science in Galesburg, Ill., February 24, 1917.

## Births, Marriages, and Deaths

### Died.

EVERY.—In Brooklyn, N. Y., on Tuesday, February 13th, Dr. Edward Woodbridge Avery, aged seventy-six years.

BARTON.—In New York, N. Y., on Saturday, February 10th, Dr. Charles E. Barton, aged fifty-nine years.

BAYLIES.—In Brooklyn, N. Y., on Friday, February 9th, Dr. Bradford Le Baron Baylies, aged eighty-eight years.

BLOGGETT.—In Ware, Mass., on Sunday, February 11th, Dr. Albert George Bloggett, aged seventy-five years.

BRANDT.—In Brooklyn, N. Y., on Wednesday, February 14th, Dr. Washington J. Brandt, aged fifty-nine years.

CAMPANA.—In Butte, Mont., on Thursday, February 8th, Dr. Eugene G. Campana, aged thirty-three years.

CHAFFEE.—In Towanda, Pa., on Sunday, January 28th, Dr. Francis Chaffee, aged thirty-seven years.

DELAMATER.—In Minville, N. Y., on Tuesday, February 6th, Dr. William H. Delamater, aged fifty-three years.

FAULDS.—In Kingston, Pa., on Wednesday, February 7th, Dr. William H. Faulds, aged seventy-one years.

FORD.—In Altoona, Pa., on Sunday, February 11th, Dr. Frank A. Ford, aged forty-two years.

GIDDINGS.—In Anoka, Minn., on Saturday, February 3rd, Dr. Aurora W. Giddings, aged eighty-six years.

HOLLISTER.—In Newark, N. J., on Thursday, February 15th, Dr. Louis E. Hollister, aged seventy years.

HOLTON.—In Brattleboro, Vt., on Tuesday, February 13th, Dr. Henry Dwight Holton, aged seventy-eight years.

LAWRENCE.—In Revere, Mass., on Friday, February 9th, Dr. David Lawrence, aged eighty-eight years.

MABON.—In New York, N. Y., on Friday, February 9th, Dr. William Mabon, aged fifty-six years.

MARTIN.—In Allentown, Pa., on Sunday, February 4th, Dr. Constantine Henry Martin, aged seventy-one years.

MARTIN.—In Caruthersville, Mo., on Friday, February 2nd, Dr. Charles E. Martin, aged forty-seven years.

MEYERS.—In New York, N. Y., on Thursday, February 15th, Dr. George Meyers, aged fifty-seven years.

MONOGHAN.—In Waltham, Mass., on Wednesday, February 7th, Dr. Mary Frances Monaghan, aged thirty-five years.

PALMER.—In Elmira, N. Y., on Friday, February 9th, Dr. Stephen A. Palmer, aged sixty-nine years.

PARKER.—In Stockton, Md., on Wednesday, February 7th, Dr. John T. Parker, aged seventy-eight years.

ROBERTSON.—In Midvale, Utah, on Saturday, February 3rd, Dr. John E. Robertson, aged forty-six years.

RYDER.—In Topeka, Kan., on Monday, February 5th, Dr. Lewis A. Ryder, aged fifty-six years.

TANKERSLEY.—In Weldon, Ark., on Saturday, February 3rd, Dr. George J. Tankersley, aged eighty years.

VANCE.—In Minden, La., on Sunday, February 4th, Dr. Thomas J. Vance, aged eighty-three years.

WHITE.—In Dorchester, Mass., on Tuesday, February 13th, Dr. Robert Marshall White, aged forty years.

WINTERBOTHAM.—In Salina, Kan., on Tuesday, January 23rd, Dr. William H. Winterbotham, aged seventy years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 9.

NEW YORK, SATURDAY, MARCH 3, 1917.

WHOLE No. 1996.

## Original Communications

### THE DESTRUCTION OF ANGIOMAS AND OTHER NEW GROWTHS BY THE INJECTION OF QUININE AND UREA HYDROCHLORIDE.

*A Preliminary Report.*

By W. WAYNE BABCOCK, M. D.,  
Philadelphia,

Surgeon to the Samaritan and Garretson Hospitals.

In reporting results from the treatment of exophthalmic goitre by the injection of strong solutions of quinine and urea hydrochloride into the gland, Watson (1) has presented evidence showing the destructive action of this drug upon thyroid tissue. In a lobe removed within forty-eight hours after the injection of two cubic centimetres of a thirty-three per cent. solution of quinine and urea hydrochloride, I was impressed by the intense necrosis produced in the vascular thyroid tissue. This necrosis is comparable to that produced by the injection of boiling water or of a caustic. Appreciating the advantage of injecting a necrotizing substance more readily handled than boiling water, and one that will not coagulate blood nor produce serious toxic symptoms should it enter into the blood stream, I was led to try similar injections for the injection of angiomas and other vascular growths. A limited experience has impressed me with the advantage of this substance for the production of subcutaneous or submucous necrosis. The injection of a strong solution of quinine and urea hydrochloride into the skin produces instant intense burning, comparable to that of the entrance of a red hot needle, which is quickly followed by analgesia. The area injected becomes white, anemic and necrotic, and a few days later a shrunken adherent black eschar marks the point of injection. Adjacent to the area injected a well marked edema appears which subsides after a number of days. On the face this edema may be marked, the eschar usually separating slowly with little evidence of local inflammation or pain, the separation being complete in ten days or more. If a considerable area has been injected, there is left a deep ulcer which heals slowly, but usually with little pain or inflammatory reaction. If the injected area has been superficial and the eschar is not forcibly removed, it may not fall off until healing is complete, and there is left a somewhat indurated and thickened scar which slowly softens and gradually becomes less and less conspicuous. When the injection is made upon a mucous surface the black eschar does

not form; instead there is produced a grayish or yellowish slough which more rapidly separates, and which is associated for several days with a well marked adjacent edema. The separation of the slough leaves an excavated ulcer which heals rather slowly with an indurated scar that in the course of some weeks assumes more and more the character of the adjacent mucosa. If the injection is made deeply into the tissues, the circulation of the skin is not involved, and a deep area of necrosis occurs which gradually becomes replaced by fibroconnective tissue. When injected into a serous sac, as the tunica vaginalis or testis, the intense local necrosis produced by subcutaneous injection does not follow.

The objections to the use of this necrotizing agent are first the primary transient but intense pain produced; second, the marked secondary edema; third, the sluggishness of the residual ulcer; fourth, the transient induration of the scar; fifth, the possibility of serious symptoms from a quinine idiosyncrasy.

The advantages of the method are, first, the intensity of the necrosis produced even in very vascular tissue; second, the secondary persistent anesthesia; third, the low toxicity of the substance employed; fourth, the convenience of the application especially upon mucous surfaces or other inaccessible regions of the body.

In a cavernous angioma of the inside of the cheek the injection was followed by the escape of a few drops of blood from the needle puncture, after which there was rapid necrosis, the slough separating without any evidence of hemorrhage and with complete removal of the tumor. A painless edema involving the entire half of the face had largely subsided at the end of a week. Cavernous angiomas of the face in infants are often difficult to treat, as they tend to recur and grow after the use of various destructive agents. In one such tumor of the forehead of an infant that had recurred after the use of electric desiccation, fulguration, the application of carbon dioxide snow, and other measures, the injection was followed by the formation of a black eschar and an apparent cure.

Internal hemorrhoids injected with a twelve to fifty per cent. solution of quinine and urea hydrochloride, promptly become necrotic and drop off after a number of days. The associated marked edema, especially from the stronger solutions, is a distressing complication, the rectal mucosa projecting through the anus suggesting to the patient that his condition has been markedly exaggerated. Unfortunately in this region the secondary analgesia

may not be entirely efficient, and usually the sphincters should be well dilated before the injection; otherwise the patient may at times suffer more from this treatment than from the conventional clamp and cautery operation. For large urethral caruncles the method seems of value. In port wine stains or birthmarks, or superficial angiomas, an injection in the upper layers of the derma of a weaker solution of quinine and urea hydrochloride enables one to substitute a white scar for the objectionable coloration of the vascular growth. The injection also seems to be very effective in the removal of warts and moles. The injection of a few drops of a thirty-three to fifty per cent. solution under the base of such a growth being followed by a rapid desiccation of the wart, which after a time drops off, leaving a reddened and transiently thickened scar. In a verruca of the hand which had recurred repeatedly after the application of trichloroacetic acid, acid nitrate of mercury and a solution of ethylate of sodium, this injection not only promptly destroyed the growth, but left a scar that was practically inconspicuous at the end of two months. In the removal of these small growths no dressing is required, and the black eschar if upon the hand is not painful, and usually does not interfere with the vocation. Keratoses and superficial and deep epitheliomas of the skin or mucous membrane, apparently may be likewise destroyed by the injection.

A much larger experience will be necessary to determine the influence of the injection upon recurrence, and the applicability of this method against malignant disease. It is possible that the injection of quinine and urea hydrochloride about a malignant growth may, by the production of edema, lymph blockage, and fibrosis with intense necrosis in the area of the injection, constitute a valuable agent in the removal of the tumor and in the prevention of metastasis. We have observed recurrence, however, in one epithelioma of the face after two injections. For certain inaccessible and inoperable tumors, such as carcinoma of the pharynx or tonsil, we think the method should be tried, and we should also be tempted to use it for the destruction of postpharyngeal fibromas. Introduced into the enlarged faucial and lingual tonsils, the injection is practically painless, much of the solution escapes, and the secondary necrosis is insufficient. In the treatment of hydrocele the solution seems of no value.

*Technic.*—An ordinary hypodermic syringe is employed, and for convenience we have a thirty-three per cent. and a fifty per cent. solution of quinine and urea hydrochloride prepared in ampoules containing two c. c. each. With a fine needle the affected area is infiltrated, taking care not to infiltrate too widely. The chief action of the injection is to block the circulation and cause ischemia; therefore the entire area is infiltrated, or a proximal infiltration is so given as to cut off the blood supply. In treating sensitive areas the preliminary injection of a one half or one per cent. novocaine solution may be desirable to prevent the initial pain.

2033 WALNUT STREET.

#### REFERENCES.

1. LEIGH F. WATSON: Quinine and Urea Hydrochloride Injections in Hyperthyroidism, *Journal A. M. A.*, January 10, 1914; September 25, 1915.

## CARCINOMA OF THE BLADDER.\*

*Patient Well Five Years After Extirpation.*

BY HOWARD LILIENTHAL, M. D., F. A. C. S.,

New York,

Professor of Clinical Surgery, Cornell Medical School; Attending Surgeon, Mt. Sinai Hospital and Bellevue Hospital.

The teaching of principles, technical, physiological, and pathological, is the most necessary thing in the education of the student of surgery. A close second in importance, possibly even too close to be considered a second, comes the study of individual cases with the analysis of their management and the interpretation of the details which appear to have been the determining factors in ultimate failure or success. If the following history were made the subject of thorough discussion in a postgraduate classroom, the several aspects of the case being gone over seriatim, we should find that an enormous field of surgery and its cognate branches would have to be traversed.

The patient was an old acquaintance of mine who had consulted me at various times for a number of ailments. He was subject to disorders of the skin, among which were furunculosis and lichen planus. In 1910 I had operated upon him for carbuncle of the neck, this being his second experience with that malady. In passing, it may be interesting to state that the second carbuncle was diagnosed before the skin became red and that I excised it completely, suturing the wound without drainage and getting primary union. The diagnosis of carbuncle was confirmed histologically by Doctor Mandlebaum. This is certainly a most unusual treatment for carbuncle. There was a double inguinal hernia which was retained by a truss.

CASE. In August, 1911, Mr. C. began to note a slight burning on micturition and a general uneasiness in the neighborhood of the genitals. At times there was slight difficulty in starting the stream. Catheterization by another physician was followed by cloudiness of the urine and urethral discharge with irritation about the meatus. His first visit to me on account of this illness was on November 21, 1911, when a No. 16 French woven catheter easily entered and demonstrated the absence of residual urine. Under general nonoperative treatment there was improvement and the urine cleared.

Analysis of the twenty-four hour specimen by Doctor Sondern showed a normal renal secretion, a few red cells and leucocytes and no tubercle bacilli. The latter part of the examination was made at my request because of a nodule in the right epididymis which, however, disappeared spontaneously. There was no loss of weight and the patient's general condition was good, the case resembling one of early prostatic disease. Rectal examination showed a smooth, slightly enlarged prostate.

Two months later the patient was alarmed by the appearance of blood in the urine without clots, the phenomenon disappearing in a few hours. Cystoscopy, with probable operation, was then suggested but refused by the patient. For about a week the urine was clear, but after that a few small clots appeared in occasional specimens. On February 11, 1912, one of these little clots was sent to me in a bottle of urine and on examining it between cover glass and slide I found certain groups of cells which suggested the presence of a neoplasm, and this suspicion was shared by Doctor Mandlebaum on examination of the same specimen.

The patient having finally consented, on February 16th, at Mt. Sinai Hospital, I introduced the cystoscope and saw a cauliflower tumor in the region of the right ureter, the growth being apparently about two centimetres in diam-

\*Read before the Section of Genitourinary Surgery, Academy of Medicine, January 17, 1917.



eter. It appeared to surround the ureteral orifice. Immediately after the cystoscopy suprapubic cystostomy was performed under general anesthesia. The tumor then appeared to be about the size of a silver quarter of a dollar, was considerably elevated and its base was indurated. The entire mass was removed with scissors, a clean dissection made and what seemed to be a sufficient zone of healthy tissue removed with the growth. Hemorrhage was minimized by the previous application of adrenalin chloride to the site of the proposed extirpation. After the removal of the growth the base of the wound was cauterized with the Paquin and a small median prostatic protuberance was also burned away. No closure of the intravesical wound was attempted, but the suprapubic opening in the bladder wall was sutured with continuous chromicized catgut, a knot at each third stitch. The aponeurosis was also approximated by a few interrupted chromic sutures and the skin wound left open. An indwelling rubber catheter through the urethra acted as a constant drain.

It was my belief that this extirpation would heal by granulation and that the resulting cicatrix would tend rather to widen than contract the ureteral orifice, about one and a half centimetres of the ureter having been removed with the neoplasm. Doctor Mandelbaum later reported squamous celled carcinoma, apparently widely excised. For ten full days this case ran what might be called a perfectly normal course. On the eleventh day there was slight distension of the bladder because of the partial slipping out of the catheter and there was a slight escape of urine alongside the instrument, the patient's temperature at once rising to 101° F. The catheter was replaced and the bladder irrigated. Indeed, the viscus had been irrigated every three hours since the time of the operation to make sure that urinary infiltration should not occur. Nearly twelve days after the operation there was a chill with temperature rising to 104° F.

The drained urine was clear with the exception of a slight sediment of pus on irrigation. The abdominal wound had been strapped with adhesive plaster and had healed completely. The finger in the rectum detected a faint, doughy mass, very high up and evidently adjacent to the place where the carcinoma had been, and on February 28th, the patient was once more anesthetized, the anal sphincter dilated, and an attempt was made to puncture the mass for the purpose of aspiration through the rectum. This proving unsuccessful, a von Dittel's incision was made half way surrounding the anus and with a guiding sound in the urethra the right side of the perineum was freely dissected up and aspiration practiced through the wound. At a depth of fully six inches some foul pus and a considerable quantity, perhaps an ounce and a half, of thin sanious fluid containing numerous flakes was withdrawn. The needle still in place, the opening was enlarged with dressing forceps and then packed with gauze.

The temperature at once dropped to normal and the general condition of the patient decidedly improved. A spread of the pus made by Doctor Mandelbaum showed micrococci in short chains; the culture also demonstrated pyocyanus, staphylococcus, and probably streptococcus, and from this complicated culture an autogenous vaccine was prepared. Without going into further detail it may be stated that the vaccine treatment appeared to be inefficacious.

A tube which had replaced the perineal gauze was removed on March 4, and within the next twenty-four hours the temperature rose to 103.8° F. Bladder irrigation now showed a considerable quantity of thick pus, and these irrigations were continued at intervals. The temperature became characteristically septic, sometimes remaining normal for three or four days, then rising to 103° F. or more. Fearing that the tube had been removed too early and that there was another pocket of pus there, aspiration through the perineal wound was performed, but nothing was discovered. The urine was at times perfectly clear and again contained pus. It appeared to me that the septic focus must lie near the seat of operation, probably between the bladder and the rectum and this opinion was concurred in by Doctor Brewer, who saw the patient in consultation.

In order to reach the suspected region with greater precision the patient was once more anesthetized and an incision as if to expose the ureter was made in the right lower abdomen, keeping the dissection extraperitoneal. Through drainage with the perineal wound was established with rubber dam surrounded by a gauze wick and the

greater part of the abdominal wound was sutured in overlapping layers. No pus, however, was encountered and the irregular temperatures continued with exacerbations of fever every two or three days, not every day as is so characteristic in a true blood sepsis. It was noted that during the period of low temperature the urine contained considerably more pus than it did at the time of exacerbation, and this led me to believe that we were dealing with a right kidney infection.

Accordingly, on April 7th, nearly two months after the first operation, I cystoscoped the patient. The wound where the tumor had been removed was healed and the bladder seemed to be in good condition. Ureter catheter passed for about an inch into the right ureter and freely for about two inches into the left ureter, no effort being made to insert it deeper for fear of carrying sepsis. Urine loaded with pus came from the right side and clear urine from the left. Examination of the right urine by Doctor Mandelbaum showed pyocyanus.

On April 14th I proposed nephrectomy and a consultation was held with Doctor Manges and Doctor Dowd who agreed as to the advisability of this procedure, and on April 16th, the operation was performed. General infiltration and infection of the perinephric fat was found. Pyonephrosis with incipient abscesses throughout the kidney substance and a pyoureter were present and the kidney was removed in the usual manner, the renal artery being secured by a chromic catgut ligature and the remainder of the vascular pedicle with celluloid linen thread. Unsuccessful efforts were made to inject methylene blue from the ureter into the bladder, and because of the impermeability of the ureter a small rubber catheter with numerous fenestræ was pushed far down the ureter and allowed to protrude from the lumbar wound, the greater part of which was sutured.

Rapid convalescence followed.

The patient's urinary troubles were not over, however, for on August 8, three and a half years later, there was a characteristic attack of prostatism with complete retention of the urine. At the time of the former operation some enlargement of the prostate had been noted and the patient's family had been informed that at some future time it might be necessary to operate again.

On Friday, August 13, 1915, I incised in the region of the old suprapubic cicatrix on a bladder full of urine and at the same sitting removed two large lateral prostatic lobes, each the size of a large English walnut. The bladder had been tremendously distended and there was a deep retroprostatic pouch. With the patient in the Trendelenburg posture it was possible to examine with great exactness the site of the old operation. The cicatrix was soft and there was not the slightest sign of recurrence of the old trouble. With the exception of a mild, rightsided epididymitis the patient's convalescence was uninterrupted and he was discharged from the hospital in three weeks following his prostatectomy. It will be remembered that there had been a nodule in his right epididymis before his original operation and that the occurrence of epididymitis in the same side is worthy of note. Examination of the prostate showed no trace of malignancy (Mandelbaum).

This case presents plenty of material for discussion. A few suggestive points follow:

1. The omission of the customary "removal of a specimen" in making the working diagnosis. With increasing experience in the operative treatment of malignant disease my feeling against the routine specimen removal has become stronger. In breast tumors I believe it is the best practice to make the histological diagnosis at the operating table not from a haphazard fragment of the growth but from specimens taken from selected parts of the principal tumor after its removal. And even here I have known the operating room diagnosis to be upset within forty-eight hours on more careful study.

In the prostate cancer may exist in a part of the gland remote from the place which yielded the specimen, and this has come to my notice often enough to make me discard the specimen method of diag-

nosis, depending on sight, touch, and history in making my decision as to the proper type of operation.

The breast and prostate are typical of the majority of cancers. If, however, we are dealing with the suspicion of malignancy in a truly vital part or in an organ whose removal would affect the happiness as well as the life of the individual the removal of a fragment for diagnosis instead of the entire part is justifiable. Such an organ, for example, is the larynx.

In the case just reported the cystoscopic picture might have been read as papilloma, or carcinoma. A specimen removed through the cystoscope might have led to a false sense of security and less radical operation. Indeed, the family of this patient had suggested the use of the high frequency current. And, in spite of the undoubtedly brilliant results obtained by Beer's method I question the wisdom of its employment in easily operable solitary growths. A clinical error in diagnosis followed by too persistent electrical treatment may combine to lose the opportunity for surgical extirpation.

2. The type of operation. Judging by the post-operative course in this case one would be justified in criticising the technic. Perhaps a transplantation of the ureter would have avoided the pyelonephritis. Yet, it must be remembered that this man's bladder and urethra had been the site of catheter infection and in any operation involving transplantation the valve action of the ureterovesical anastomosis could not be assured. The influence of heat on carcinomatous tissue at a considerable distance from the point of cautery application is well known, and in this case the long freedom from relapse may well be due to thermic action on the bladder wall and on the stump of the ureter. In another case of this kind I should probably drain the kidney for some days through an indwelling ureter catheter, or the end of the ureter might have been drawn into the bladder and fastened there after applying the heat; or with the knowledge that both kidneys and both ureters were healthy it might have been best to sacrifice at once the right renal function by simply clamping and tying off the end of the divided ureter.

3. What are the chances of actual cure following an operation for localized cancer of the bladder?

4. Has vaccine therapy a place in the strictly surgical or ascending infections of the kidney?

Through the critical part of this case salol was the internal antiseptic. A tendency to bleed seemed to follow the ingestion of urotropin on two occasions. Mr. C. has been taking thymus gland substance in fifteen grain doses three times a day since his convalescence as a discourager of malignancy. It is now five years following the extirpation of the tumor and he is perfectly well.

48 EAST SEVENTY-FOURTH STREET.

**A Report of Two Cases of Fracture of the Neck of the Femur in Childhood.**—B. H. Whitbeck (*American Journal of Orthopedic Surgery*, January, 1917), states that the results of the treatment of these cases depend upon the immediate and complete reduction and fixation of the part. He has used in his two cases the abduction method of Whitman with excellent results.

## THE MEDICAL DEPARTMENT WITH THE MOBILE ARMY.\*

*With Some Remarks Relating to the New York National Guard in the Mexican Border Service.*

BY WILLIAM H. STEERS, M. D.,  
Brooklyn, N. Y.,

Major, Medical Department, New York National Guard.

It is assumed that these remarks are addressed to those who are entirely unfamiliar with the subject. Hence they are elementary and in the nature of a rambling talk rather than an allocution.

In ancient times an expeditionary force was complete in itself. That is to say, a military force advanced into an enemy's country carrying with it some supplies, but living mainly on the country through which it passed. It maintained little or no communication with its home territory, and received no supplies from it. If the expedition was successful the force returned. If it was not successful it did not return, although individuals might. The expedition as a unit ceased to exist. It was disorganized both as to the force collectively and as to most of its men.

A modern military force of size is divided with respect to difference of immediate purpose, into three parts, namely, the base, the advance, and the line of communication. Forces in the zone of the advance are occupied in fighting and in the maneuvering preliminary thereto.

Forces in the zone of the base are occupied in collecting supplies, myriad in variety and enormous in quantity and including men and animals; and in organizing the forces, mobilizing and training them, and in concentrating them for transportation to the zone of the advance.

The name of the zone of the line of communications almost explains itself. The business of the forces belonging to this zone is that of transportation. There are duties incidental to transportation, such as distribution at the advance or at the base, and duties incidental to the care of troops and supplies in their charge. The great work, however, of the forces of the line of communication is that of transportation.

In the medical department of an army there is likewise this same division and difference in immediate purpose in the different zones. The medical department being an integral part of an army, must always be with it, and every detachment, subdivision, or individual of the medical department must always be with the organization to which he or it is attached. It follows then that in the zone of the advance, the medical department or any part of it must never be permitted to become immobilized. It should always be in condition to accompany its organization.

In the zone of the advance, therapeutics, medical and surgical, is limited to: First, such temporary treatment as will suffice to preserve life and function and make the patient comfortable until he has been transported to the base; second, the treatment of those who can be immediately returned to duty;

\*Read before the Brooklyn Medical Society, February 1, 1917.



third, the treatment of those who will probably be in condition to return to duty in shorter time than would be required for transportation to and from the base; fourth, the treatment of those in too critical a condition for removal.

In the zone of the line of communications treatment is temporary and is confined to such emergencies as arise in transit and to the continuation of the treatment instituted in the zone of the advance. It is in the zone of the base that the medical department has its first opportunity to treat individuals without regard to the military situation. Here the patient is treated until he is returned to duty, is discharged from the army, or dies.

In the advance and in the zone of the line of communications, the military situation and its requirements dominate everything. All else, even the treatment of sick and wounded, must and should be secondary. If this were not so, the army would be defeated, and all would speedily be converted into sick, wounded, or dead. So, this at first seeming disregard for the comfort and treatment of the sick and wounded is really the reverse. It is in their interest and in the interest of all, and may be considered preventive.

The failure of the civilian physician in the military service, even in some cases after months of training to comprehend this, and his failure to appreciate that therapeutics in the advance is, must be, and should be different from that at the base, cause much trouble for himself and for his superior officers, and are detrimental to the patient and to the work of the fighting army.

It must ever be borne in mind that the purpose of an army in the field is to fight. Nothing should be permitted to interfere with, or in the slightest degree to impede this purpose.

In harmony with this we may recall the story related by the great French surgeon Ambroise Paré. Surgeons in his time were only followers of the army. He relates that after a battle he came to a place where there were three or four men mortally wounded. As he was looking at them he was approached by an old soldier who asked whether these, his comrades, could recover. Paré replied that they could not, whereupon the old soldier went to each in turn and in the words of Paré: "Did cut their throats sweetly and without wrath."

Looking back from our present knowledge to the surgery of the time, what the old soldier did was doubtless an act of mercy to the individual. If it were possible, which it is not, but if it were possible, even in the present time, to consider only the immediate object and the immediate result of an action, this treatment of all sick and wounded in a fighting force might well be recommended as being merciful, not to the individual especially, but to the mass. Sick or injured require the services of the well, who otherwise might be added to the actual fighting strength of the force. In other words, the sick and wounded not only themselves do not fight, but they prevent others from fighting. Therefore in a fighting force sick and wounded must quickly be gotten rid of or the fighting ability of the force will be diminished.

Please do not misunderstand me, or quote me out

of context. I do not advocate any such plan. It would be fatal to an army adopting it, and degrading and fatal to the country of such an army. The story is quoted to illustrate a point, namely, that in the zone of the advance, sick and wounded impede the work of an army. They must therefore quickly be gotten rid of. This is done by transporting as soon as possible to the base all those who cannot quickly be made well.

Armies are composed of individuals organized into squads, sections, platoons, companies, battalions, regiments, brigades, divisions, army corps, and armies. In our country the basis of organization is the division. "A division," in the words of the regulations, "is a self contained unit made up of all necessary arms and services, and complete in itself with every requirement for independent action, incident to its ordinary operations." In other words in our organization, it is the smallest body capable of performing all of the functions of a fighting force. At war strength a division in our army aggregates 24,785 individuals. Two or more divisions constitute an army corps; two or more army corps constitute an army.

Some figures relating to our army may be instructive and interesting: An infantry regiment consists of 1,836 enlisted men and fifty-one officers. To these are attached four officers and twenty-four enlisted men of the medical department, making a total of 1915. It has 171 animals. It has men rated as cooks, clerks, drivers, musicians, artificers, a horseshoer, a saddler, and a blacksmith. In column of squads, that is in a general way, in a column of four men abreast it would occupy a road space of over half a mile, and with its field train of twelve wagons and sixteen pack mules would on a march occupy a road space of at least three quarters of a mile. To encamp it would require six acres. For its men it will require about 1,900 gallons of water a day. For its animals it will require about 1,300 gallons of water a day, making a total of at least 3,200 gallons, or about fifty barrels of water a day for one infantry regiment. This is on the march and in temporary camps. In permanent camps its requirements would probably be increased to 50,000 gallons a day.

A cavalry regiment and attached sanitary troops totals 1,306 men and officers and 1,435 animals. It requires on the march an allowance of about 12,000 gallons of water a day. In permanent camps this would be increased to about 40,000 gallons a day.

A typical infantry division consists of: Three brigades of infantry, that is, nine regiments; one regiment of cavalry; one brigade of light artillery, or three regiments; a regiment of engineers; one field battalion of signal troops; one aero squadron; one ammunition train; one supply train; one sanitary train; one engineer train, and the commanding general and his staff.

There is a total of 24,785 men and officers, 8,906 animals, and 940 wagons and two aeroplanes in a full division. Included in this are the personnel of the medical department, namely: 104 officers, 950 enlisted men, twelve veterinarians, and such number of dentists as may be assigned to the command.

The New York National Guard in the present Mexican Border Service numbered over 18,500 men.



A division occupies a road space of from fifteen to twenty miles, varying with road and other conditions. To encamp it requires 180 acres or more. A division on the march will require about 84,500 gallons of water a day. In a permanent camp this would run up to 500,000 or 600,000 gallons a day.

For a division in the field the amount of food consumed and therefore required to be transported to the division will, with its containers, weigh from twenty-five to fifty tons a day. The forage for animals amounts to about ninety-five tons a day. This in addition to other supplies and equipment.

A division carries with it seven days' rations for the men and for the animals grain for three or four days. The ration for the men is so liberal that in an emergency the supply carried would be sufficient for ten days. The amount of ammunition consumed is of course extremely variable. Water and food for men and animals must be supplied daily. It is interesting to note that the marching ability of a division will, in general, amount to no more than ten to twelve miles daily. This to a civilian seems astonishingly small. But when it is remembered that this means the marching ability of the entire division, that is, of all its components; that its marching ability must necessarily be that of its slowest unit; that to reach a designated point some of the units, because of differences in distance by different roads, may have to march further than others; that camp has to be broken and made; that men and animals have to be fed at least twice; and that supplies must be brought forward, the reasons for this average small distance becomes apparent.

To obtain an idea of the working of the medical department, let us sketch its distribution in a division of our army. To every organization of a division there is attached a detachment of the medical department. In an infantry regiment this consists of four officers, one major, and three captains or first lieutenants, and twenty-four enlisted men, equipped with a mule and a fixed quantity of medicines, surgical dressings and supplies, tentage, and camp equipment. In a cavalry regiment the detachment of the medical department consists of three officers, sixteen enlisted men, and two veterinarians. A regiment of field artillery has three officers, nineteen enlisted men, and two veterinarians from the medical department. Separate organizations, smaller than a regiment, have smaller detachments attached to them. No organization is ever out of reach of the services of the medical department.

The work of the detachment attached to a regiment may be thus outlined. The senior medical officer is in command of the detachment. He and the detachment are under the command of the commanding officer of the regiment. Any orders from higher authority for the detachment are transmitted to the senior surgeon, through the regimental commander. There is an exception to this in that communications relating to the technical work of a department may be sent direct to the medical officer.

The senior surgeon is responsible for the temporary care and treatment of the sick and wounded, for the training and efficiency of the personnel of the medical department attached to the regiment, for the instruction of the regimental personnel in

hygiene and first aid, for the care of the property belonging to or assigned to the detachment, for keeping the regimental commander informed of violations or lack of enforcement of sanitary orders, and for obtaining the necessary supply of sanitary equipment. He must keep individual records of the sick and wounded in order that both the government and the individual may be secure in their rights.

In general orders from the commanding general of the division there is published a list of service calls. These must be put in effect by commanding officers of organizations. In this order there is a time assigned for all regular duties. A general order issued from Headquarters, Sixth Division, that is, the New York National Guard, McAllen, Texas, July 23, 1916, is taken as an example, and we will follow the work of this detachment according to this order.

At 5.15 a. m. the bugle sounded first call. At this the men arose and dressed. At 5.20 reveille was sounded, at which the men hastened their dressing and individually proceeded to the place of assembly, usually their company street. At 5.25 a. m., that is, ten minutes after first call, assembly was sounded. At this, the first sergeant commanding "fall in," the men fell in line and the roll was called by the first sergeant. The commanding officer of the detachment or one of the junior officers must be present at assembly. He took command of the detachment and put them through at least ten minutes setting up exercise. At 5.50 mess call was sounded; the men fell in line with their mess kits and were served in turn. Before serving every meal is inspected by a commissioned officer of every detachment or company and the serving of every meal is under the direct supervision of a commissioned officer. Immediately after mess the camp was policed; that is, cleaned up. The latrines were burned out, urine cans emptied, the ground of the camp gone over by squads of men, and all rubbish gathered and burned. Tents were cleaned and put in order, and the camp made ready for inspection. At 6.20 a. m. came sick call. All the men of the regiment desiring to report sick, having first so informed the first sergeant of their company, and having been entered on the sick report book, which book must be signed by the company commander or one of his junior officers, were marched by a noncommissioned officer to the surgeon. As many of the medical officers attend at sick call as are necessary to promptly finish the work. The object of sick call is not to treat the sick immediately. It is to determine those who are really sick and to return to work those who are malingerers or who, having previously been on sick report, are now able to be returned to duty. The sick are treated after the sick report book has been signed by the medical officer, in each case recording whether the man is fit for duty or is sick. A report is immediately sent to the regimental adjutant, showing the number of men sick and the number fit for duty. The object is that the regimental commander shall know how many men he has who are able to work. Men unable to go to the surgeon were seen in their quarters. The actual treatment of sick and wounded in a regiment is conducted similarly to that in a civilian dispensary, with

the addition that some may be retained for twenty-four or thirty-six hours in the regimental infirmary. This is a tent, which in permanent camps might have cots, extemporized, or furnished by special order, or purchased by special funds. For troops in campaign, cots would not and should not be furnished here.

At 6.35 first call for drill was sounded, followed at 6.40 by assembly. The detachment was then drilled and instructed for three and a half hours. As the medical department must attend to its special duties its drill time is necessarily somewhat less than this, usually not more than three hours. Previous to drill the animals belonging to the detachment must be watered, fed, and groomed. At 10.20 a. m. came recall from drill. Twenty-five minutes later, that is, at 10.45 a. m., came assembly for school for noncommissioned officers. This lasted forty-five minutes. At 11.35 a. m. inspection of quarters took place, the company streets, tent, kitchens, baths, and latrines being inspected. All must be clean and in order. At 12 noon, mess call was sounded. At 3.00 p. m. there was a school for officers lasting one hour. First call for guard mount occurred at 4.00 p. m. The medical department has no duty with this formation. Retreat was sounded at 5.50 p. m., mess call at 6.00 p. m., and first call for drill at 6.40 p. m.

At 6.45 p. m. assembly for drill. This drill lasted one hour and during this time the clothing, equipment, arms, and ammunition were particularly inspected.

At 9.45 came the call to quarters, and at 10.00 p. m. taps. Then all lights in the men's quarters were extinguished. All men out of camp without pass after 10.00 p. m. were arrested.

The surgeon or one of his junior officers makes a complete sanitary inspection of the camp of his regiment at least daily and at all times maintains sanitary observation over it. Vaccination against smallpox and typhoid fever must be complete throughout the regiment, and in the latter part of the Mexican Border Service vaccination of every man against paratyphoid was instituted.

Because of the necessity of performing the technical work of their department the hours and duration of instruction of the enlisted men of the medical department would vary from the schedule, but time must be found to instruct and drill them in the general knowledge and duty of all soldiers, including those parts of the infantry drill regulations, known as the school of the soldier and school of the detachment, and, in addition, in the technical knowledge of their own department. This includes use of the litter, application of first aid, hygiene, camp sanitation, preparation of food for sick and well, establishing and breaking camp, and dressing stations, use of their equipment and of medical department supplies, transportation by wagon and pack mule, marching, driving, and equitation. The noncommissioned officers must also be instructed in the preparation of the required reports and returns.

During campaign the senior surgeon of every organization must make the following reports daily: 1. Surgeon's morning report of sick. 2. Morning report of the detachment or unit. 3. Daily sick re-

port. 4. Daily field report of sanitary personnel and sanitation. 5. Daily field report of patients.

In addition to these the reports and returns that are required monthly, bimonthly, quarterly, semi-annually, annually, and on special occasions number about 100.

It will readily be seen that the conscientious performance of these duties by a man who comprehends their importance, who actually knows them himself, and who possesses any patriotism and force of character will keep him and his detachment comfortably busy. However, it can be done, be made enjoyable, and leave time for other things.

In addition to the detachments of the medical department serving with other organizations there are what are known as sanitary units. In a division these are four ambulance companies and four field hospitals.

An ambulance company includes one captain, four first lieutenants, and seventy-nine enlisted men of the medical department, to which are attached three enlisted men of the quartermaster's department. It also includes twelve ambulances, either motor or mule drawn, three wagons, four pack mules, eighteen horses, and, if it is not a motor company, sixty draft mules. It is equipped with a large quantity of surgical dressings and some medical supplies. It also carries the equipment of four camp infirmaries.

An ambulance company has two functions, namely: 1, transportation of patients, and, 2, in time of battle the rendering of first aid and temporary treatment, almost all of which would be at what are called dressing stations.

A field hospital includes six officers, of whom one is a major and five are captains or first lieutenants, and sixty-seven enlisted men of the medical department. To it are attached eight enlisted men from the quartermaster's department. It has seven wagons, sixteen horses, twenty-eight mules. The normal capacity of the field hospital is 216 patients, but by crowding shelter can be afforded to 300. If buildings can be pressed into service in addition to the tents, this can of course be temporarily increased. The increase, however, would have to be but for a very short time, since the personnel could not care for more than this number for more than a very brief period.

The function of a field hospital is to afford shelter, care, and treatment until the sick and wounded can be turned over to the line of communications. Like the rest of the medical department, it must maintain contact with the organization to which it belongs, namely, the division, or that part of the division to which it may be attached.

Prompt evacuation of the sick and wounded from the field hospital is necessary. If this were not done the company would become immobile, and lose contact with the division. The combatant troops would therefore be deprived of its service and suffering from the lack of medical and surgical treatment would result. Treatment in the field hospital should therefore be limited to that immediately necessary to save life.

To facilitate mobility the equipment of a field hospital, while ample for its proper purpose, is as scanty as possible. Patients are laid on bedsacks

which, stuffed with hay or straw, are placed on rubber sheets on the ground. Cots or beds are not, and should not be, a part of the equipment. In the first part of the present Mexican Border Service effusive critics were very fulsome in exposing in the daily press their indignation at this absence of cots. Some of them actually saw sick men with only a bag of hay between them and the ground.

Like many other critics they did not understand what they were talking about. In fact, a bedsack filled with hay and on the ground is not nice, but in cold weather it is warmer than a cot. As soon as it was seen that the troops would probably be in camp for some time cots were furnished for all, both well and sick.

All of the medical department of a division comprising 104 medical officers, 915 enlisted men, twelve veterinarians, such number of dentists as may be assigned, and in times of stress a variable number of civilians, with all the equipment, is under the control of the division surgeon. His grade is lieutenant colonel. He is both an advisory and an administrative officer. He keeps the commanding general informed of all things necessary for the care of the sick and wounded, and of all things necessary to prevent disease. When troops are to be moved he must anticipate conditions and diseases to be guarded against. The office requires that he be skilled in the profession of medicine and also that he possess executive ability. Individuals with these requirements in perfection are not common. An efficient division surgeon is one of the most important officers in the organization.

It might well be thought that in the present day it would be impossible to find medical men to whom it would be necessary to say that sanitation is the most important work of the medical department; that to prevent disease in an army, or, more precisely, to keep the sick rate low, is a large job; that it requires discipline and team work in the medical department and in the entire army; that it requires constant attention of the medical department to all sorts of details, some of which might at first thought be considered as no part of a doctor's work; that a medical officer should know a few things in addition to a little pathology and how to write a death certificate; and that an army with a low sick rate is in better condition to accomplish its purpose, that of winning battles, than it would be with a high sick rate. Therefore, to this society I shall say nothing in this respect.

However, in passing, and just between friends, I may say it is my opinion that if a division surgeon has under him ten really efficient medical officers it would be an exception and he would be extremely fortunate, and if this country at the present time puts in the field a force of any size he will be extremely fortunate and an exception if he has one.

I have seen medical officers whose conception of their job included no more than the giving of a pill or opening a boil. And I have known instances where they were too lazy or ignorant to do even this.

An enlisted man told me that having a very severe pain in the chest he had gone to the doctor

of his organization, a major. He described his feelings to the doctor who, without making any examination, said: "Er—wait until my sergeant returns and he will give you something," and then returned to his cigarette. I have seen the kitchens of detachments of the medical department and of sanitary units filthy and the food swarming with flies. This right in the medical department itself. Comment is unnecessary.

To enforce sanitation a sanitary order is issued by the commanding officer of the troops, a copy of this is sent to all organizations. It provides or should provide for all things necessary to promote the health of the command that are not already provided for in regulations. This will necessarily be somewhat lengthy.

The commanding general of the division has on his staff another medical officer, namely, a sanitary inspector who is under the division surgeon. The incumbent of this office should possess two things: First, the ability to repeat the sanitary order blindfolded; second, and most important, a mind indifferent to criticism. He inspects every organization of the division. He should inspect the surrounding community and country. He reports the result of these inspections and his recommendations to the division surgeon. He may be empowered to issue orders in the name of the commanding general for the correction of sanitary defects. As in the case of Ishmael every man's hand is against him. He makes trouble for everyone, from the commanding general down.

Having given you an outline of the military medical machine and its working, let us examine some of its results in the Mexican Border Service. The following remarks apply only to the sixth division of our army, that is, to that part composed of the New York National Guard.

It is a common error to suppose that soldiers are heavy drinkers. Possibly they may have been so in the past. I am not old enough to say. However, in our army, alcoholism has been diminishing for the past ten years. There are some peculiar people who will not admit this to be a fact, although the figures of the Surgeon General's annual reports show it. These people always add that the selling of alcoholic drinks at army posts should again be permitted, it having been abolished in 1901. They evidently believe that the decrease in the number of cases of alcoholism in the army is due, not to a smaller consumption of alcohol, but rather to an increase in the soldier's capacity. For myself I say nothing, but I enumerate the following facts, at the same time calling to your attention that in time they are not identical:

1. The reported admission rate for alcoholism has been diminishing during the past ten years.
2. The sale of alcoholic drinks at army posts has been prohibited for the past sixteen years.
3. The pay of a soldier is stopped when he is incapacitated because of sickness due to drug addiction, alcoholism, or misconduct; this for the past five years.

In the Mexican Border Service of the sixth division, which was composed of the New York National Guard and included for part of the time



the Third Tennessee Infantry, the use of alcoholic drinks was prohibited by the commanding general.

I do not pretend that there was no drinking. It was not war time, so that the selling of liquor in adjoining towns could not be stopped. Therefore,



LIEUTENANT-COLONEL WILLIAM S. TERRIBERRY,  
Chief Surgeon New York National Guard.

some men did obtain and drink it. However, the great majority of the troops lived up to the order. They played the game honestly and were the better for it, morally and physically.

With over 18,500 men of all classes in camp, one would naturally expect considerable rowdiness, fighting, and drunkenness. This, however, was not the case; a drunken soldier was infrequent. Also the number of offenders against order, brought to trial, were few.

It is another vulgar error that soldiers, when not fighting, are indulging in sexual intercourse. This I do not believe to be so. At least it is not always so. It was not so with the New York troops, perhaps had there been fighting there might have been more venery. The monthly sick rate from venereal diseases varied from less than one half to one and one half a thousand. The total number of venereal prophylactic treatments given during the months of August, September, October, and November, 1916, was only 812. This is an average of 203 per month or eleven prophylactic treatments a month for one thousand men. I am well aware that statistics of disease are never exact and I do not believe that all of the cases of venereal disease appeared on the record, nor that all of the men reported for prophylactic treatment after sexual intercourse. However, this is the only way that I know, of estimating the amount of sexual intercourse. Certainly these figures are very small.

There are a number of reasons that may be given to account for this: First, the small consumption of alcohol, and that limited to a comparatively few. It is an anciently and well known fact that Bacchus and Venus are closely associated; second, the fact that the men were generally fairly well worked;

third, the dirt of the Mexican ladies there present and their lack of attractiveness, and fourth, the absence of brothels. A kind though mercenary woman brought a company of females and established a retreat in the town of Mission, Texas, where a part of the New York troops were encamped. An increase in the number of cases of gonorrhea led to the discovery of this house. An examination was made of the inmates, and a guard was stationed there to prevent soldiers from entering. Thus was another infant industry discouraged and the ladies soon left town. Another reason was thus expressed by a medical friend. He said that it was due to the fact that there was no lead in the country, and a pencil without lead is of no use. Certainly to men just from the North, a temperature of 115° F. or 120° F. does not promote sexual vigor. At Brownsville, which is some sixty miles nearer the coast and the stimulating salt air, brothels did a land office business. In this town there is what is known as "the district." Here one may see men in line waiting their turn to enter. At intervals one of the females of the house, having relieved or exhausted her patron, calls, "Next," and the line moves up one. Sometimes an enterprising beauty elects to conduct her business alone. She may have a house of but one room. In such a case she will sit by the window arrayed in her finery and will without price bestow smiles on all male passersby. Should a customer enter she draws the windowshade, which is an indication that at the moment she is engaged in the more private maneuvers of her calling. The raising of the windowshade is an indication that her services are again for sale.

There were very few cases of typhoid fever. These occurred in men who had not received the



LIEUTENANT-COLONEL JUNIUS F. LYNCH,  
Surgeon-General Virginia National Guard.

typhoid vaccine. Some men did intentionally dodge and escape the administration of this treatment. Theoretically it should be possible to prevent typhoid fever without vaccination. The difficulties of putting such theory into effect make this impos-

sible. It is not too much to say that antityphoid vaccination, which it has been shown can be absolutely relied on to prevent typhoid fever, is a prerequisite to military success.

Possibly the occurrence most interesting in a med-



MAJOR E. S. MOULTON  
Surgeon-General Connecticut National Guard

ical way was the epidemic of paratyphoid fever. During the month of August there were recognized nineteen cases of paratyphoid in the division. It was first recognized in the Fourteenth Infantry, in camp at the town of Mission, Texas. In September there were 104 cases, in October thirty-two, and in November 4. It was found that a few cases of this disease had existed in the town of Mission before the advent of the troops. Clinically the disease in individual cases cannot be distinguished from typhoid fever, although during an epidemic a man can guess that all fevers are paratyphoid and generally be right. The pathology is the same as that of typhoid. After death ulcerations and perforations of the intestines are found which to the eye are not different from those in typhoid fever. The diagnosis is made by cultures from the blood or feces, preferably from the blood. Two forms of the paratyphoid bacillus have been found, *Bacillus paratyphosus A*, which is acidumfaciens, and *Bacillus paratyphosus B*, which is alkalifaciens.

Preventive measures consisted 1, in removing all cases and carriers to the hospital, 2, in isolating all cases of rise of temperature, 3, disinfection of clothing, tentage, and equipment, 4, removal of all troops from the town of Mission, and, 5, antiparatyphoid vaccination.

The exact mode of the transmission of the disease has not, so far as the writer knows, been definitely ascertained. It seems reasonable to believe that it is transmitted in the same manner as is typhoid fever; and that therefore transmission by contact is the most common method. It is to be noted that this epidemic was quickly checked.

Perhaps the most curious thing medically was the occurrence of a few cases of larvæ migrans. This minute larva, from a fly whose name I have seen but will not venture to spell, burrows in the skin, producing a narrow raised red serpiginous ridge. All those seen by the writer were in the lower extremities. The lesions seen were from three inches to a foot or more in length and very tortuous.

During July and August there was much diarrhea. Whether this was due to water, climate, bad cooking, or flies, or to all of them combined, is a matter on which there is a difference of opinion. These were the only diseases that assumed importance because of numbers.

Drinking water was obtained from the towns of Pharr, McAllen, and Mission. In the towns of Pharr and Mission it was pumped from the irrigation canals, which drew it from the Rio Grande.

The water from the town of McAllen was from three artesian wells. These wells passed through the alluvial soil to a depth of about sixty feet, where a layer of salt water was found. Continuing, the boring passed through a layer of clay to a depth of about ninety feet from the surface. Here a layer of fresh water was found. Curiously enough, analysis of the water from the three towns was qualitatively the same, though varying in quantity. All contained an excess of sulphates, chlorides, nitrates, nitrites, and ammonia. All also contained the *Bacillus coli communior*.

This water was not pleasant to taste, though after a time most of the men became accustomed to it. Disinfection by the hypochlorite of lime method was



LIEUTENANT-COLONEL FRANK P. WILLIAMS.  
Surgeon-General Massachusetts National Guard.

enforced. In addition to this some organizations filtered the water, some boiled it, and some did all three.

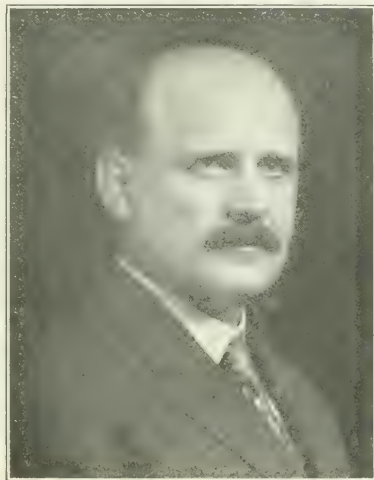
It is not believed that the drinking water played any part in the development of the epidemic of para-

typhoid. It may, however, by reason of its chemical composition, have had some influence in causing the diarrhea which prevailed during the early part of the service.

It is generally the practice to care for latrines by burning them out daily with straw and oil. The object of this is to prevent the breeding of flies. This method accomplishes its purpose in two ways: by destroying any fly larvæ that may be on the surface of the contents of the pit, and, most important, by blackening and so darkening the pit. Flies will not enter a dark hole. It is this that deters them from entering the pit and laying eggs there. At this encampment an opportunity was afforded on a large scale to use the method devised by Major Walter Montgomery, Medical Corps, New York National Guard. Having observed that flies will not enter a dark place, Major Montgomery, some three years ago, conceived the idea of treating latrine pits by spraying with a mixture of lamp black and kerosene oil. This more completely darkens the pit than does the most efficient burning. It was found that even where the seat boxes of the latrines were imperfect or where the covers had been left open, if the pit and inside of the box had been completely blackened flies would not enter and lay eggs. In addition, this method has the advantage that the kerosene prevents fecal odor. It has the further advantage in large camps of being less expensive both in oil and labor. This method of treating latrines is a distinct advance in camp sanitation.

Minor injuries were of course frequent, but probably not more so than in manual occupations of civil life. There were one or two shooting affrays or

seem sudden action. The following is an example: A Mexican gentleman returned home one night somewhat earlier than usual. Where he had been is not known, but it is known that he returned and entered a house. It is also known that it was a dark



LIEUTENANT COLONEL GILBERT E. SEAMAN.  
Surgeon-General Wisconsin National Guard.

night. It is moreover a known fact that the Mexican ladies are of a dark complexion. Owing doubtless to this uniform darkness the gentleman mistook another man's wife for his own. It must have been a very dark night, because the lady evidently thought that the gentleman was her husband. The history of the case here becomes somewhat hazy. The husband, however, shortly entered, and immediately and without other argument, divided the intestinal tract of the first gentleman in several places. There were some who held that in view of all the circumstances, the darkness of the night, etc., the action of the husband was precipitate and inconsiderate. Of this I venture no opinion, not being married. However, I do know that despite the aid of surgery the man died. Intestinal wounds, I may add, were uniformly fatal.

In closing this wandering talk let me urge the younger men in the medical profession to immediately engage in the study of military medicine. It offers no financial reward unless indeed you join the army. It will, however, enable you to exercise and strengthen your patriotism. It is said that medicine is an exacting profession and that a doctor has no time for other things. This is also true of every occupation. A doctor in serving his country gives up no more than any one else. At the present time if a man is to learn to do anything in the medicomilitary arts he must join either the army or the National Guard. There is no other practical way. Circumstances beyond the control of most will prevent them from joining the army. All others should join the National Guard. If you like the military game, can take buffet and reward with equal grace,



LIEUTENANT COLONEL JACOB FRANK.  
Surgeon-General Illinois National Guard.

accidents among the men, and the camp hospital received one or two from the Mexican population. The Mexicans seen by the writer were most polite, courteous, and gentle people. In one or two cases there seemed to be a tendency to what to us might



you will enjoy it. If you do not and cannot, it is the more reason why you should join and learn to do so. But do not join with the idea that the National Guard is for display and parade. That time has gone, never to return. If you join the National Guard you will have to work and you will have to make sacrifices. One who will not do this for his friends, his family, and his country is not a man. He is a parasite. It will not be possible for all to obtain commissions. Those of you who cannot should not hold it beneath your dignity to enlist. By so doing you will acquire what is the most essential thing in an army, in a soldier, and in a man, namely, discipline. Discipline is a habit, a state of mind. It is evidenced by unquestioned, immediate, and exact obedience to orders. It can be acquired only by long practice and is as essential in the medical department as in any other part of the army.

The man who having never had military training says that in case of war he would be willing to go but who does not join the National Guard, which is the only present way of preparing himself to be of service, is not now a patriot. He may be a patriot when war comes, but even then he will be a very unserviceable patriot. It is as though, knowing nothing of the violin, he had said that if a certain great soloist was sick he would take his place.

The present time requires every man to be prepared or to have at least made an attempt to be. For it is probable that none are perfectly prepared. If you have made no such attempt it is regrettable, but you cannot now begin earlier. Therefore, start now.

In Texas the writer served with and observed one of the richest men of the country. This man worked as all the rest and worked well. He gave up the luxury that his millions afforded and was willing to risk his life for his country. Yet his patriotism was no more than that of the man who left a job at two dollars a day. Each risked all that he possessed and counted it a privilege so to do. Not only this, but each had previously given of his time to prepare himself to serve his country. They were and are true Americans. Are you less?

1251 PACIFIC STREET.

**Urethral Irrigation.**—Frank S. Kidd (*British Medical Journal*, January 20, 1917) describes simple methods for irrigation of the anterior or posterior urethra by means of a fountain syringe, and emphasizes the desirability of limiting oneself to the use of a few kinds of irrigating fluid only. For all acute cases, and most chronic ones, solutions of potassium permanganate of one in 4,000 to one in 1,000 are unequalled. In the late stages of urethritis zinc permanganate in one to 8,000 to one in 2,000 is the best astringent. A few chronic cases will require silver nitrate in one to 5,000 to one in 1,000, and in cases with secondary infection a one to 2,000 solution of mercury oxycyanide is the most satisfactory. The author also warns against the use of medicated bougies and preparations of colloidal silver or organic silver compounds, as these seem to tend to the formation of troublesome soft strictures.

## REPORT OF ONE YEAR'S WORK IN TUBERCULOSIS.

By JEFFERSON D. GIBSON, M. D.,  
Denver, Colo.,

The method of treatment which I have found most satisfactory in pulmonary tuberculosis consists of raying the lungs, usually three times a week, the strength of ray being usually two milliamperes passing through the tube, a distance of twelve to fifteen



FIG. 1.—Case I, H. H. A.

inches from patient, and the time usually ten minutes. On alternate days with x ray, static electricity, usually the "brush" discharge, is used for its metabolic effect as an adjuvant to the x ray; also inhalations of ozone, an ozonized oil nebula, or some ozone preparation is used daily. This added to the regular dietetic, hygienic, climatic, rest, forced feeding, and medicinal care usually carried out in these cases, comprises the methods of treatment I employ.

I wish to point out, and I believe I shall be able to demonstrate satisfactorily, that the x ray pro-

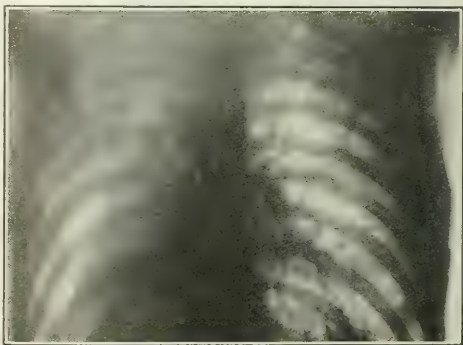


FIG. 2.—Case II, Mrs. O. J. S.

duces a different kind of healing in pulmonary tuberculosis from that effected by any other agent. Patients treated in this way live much longer than when treated by other means, and do not relapse so easily and die from continued exacerbations. In other words, the ordinary hope and expectation in

pulmonary tuberculosis is that encapsulation may occur, and when encapsulation and the following fibrosis takes place, the cure is considered complete. Encapsulated tubercles contain live bacilli; hence

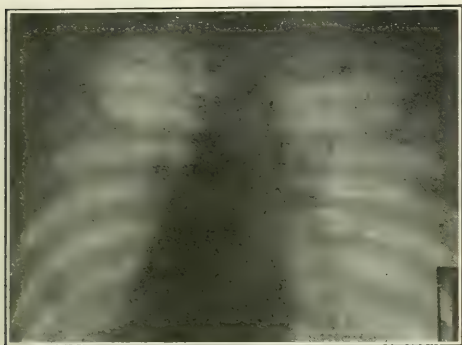


FIG. 3.—Case III, Mr. J. A. L.

propagation continues and the patient is not out of danger. The lung is not clear; large fibrosed areas and forming scars contain these encapsulated tubercles in which there is no air nor respiratory tissue left.

I hope to demonstrate that x ray heals the lungs, not by encapsulation, but by elimination. X ray treatment, properly and systematically applied, eliminates the tubercles, and clears the lung tissues of the tuberculous infiltrate; air is obtained and respira-

I have in previous papers called attention to the elimination or decrease of expectorations following this treatment temporarily. At first the expectoration is yellow, then after two or three months this heavy yellow sputum changes to white, and as the case progresses to favorable termination, gradually disappears. I have never fully appreciated until recently that much of the old so called fibroid tissue could be resolved and eliminated by means of the x ray, and the lung restored to almost normal condition. I believe

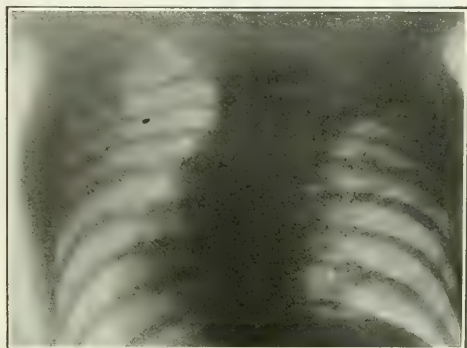


FIG. 5.—Case V, Miss J. C. J.

I am not now laying enough stress upon the disappearance of fibroid tissue in the lung, and the effect of this disappearance on the future welfare of the patient. I believe the future welfare of the patient will largely be predicated on the rapidity and completeness with which the fibroid tissue can be removed under the effect of the x rays.

The ideal method is to resolve and eliminate all fibroid tissue; but like all ideals, this is difficult to realize, as any scar which is firmly and positively

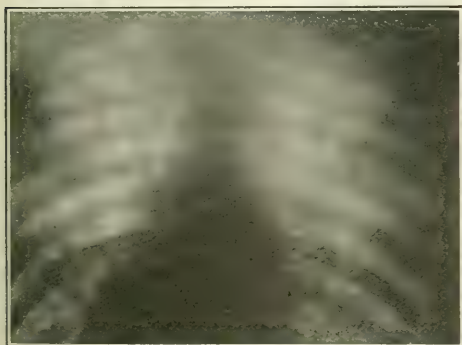


FIG. 4.—Case IV, Mr. R. C. C.

tory tissue restored to normal condition, where under previous methods of treatment encapsulated tubercles, infiltration, and consolidation took place. In other words, with x ray abnormal consolidated and thickened tissues are cleared up, and a normal, healthy condition is reestablished, which no other treatment accomplishes in pulmonary tuberculosis.

These conclusions have been forced upon me during the last few years by observations and results which have been more pronounced during the last year, and I wish to show certain significant photographic reproductions that will bear witness to the correctness of my contentions.

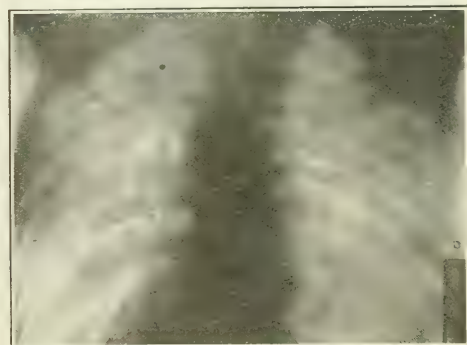


FIG. 6.—Case VI, Mr. J. W. G.

healed and becomes organized tissue, will not be affected by x ray. As long as there is any inflammatory condition, however, and the fibroid scar is not thoroughly organized, the x ray will set up an irritation and will resolve and eliminate it. Another difficulty is that these patients, long before the ideal

condition is reached, feel and look and actually are so well that it is difficult, in the vast majority of cases, to keep them from plunging into the great world of business before they are ready for it. In this stage they have too much confidence in themselves to worry very long with experiments for scientific purposes only.

During the year 130 patients have been treated in my office by my method, of whom ninety-three per cent. are now living. Of these, 128 have an excel-

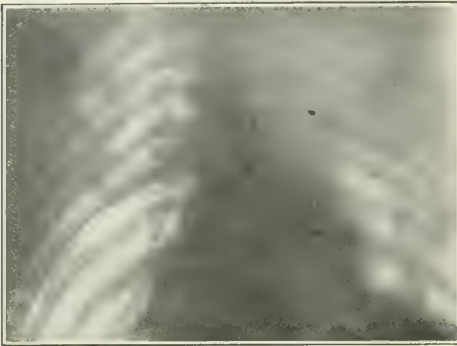


FIG. 2. Case VII, Mr. D. P.

lent chance of recovery and a long life of usefulness.

The first ten photographs reproduced in this article show conditions in cases which ended fatally.

Fig. 1 shows a very advanced second stage condition of the lung, ready for the beginning of development of cavities in the upper right lung. The skia-

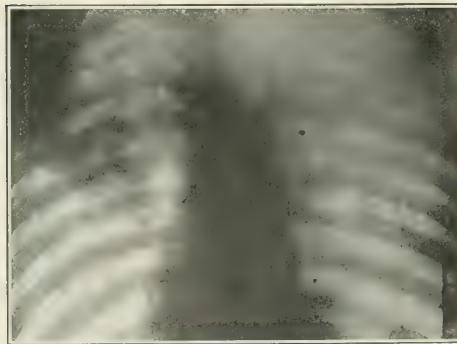


FIG. 3. Case VIII, Mr. W. M. D.

gram shows no cavity. This case should have been saved as far as the lung was concerned, but the patient had a seriously ulcerated larynx, and the pain on deglutition was severe. He had what I am constrained to call a tuberculous condition of the liver and pancreas, not of the bowels. He died from exhaustion following grippe and exacerbation of diarrhea. Notice the wide mediastinal area of thickening and filtration, showing great pressure; I find this is the case in most of the severe laryngeal conditions.

The third stage case shown in Fig. 2 was very obstinate. While the lung *per se* ought to have been relieved, the alimentary condition was unusually obstinate. This is another case in which the infection in the abdomen was of the pancreas and liver, instead of the intestines or glands. The pa-



FIG. 4. Case IX, Miss M. F.

tient became restless and discouraged, ceased treatment at the end of the second month, and died some months later.

In the next case (Fig. 3) the second stage condition was complicated with syphilis. The patient became insane and died of cerebral syphilis.

Fig. 4 was a rather peculiar case. Much of the lung was not seriously involved, but a cavity of large size at the base of the left lung near the heart can be seen. The case progressed very unsatisfactorily, not at all proportionately to the area of lung involved, and the patient died suddenly at the end of the third month from pulmonary embolism.

An acute third stage case in a girl twenty-one years old is shown in Fig. 5. The case progressed



FIG. 5. Case X, Miss M. M. G.

satisfactorily for two months and everything seemed favorable. Through careless exposure pneumonia developed and she died forty-eight hours later.

The acute septic second stage patient (Fig. 6) lived three weeks after reaching the city, and died from acute Bright's disease.



The case illustrated in Fig. 7 should have been saved, but the patient had a bad larynx and finally succumbed from exhaustion following ulcerated epiglottis and diarrhea. Note the wide mediastinal space and compare it with Fig. 1, also a case of laryngeal condition.



FIG. 11.—Case XI, normal lung.

Fig. 8 shows a far advanced case complicated with syphilis. The patient died from exhaustion.

A case with acute miliary tuberculosis, chills, night sweats, temperature  $104^{\circ}$  F., with rapid exhaustion, is shown in Fig. 9. The condition was arrested two different times, and I sent the patient home to rest for three months. She died from exhaustion before her return. She was a contortionist, as will be seen by the plate. Note the cavity at the base of the left lung near the heart. I find this is a serious and unusual location for cavities, yet I had two such cases in this series of failures.

Two other patients died, of whom I have no

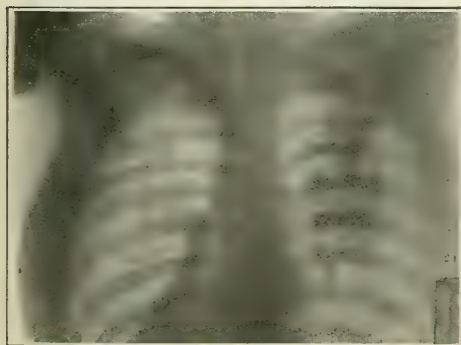


FIG. 12.—Case XII, Miss M.

plates to show their condition. One died of abscess of the kidneys and acute nephritis; the other from injuries sustained in a railroad wreck. This is the total number of cases lost this year—twelve—from all causes.

I wish to call especial attention to the two cases

with cavities near the heart. In my experience I have seen only three, and they have all been exceed-

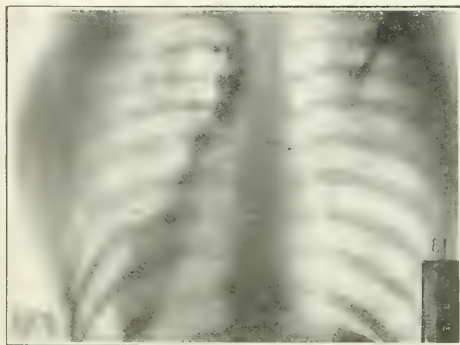


FIG. 13.—Case XIII, Miss M., dismissed.

ingly serious cases. Out of the twelve failures there were two syphilitics; two more I believe were af-

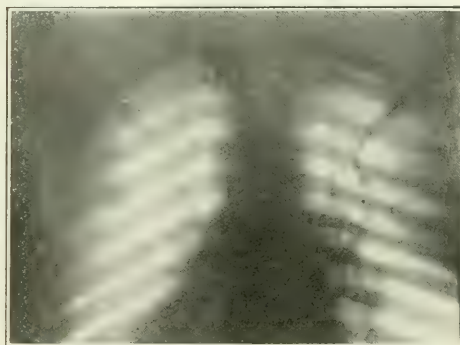


FIG. 14.—Case XIII, Mr. W. B.

ected to some extent by syphilis, but it could not be demonstrated.

The next seven illustrations show a few of the



FIG. 15.—Case XIII, Mr. W. B., dismissed.

successes among the 129 patients now living, either recovered or on the road to recovery. I show the

skiagram of the patient at the commencement and at the end of treatment.

Fig. 11 is a plate of the normal lung.

Fig. 12 shows a prebacillary stage; lung at commencement of treatment showing enlarged bronchial glands and slight shadows in the hilus of the lung. Fig. 13 shows same case when dismissed. The patient was at work, tired feeling all gone, full weight, and apparently well. She returned to work at the

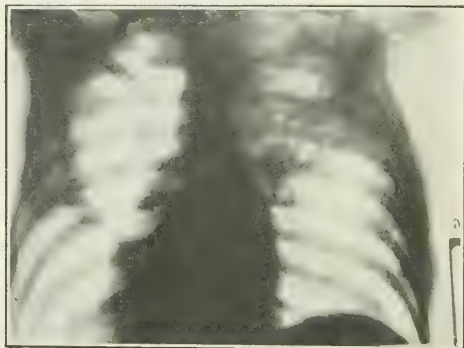


FIG. 16.—Case XIV, Mrs. I.

end of the first month's treatment, and continued to work during the term of treatment of five months.

Fig. 14 is a second stage case; thickened pleura and infiltration of lungs shown in skiagram at commencement of treatment. The case progressed well, and at the end of five months we find this condition as shown in Fig. 15. The patient is apparently well.

Fig. 16 shows a case at beginning of treatment, a rapid and acute condition. The condition developed

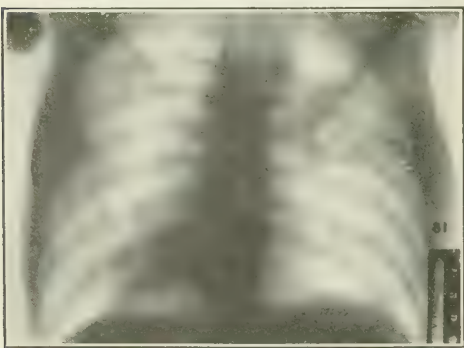


FIG. 17.—Case XIV, Mrs. I, at second course of treatment.

after childbirth. The woman when brought to me was much exhausted, weighing 81¼ pounds, pulse 130, temperature 104° F., chills every day, and night sweats. Note consolidation of the right apex and upper lobe of the right lung; also the heavy infiltrate rapidly spreading through the base of right lung, cavity with fluid shown in right apex. The infection was spreading rapidly in the left lung. After five months' treatment the base of the right lung cleared

up; tubercles disappeared; two rib spaces more of lung were in service; left lung looked almost well.

Fig. 17 shows a picture of patient while taking her second course of treatment. Notice the vast difference in the appearance of the last skiagram and the first. The general condition of the patient had improved in every way. Her weight had increased from 81¼ pounds to 108 pounds. She is almost without cough and expectoration, and has been doing her housework for several months.

The results as demonstrated in these last three cases have led me to conclude that when treated with patience and experience, we can eliminate the last tubercle from the lungs and almost all of the fibroid tissue in the great majority of pulmonary tuberculous cases.

#### A METHOD OF OBTAINING DUPLICATE RECONSTRUCTIONS FROM THE ONE SERIES OF WAX PLATES.

BY FREDERICK D. WEIDMAN, M. D.,  
Philadelphia.

Ordinarily one model is sufficient to satisfy the requirements of a problem, but there are times when a duplicate may be desirable. The writer's task was to supply one to each of two laboratories in which a research was being jointly conducted. Others may find duplicates of commercial use. Finally, as the duplicate is to be of plaster of Paris it will be seen to be more durable than a wax one in tropical countries or in case of fires which sometimes visit our museums. For use in tropical countries it might be advantage-



FIG. 18.—A method of obtaining duplicate reconstructions from the one series of wax plates. Original left, duplicate right.

ous to make the duplicate and not the original as a matter of routine.

In making reconstructions the outlines of the magnified serial microscopic sections are traced upon successive wax plates, later cut out from them

(positives), then carefully superimposed in numerical order, thus building up an enlarged reproduction in wax of the original. That part of the wax plate remaining after the essential part has been removed is ordinarily discarded and melted into new wax plates, but when the duplicate is desired it is this part that is saved and used. We may call this the negative. It will contain a hole, showing the outline of the original, and it is proposed to fill this in with plaster of Paris and thus produce a duplicate.

To this end the negatives are also kept in numerical order and superimposed. The plaster of Paris will be placed in the resultant cavity at a stage depending on the complexity of the subject. If simple, such as a rounded body, the whole series may be built up at once, the various plates held together by transfixing with pins or sealing the edges with hot iron, and the plaster poured in through a hole in the last plate. This would be a very simple case. Oftener the subject is complicated, as with the writer's material, a fluke with tortuous ceca, between which the testicles and female reproductive organs lay, the former branched and the latter coiled. These structures will appear in the superimposed negatives as diverticulae, passing in all directions which, containing air, will not permit the entrance of the plaster unless they extend obliquely or directly downward.

This difficulty is met by pouring the plaster in installments, the worker piling up the plates until he finds that he is about to close over the vault of some space, when he will pour in sufficient plaster to fill it flush with the level of the last plate. The building up process with wax plates then continues until another vault is about to be covered, when another portion of plaster is poured, and so on until the whole has been completed. The worker is on the alert during all this time for spaces into which the plaster will not run; not only do vaults fall into this category, but also *winding* channels passing from below upward. Installments must be continually made to these.

In practice the ordinary plaster will set too quickly during this slow upbuilding, and would tend to separate later between the different strata. The addition of gelatin, two to four per cent., to the water retards the setting and allows the different strata to commingle. A 2.5 per cent. solution is the most useful in winter because stronger ones solidify at room temperature. The proportion of plaster and water also influences the rate of setting. The following recipes may be used:

- No. 1. 100 cc. gelatin solution (2.5 per cent.).  
15 rounded teaspoonsful of plaster.  
Can be poured for four hours.
- No. 2. 100 cc. gelatin solution (2.5 per cent.).  
10 rounded teaspoonsful of plaster.  
Can be poured for eight hours.

Both are firmly set by the next morning.

The addition of cotton fibres reinforces the model, is particularly useful in more or less delicate branches, and accomplished practically by soaking pledgets of absorbent cotton in the slow set plaster and packing loosely into the pockets instead of pouring the plaster.

After the negative has been thus filled it is set aside until its contents have set. A portion of the

plaster may be kept outside as a control or a needle run into the negative. After it has set it is then placed in a basin in a paraffin oven or hot air sterilizer at a temperature sufficient to melt the wax encasement. When the wax has run off the contained plaster model will reveal a duplicate positive, whose exterior must be smoothed and finished as in the case of the original. Where it is known that the model will have branches or constrictions which might break under the weight of the specimen during the melting process, provision must be made to *suspend* the mass over the basin. This is easily accomplished by embedding string in the plaster during the building up process.

Two differences will always exist between the original and duplicate. First, more care will be required in finishing the duplicate because the plaster cannot be worked as easily as the wax. Second, the duplicate will be slightly larger than the original, easily explained and to be expected because it is made of material put into a space from which the original has been taken. In other respects they will be exact duplicates.

The minor differences in form of the two models shown in the illustration result because the nature of the case did not necessitate perfect alignment of the plates. Where necessary this could be done just as well with negatives as has always been done with positives.

As far as I am aware, this method is original. Perhaps it is recorded somewhere, I have not searched the literature, but it is new to a number of embryologists of whom I have inquired, and if not original is certainly not generally known.

242 NORTH SIXTY-FIRST STREET.

# RESTORATION OF SIGHT IN A CASE OF HYPERMATURE CATARACT OF TWENTY YEARS' STANDING COMPLICATED BY ACUTE GLAUCOMA.

*Cutting the Capsule in Preliminary Capsulotomy, a  
Modification of Homer Smith's Way of  
Incising the Capsule.*

BY MAX TALMEY, M. D.,

New York,

Surgeon Harlem Eye, Ear, and Throat Infirmary.

About ten years ago Dr. R. T., former professor of Barnard and Adelphi Colleges, who had had poor vision for years, called at my office to have his right cataractous eye examined. He related that the eye had been blind for the last nine to ten years, due to cataract, and that several prominent ophthalmologists had advised against an operation, one of them considering it difficult and dangerous and the result, even after successful removal of the cataract, hardly worth the trouble. The patient remembered positively that the cataract had been pronounced as "congenital" by at least one of the ophthalmic surgeons. He did not recall what other reasons had been given for advising against an operation.

A cursory examination of the left eye was made first. The pupil reacted well. Ophthalmoscopically a red reflex from the fundus and some of its de-



tails were seen. A clear view of the background of the eye, however, could not be obtained owing to pronounced opacities of the lens. The latter sufficiently explained the patient's very poor vision. The right eye was examined with more attention. The pupillary area was filled out by a gray mass somewhat yellowish centrally and without striations. Reaction of the pupil was very prompt. Projection directly upwards, downwards, temporally, and nasally was good; for intermediary positions it was not determined. Perception of light or visual power consisted in seeing the light of an ordinary candle and discerning its movements at a distance of eighteen feet. Colors, too, were distinguished correctly.

The patient was therefore afflicted with an over-ripe cataract of the right eye in which the fundus presented normal conditions, and with advanced lenticular opacities of the left eye. The anamnesis, to be given later, did not support the assumption that we had to deal with congenital cataract. Removal of the cataract of the right eye was advised for several reasons. The patient had little to lose and much to gain from the operation. The prospect of recovering useful vision was good, all fundus tests having given favorable results. Finally it was quite probable that the patient's defective vision would become further impaired, since in the left eye, too, there were advanced opacities of the lens. The patient was pleased with the statement and the good prospect held out to him and reserved decision upon an operation for some future time.

For years afterwards, though I met the professor once in a while socially, his eye trouble was not touched upon in our conversations. In April, 1912, about six years after the above examination, a member of his immediate family, then under my treatment for an eye affection, informed me that the professor had not the courage to risk the operation recommended to him because of the widely varying opinions of the physicians whom he had consulted about his case.

Again the professor's affliction did not come to my notice for three years, when on July 7, 1915, I received an urgent call to come to see him. Arrived at his home, I found him in bed tormented by excruciating pain in his right eye and violent headache. The last two days he had been sick with grippe, for which he had received treatment from his family physician. When the eye symptoms set in I was called. I found the patient slightly feverish, temperature being 100° F. in the mouth. The pulse was 100. The right eye showed all the symptoms of a severe attack of acute glaucoma. A speedy operation was urged to relieve the patient from his tortures and to save the optic nerve from destruction. The patient consented to the operation. The necessary preparations for it required a delay of twenty-four hours. Meanwhile aspirin in medium doses and instillations of a one and one half per cent. solution of pilocarpine every four hours were ordered. On the following day a broad iridectomy upwards was made under local anesthesia through cocaine and adrenalin instillations. The pillars of the coloboma were carefully replaced. There was considerable bleeding in the anterior chamber in spite of the adrenalin. Some of the

blood was pushed out of the chamber by gently stroking the cornea upwards, but altogether the attempts to remove the blood gathered in the anterior chamber were not very effective, fresh bleeding filling it up again. The attempts were therefore discontinued and a moist bandage applied to the eye.

The immediate effect of the operation was excellent. At the change of the dressing twenty-four hours later the irritation of the eye was found greatly reduced and the patient cheerful and free from pain. The anterior chamber contained a good deal of blood. The latter appeared hardly diminished after a week, but the irritation of the eye had entirely passed away by this time and therefore the patient was dismissed for the time being. He was instructed to continue pilocarpine instillations for a few days and the moist dressing at night and to call at the office in about a week, chiefly for an examination of the left eye, the sight of which had become so impaired in the last few years that the professor was very much handicapped in his literary studies and his teaching, experiencing great difficulty in reading and even being hampered in walking on the street.

On July 21st, nearly two weeks after the operation, the professor called. The operated eye was not irritated in the least, the anterior chamber almost entirely free from blood, and the intraocular tension normal. The pupil was central and enlarged by a regular iris coloboma upwards which presented to view a peripheral part of the cataractous lens invisible before the iridectomy. Perception of light was good. Projection, too, appeared to be satisfactory, but it was not gone into with any detail.

Vision of the left eye was 20/70 for the distance. Nearly the patient was hardly able to read ordinary print (Jäger No. 5-7); only with difficulty he made out some words and short sentences. A remarkable point in his statement was that written matter caused him less trouble than printed script. The ophthalmoscope showed the cause of this greatly reduced acuity of vision to be advanced turbidity of the lens. Its lower part was densely opaque, while the central part was still somewhat transparent and the upper part quite clear. Details of the fundus could not be seen through the undilated pupil. Dilatation through a mydriatic was not attempted because of the patient's glaucomatous diathesis. The eye was therefore affected with a cataract that was far from maturity, but far advanced. Already nine to ten years previously there were in the eye pronounced lenticular opacities. The cataract was therefore either progressing exceedingly slowly, the opacities representing its beginning, or else had developed in a lens containing stationary, perhaps congenital, opacities which had become progressive from a certain time. The anamnesis will show that in the second case the opacities can have been but very slight in boyhood and adolescence.

The patient was made to understand that further impairment of vision in his only seeing eye was to be expected, perhaps quite soon. He would then be entirely blind till a successful removal of the cataract of that eye. It now appeared, therefore, very expedient to perform a cataract operation on his right eye, where he had nothing to lose, the eye

having been blind for years. Even if this operation had no more favorable effect than enabling him to find his way, this slight gain would be invaluable. It would save him from going through a period of blindness and from total blindness for the rest of his life in case of an unfortunate outcome of the future operation on his left eye. The patient, made courageous through the good result of the recent glaucoma operation and well understanding the expediency of the operation on his right eye, at once resolved to submit to it. Because of the recent occurrence of an inflammatory process in that eye it was decided to defer the removal of its cataract until seven or eight weeks had passed after that inflammatory attack.

Removal of hypermature cataract offers more difficulty than that of mature senile cataract, to a large extent because of greater difficulty of opening the capsule. Incision of the lens capsule after the eye has been opened through an extensive section, i. e., ordinary cystotomy, is an unsatisfactory operative procedure at any rate, for the lens having lost a good deal of its stability through the opening of the eye, recedes before the cystotome. Many ophthalmic surgeons have therefore given up such cystotomy and open the capsule by grasping its anterior plate with an appropriate pair of forceps and tearing it away. Where the capsule is thickened, as in hypermature cataract, the forceps cannot grasp the capsule properly, so that this way of laying bare the lens is not feasible. This is one reason why intracapsular extraction is sometimes used in hypermature cataract. Since in our case the cataract was very hypermature, intracapsular extraction came first into consideration. But intracapsular extraction after the method of Pagenstecher, applicable mainly in hypermature cataract and consisting in lifting the lens out of the eye, as well as after other methods not well applicable in hypermature cataract and consisting in removing the lens by pressure or by pulling, is yet fraught with grave dangers and untoward consequences. Loss of vitreous body is very frequent and later iris prolapse, incarceration of the iris, and displacement and distortion of the pupil occur more often in intracapsular than in extracapsular extraction, owing chiefly to the great difficulty of replacing the iris when the hyaloid membrane is right behind it. In our case very much was at stake and no risks could be taken. Intracapsular extraction was therefore given up. Instead, incision of the capsule before opening the eyeball, i. e., preliminary capsulotomy, was decided upon. When the lens is held firmly in its place there is no difficulty in opening even a thickened capsule. Because of the glaucomatous disposition of the eye it was very advisable to make the interval between the capsulotomy and the cataract extraction as short as possible, very much less than six hours, the usual interval in the Homer Smith operation. About half an hour was considered sufficient for adequate restoration of the intraocular tension, the lowering of which, through piercing the eye with a knife needle, would render the section difficult.

On August 26, 1915, the patient being then sixty-nine years old and the cataract in his right eye dat-

ing back about twenty years, the second momentous operation upon our patient, the extraction of his hypermature cataract, was undertaken according to the plan just outlined. After instilling cocaine and adrenalin the first step consisted in making a cross cut in the capsule with a Homer Smith knife needle after a modification, to be described later, of this surgeon's method of incising the capsule. As soon as the capsule was opened a milky fluid issued from it, rendering the aqueous humor quite turbid. The eye was covered with a moist pad and an intermission of half an hour made before proceeding further. A corneal section was then made with a Graefe knife. It did not offer any more difficulty than a section not preceded very shortly by piercing the eyeball with a knife needle. The lens consisting of little more than its nucleus was now expressed and the iris replaced. The anterior chamber was then washed out, which was deemed advisable because of the irritating quality of the milky fluid in the anterior chamber. During this manipulation, vitreous body appeared. All further handling of the eye was forthwith stopped, though the iris needed to be replaced a little better. A bandage applied to both eyes closed the operation. Recovery from it was smooth and the eye showed no irritation during the healing period. On the ninth day the bandage was left off and the patient directed to wear smoked glasses.

A few weeks later, examination showed that the visual capacity obtained through the cataract extraction enabled the patient to see large objects and to find his way in the room, but not to read even the largest types of the test card at twenty feet distance or the largest print of Jäger's tables nearby. The pupil was narrowed, displaced towards the section in the upper limbus, and filled out by a gray membrane of some density. In the upper part of the pupil there was a small black spot in the gray membrane. Through this opening in the diaphragm the red fundus reflex was visible but very faintly. The extraction of the cataract had therefore accomplished so far some good result. Besides, the possibility was created of further improving the sight of the eye by a subsequent operation. For this end a larger opening was needed in the diaphragm, consisting of capsule membrane and iris. Iridectomy to obtain this opening appeared rather difficult because the iris was adherent to the capsular membrane. Plain iridotomy performed with one cut of De Wecker's scissors offered less difficulty, but the slit produced by such iridotomy does not often gape sufficiently in diaphragms of little elasticity. A triangular iridotomy, however, after De Wecker, i. e., cutting out and removing from the eye of a triangular piece of the diaphragm, bade fair to yield the desired opening.

The eye was given a rest of eight weeks and on October 21st we set about performing the triangular iridotomy. With a keratome the eye was opened in the upper limbus. The instrument was advanced into the anterior chamber until the cut in and near the limbus was about five mm. long; then it was withdrawn until its point was at the place of the black spot in the diaphragm. The keratome was now advanced again through this opening until it made



in the diaphragm a horizontal slit of three to four mm., and then it was withdrawn from the eye. De Wecker's scissors were now introduced, one blade behind the diaphragm, the other between it and the cornea. The blades were brought near the nasal end of the horizontal slit and closed, making in the diaphragm a second cut which reached below its

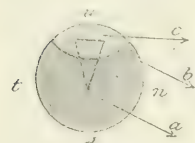


FIG. 1.—Triangular iridotomy; a, iris; b, capsule; c, black spot in diaphragm.

centre and had an almost vertical direction running from upward and nasally to downward and temporally. To obtain a triangular opening it was now necessary to unite through a second vertical cut the temporal end of the horizontal slit with the lower end of the first vertical cut

and to pull out the triangular piece thus formed and grasped before it was fully completed. But owing to bleeding which obscured the field, and to threatening prolapse of vitreous body it was not possible to accomplish the second vertical cut without endangering the eye and attempts were discontinued. The incision in the diaphragm consisted therefore of two branches only, a horizontal one entirely in capsular membrane and a vertical one partly in the latter and mostly in the iris. A moist bandage completed the operation. Recovery from it was smooth and quick.

A few days later the eye presented a black pupil in the shape of a vertical slit of between two and three mm. width. When the eye had recovered sufficiently to permit further examination, the ophthalmoscope showed the red fundus reflex distinctly, but no details of the fundus could be seen.

In the course of time the slitlike pupil became gradually wider. Now, a year after the iridotomy,

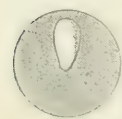


FIG. 2.—Leaf-shaped pupil.

it has approximately the shape of an elongated leaf, the long vertical axis measuring between nine and ten mm. and the widest horizontal part of the leaf measuring about five mm. and being situated more upwards. Capsular shreds have disappeared from view or receded behind the iris. Only nasally close to the upper end of the nasal margin of the oblong pupil some gray mass is still visible. Ophthalmoscopically a good view of the fundus and papilla can be obtained.

Three weeks after the iridotomy, examination of the visual capacity showed a most gratifying result. With the improvement of the shape of the pupil and of the corneal surface curvature in the course of time the acuity of vision gradually increased until it became remarkably good, as may be seen from the following records and notes of examinations repeated at more or less extended intervals:

November 13, 1915—three weeks after the iridotomy: VOD = 2/30 with +12D sph.  $\odot$  +4D cyl. ax. 75° n. At 20 feet distance patient cannot read anything on the test card. He sees, however, large objects quite distinctly and walks about the room freely.

November 20, 1915. ROD = H 10D Ash 3D ax. 75° n V 20/200.<sup>1</sup> Nearby patient reads Jäger No. 10 with +4 D sph. added.

<sup>1</sup>This formula means: refraction of the right eye is equal to 10 diopters of hypermetropia combined with 3 diopters of hyperopic astigmatism axis 75° nasal and the correction of this refraction gives an acuity of vision of 20/200.

November 27, 1915. ROD = H 10D Ash 3D ax. 75° n V 20/70. Nearby Jäger No. 10.

December 4, 1915. ROD = H 8D Ash 4D ax. 75° n V 18/70. Nearby with +14D sph.  $\odot$  +4D cyl. Jäger No. 7 and some words of Jäger No. 6.

December 11, 1915. ROD = H 9D Ash 3D ax. 75° n V 18/70. Nearby with +14 sph.  $\odot$  +3D cyl. Jäger No. 7 and some words of Jäger No. 6.

Since the patient was greatly handicapped in walking on the street the following glasses for the distance were prescribed at this date:

OD: +9 D sph.  $\odot$  +2.50 D cyl. ax. 75° n; OS: +1 D sph. The patient was told that the right glass might have to be changed after a few months.

Examinations of vision were now suspended for a longer time. Until the beginning of February, 1916, the patient called about once a week to be treated for chronic conjunctivitis. He reported that the glasses prescribed enabled him to move about freely on the street, to see everything, and to recognize distinctly everybody he met, but that double vision inconvenienced him a good deal. Nevertheless he would not miss the glasses, as without them he was dependent upon his left eye only, the sight of which hardly enabled him to walk about.

Owing to severe illness I was unable to receive patients for the next two months of February and March. The vision of our patient was therefore not reexamined for over four months. The next examinations gave the following results:

April 15, 1916. ROD = H 7.50 D Ash 2.50 D ax. 60° n V 20/200. Nearby with +13D sph.  $\odot$  +2.50 D cyl. Jäger No. 5.

Two pairs of glasses, for distance and for near work, were prescribed on this date:

I. OD: +7.50 D. sph.  $\odot$  +2.50 D. cyl. ax. 60° n; OS: +1 D sph.

II. OD: +13 D. sph.  $\odot$  +2.50 D. cyl. ax. 60° n; OS: +5 D sph.

April 29, 1916. Patient reads with his working glasses Jäger No. 5 quite easily and some words of No. 4 while the left eye is covered. Nevertheless he reports that at home he has to use mostly his left eye in his studies and instructions, while for the distance he uses his right eye. The capacity of the latter for reading varies greatly. Sometimes he can read with it a whole page, at other times he can hardly make out a line with it. The eye also gets tired quickly. He reads with it written matter more easily than print.

May 11, 1916. Patient reads with difficulty Jäger No. 7 and barely a few words of No. 6. Shortly before the examination he had strained his eyes a good deal at home with literary work.

August 26, 1916. Patient reads Jäger No. 5 and even some words of No. 4. He reports that double vision, which formerly inconvenienced him quite often, is now rare. Vision of the right eye for reading still varies very much. Sometimes he can read fluently, at other times only with difficulty. Yet he now also uses his right eye almost entirely for reading. Writing gives him less difficulty than print.

November 11, 1916. With the left eye alone patient is unable to read even Jäger No. 14. Only after shutting off the light from above in a certain manner he makes out some words of Jäger No. 10.

ROD = 7.50 D Ash 2.50 D ax. 75° — 80° n (!) V 20/70. With +13 D sph.  $\odot$  +2.50 cyl. ax. 75° n patient reads Jäger No. 4 quite easily and even some words of No. 3. He reports that he has no more double vision on the street and is able to read with his right eye books and newspapers for a long time continuously.

Although the axis of the astigmatism at the last examination showed distinctly a difference of direction of 15°, being 75° n instead of 60° n, a change of glasses prescribed on April 15th was



not made yet, but was deferred for several more months. About a year after the last operative step we have therefore the extremely gratifying result that the patient, whose hitherto only seeing eye has meanwhile become almost useless, has now excellent sight restored in his right eye that has been blind and useless for nearly twenty years.

What is most remarkable in our case is that competent ophthalmologists had considered extraction of the cataract useless and even dangerous and had advised leaving the eye alone. If the patient remembers aright, some of those physicians pronounced the cataract congenital and gave this as a reason for their reluctance to operate on the eye. Congenital cataract in aged patients may indeed offer great difficulties to operation. Besides, eyes with congenital cataract may be affected with amblyopia, rendering the result even of a successful extraction hardly worth while. But the assumption that the cataract was congenital is untenable, as shown by the history of his eyes from earliest youth written by the patient himself:

New York, November, 1916. I am now in my seventy-first year. As far as I can remember my eyes never caused me any trouble in my boyhood nor later, when I was student at the university. I never had any cause to complain about my eyes, although I frequently had to strain them very much both in daytime and at night. Also as soldier in the War of 1870 and later at target practice I did not notice any impairment of my vision, nor in later years when as teacher I had to tax my eyes to the utmost with reading and correcting pupils' compositions.

I was about fifty-four years old when I discovered, all by chance, that my right eye was entirely blind. I consulted an eye specialist for the first time. He established total blindness of the right eye due to cataract and beginning cataract of the left eye. He, as well as several other ophthalmologists who examined me later, deemed operation of the eye inadvisable. Some of those physicians pronounced the cataract congenital. A well known ophthalmic surgeon in this city considered an operation difficult and dangerous and directly rejected operative interference. Even if the operation was successful, he argued, the vision gained would not be worth the trouble. He advised me to wait until the cataract of the left eye was sufficiently ripe for operation.

Dr. Max Talmey, about ten years ago, and Dr. Otto Schirmer, about four years ago, emphatically recommended an operation holding out prospect of a good result. But I declined to be operated on since I was still well able to perform my professional work with the help of my left eye. In the summer of 1913 I consulted a prominent ophthalmologist in Berlin. He, too, was of the opinion that the eye could be operated on successfully, but did not think an operation was necessary as long as the left eye afforded sufficient vision.

Not long afterward the left eye became more and more dim, so that in the winter of 1913-1914 I was barely able to give instruction. Reading grew very difficult. In this way I labored under great hardships till the summer of 1915, when on July 5th my right eye became afflicted with glaucoma.

The above history shows that there was good vision during childhood and adolescence. This excludes congenital opacities of the lenses of any appreciable degree and extent. The cataracts were first observed at the age of fifty-four years, the one in the left eye being then incipient and that of the right eye presumably having commenced at about fifty years of age, since at fifty-four it was already total. This is the age when senile cataract makes its appearance. The cataracts in our case were therefore senile, even though the lenses may have contained slight stationary congenital opacities.

One reason why I recommended extraction of the cataract ten years ago was that the fundus tests gave favorable results. I found projection of light satisfactory, but I had not examined it minutely. Doctor Schirmer, who did this long after me, was kind enough to inform me that he found projection defective in some parts of the field. This finding, however, is not incompatible with mine of six years previously since after long standing of cataract projection may grow imperfect. In spite of his finding, Doctor Schirmer, too, had urged an operation. Perhaps those ophthalmic surgeons who had advised against it did so because they had detected defects of projection. This would be the only plausible explanation for their advice. The final splendid result in our case proves that Doctor Schirmer's advice, which coincided with mine, was the more judicious one, and that defective projection in some areas of the field forms no contraindication against cataract extraction if the other tests are favorable.

The following inferences derivable from our case are deserving of notice. With very slight acuity of vision the test card examination of the refraction is not reliable, differences of almost two diopters may be found in the spherical lens and different degrees of astigmatism at different times, aside from the postoperative change of the astigmatism, which tends to grow less with time. On November 20th and November 27, 1915, the test card examination gave hypermetropia of ten D and hyperopic astigmatism of three D; on December 4th the former was found to be eight D, the latter four D, and on December 11th again nine D and three D respectively. The actual hypermetropia is that obtained on April 15, 1916, namely, 7.50 D, for the same amount was found at four later examinations made after long intervals.

The change of the axis of astigmatism usually met with after cataract extraction does not always tend toward the same direction, but may be irregular. At the first five examinations the direction of the astigmatism was found 75° n. Five months later it was found 60° n, and several subsequent examinations gave the same result. At the last and most reliable examination on November 11, 1916, the direction of the axis of astigmatism was 75°-80° n.

The postoperative acuity of vision when it is very slight may vary a good deal. On November 20, 1915, four weeks after the iridotomy, it was found to be 20/200, in later examinations 18/70-20/70, and on April 15, 1916, again only 20/200.

Likewise the capability to read near by may vary considerably. On April 15, 1916, the patient could read Jäger No. 5, while on the following May 11th he had difficulty in making out No. 7. The patient frequently complained that at his home, too, he could read fairly well at some times, but hardly anything at others.

There may be no congruity between the capability for reading near by and the acuity of vision for the distance. At one time the latter was found to be only 20/200 and Jäger No. 5 was read, at another time no more than Jäger No. 10 could be made out, while distance vision was found to be 20/70.

Finally the following point is remarkable in our case. Reading written matter has always given our

patient less difficulty than reading print. This was the case when he was still dependent upon his defective left eye only as well as when he began to use his right eye for reading. Perhaps this has something to do with the occupation of the professor who is a great authority on, and expert in, stenography, where strokes of the pen and pencil figure a great deal.

It remains now to describe the modification, applied in our case and mentioned above, of Homer Smith's way of incising the capsule in preliminary capsulotomy.

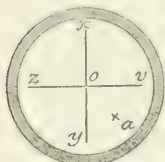


FIG. 3.—Preliminary capsulotomy.

According to this surgeon (1), a vertical cut in the capsule is first made from X to Y across O after the knife needle has entered the anterior chamber at *a* (see Fig. 3). The point of the knife is now brought to Z, near the inner end of the horizontal diameter of the dilated pupil. The knife, held until

now with the edge toward the operator, is rotated so that the edge is toward the capsule. The point is made to penetrate the capsule at Z, and with one sweep a cross cut is made from Z to V across O.

It would appear that the second cut can hardly be accomplished in this way. From Z to O the capsule would be incised, but further from O to V it would not, but would recede before the knife and be merely pushed sideways. For at O the capsule is loose through the preceding cut XY and a loose membrane cannot be cut well. The incision in the capsule would not have the shape of a cross, but the shape shown in Fig. 4. To obtain a cross the second cut ZV is divided in two parts, ZO and VO. Either of the two can be made first. But it is pref-

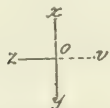


FIG. 4.—Diagram of incision in capsule.

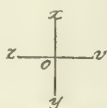


FIG. 5.—Diagram of incision in capsule.

erable to make the half cut VO first for the following reason: To make the half cut ZO the knife must be rotated toward the capsule fully 90° and even more, not only "slightly"; then it must be rotated back again into its initial position, the point carried to V, and the half cut VO made. This implies two rotations, which are difficult. It is therefore better to bring the point after completing the cut ZY to V, incise from V to O, then raise the point somewhat and carry it to Z, rotate now the knife 90° or more, and cut the capsule from Z to O.

51 WEST 126TH STREET.

#### REFERENCE.

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**Relation of Oral Injection to Arthritis.**—Harry A. Goldberg (*Medical Record*, February 3, 1917) reports a case of multiple arthritis diagnosed as tuberculous, rheumatic, and syphilitic by different observers which cleared up rapidly on the drainage of an alveolar abscess and treatment of infected root canals.

## RESEARCH IN EPILEPSY.

By HOWARD A. KNOX, M. D.,  
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(Concluded from page 347.)

### PART III.—THERAPY.

The following observations on the treatment of epilepsy are drawn from the sum total of my personal experience over a period of nine years, finally crystallized by five months intensive research at the New Jersey State Village for Epileptics. I will carefully avoid compiled matter in discussing therapeutic agents and refer to only those which have been used by myself or by those whose work is familiar to me from personal observation.

Before treating epilepsy we must know the disease, and by this I mean its hereditary characteristics and other predisposing factors, its differential diagnosis, exciting or determining causes, mode of onset, the almost endless ramifications of its symptomatology; and we must be able to separate and to properly select cases and adjust the treatment to suit the needs of each. When this is done the treatment will be divided into special and general, the former being more or less symptomatic and directed at seizures, episodes, constipation, migraine, circulatory symptoms, and the like; and the latter dealing with the underlying or basic elements such as bacterial causes, stasis, and sensitization to foods.

We must recognize those predisposed by a study of the personality, heredity, skin reactions to specific antigens, intellectual signs, spasmophilic diathesis, and vague transient alterations of mood that often precede seizures and psychic epilepsy.

We must know the multiform seizure manifestations. (1) The psychoses in epilepsy are varied and interesting; the psychiatrist might describe a given case as one of manicdepressive insanity with epileptiform attacks and the epileptologist might call it epilepsy with a maniclike psychosis. This is not hair splitting, and the differential classification can easily be made by one familiar with the two sciences. The psychotic conditions in epilepsy may stimulate, superficially at least, any known psychosis, but in epilepsy these states are of such short duration and so colored by the other symptoms of epilepsy as to render diagnosis easy. Hypomanic states are extremely common; neurasthenia and psychasthenia and other psychoneuroses that cannot be classified under these two headings are also common. Depressions, formal and otherwise, with a hypochondriac trend are also often observed. Conditions are often seen which resemble acute alcoholism in all its forms and other passing states which resemble the alcoholic psychoses proper, especially delirium tremens and alcoholic hallucinosis. An occupational delirium like that seen in Korsakoff's syndrome, I have seen several times. Cases occasionally occur which resemble the psychic symptoms seen in grandiose and excited paretics, but the physical signs and laboratory findings are negative. Others suffer from mental states, usually temporary, which resemble the involuntional melancholias and senile dementia. I

have, on more than one occasion, confused arteriosclerotic dementia with epilepsy; and it is very possible of course that the two have etiological factors in common, since we know that arterial change and cardiac disease occur with extreme frequency in long standing cases of epilepsy. I have seen transient psychic epilepsy that resembled for a few days or longer every type of dementia præcox that I know about; and the "shut in" and homosexual types of dementia præcox personality are just as often seen in epileptics, and the alcoholism that frequently goes with the homosexual manifestations in dementia præcox occurs more often in epilepsy. It may be said regarding this, however, that in the epileptic the adult sexual adjustment is the rule, and the tendency is toward hypersexuality in many cases. These few remarks then, will convey some idea of the scope of conception necessary to an intelligent comprehension of epilepsy.

In treating the individual case of epilepsy in order to make an accurate prognosis, and to institute effective therapeutic measures the clinician must be in possession of certain historical, physical, mental, and laboratory facts regarding his patient, namely:

**Heredity.**—This should embrace direct and collateral heredity for at least three generations, and the results should be charted by the Mendelian method with descriptive data on the reverse side of the chart. Careful investigation should be made of other cases of epilepsy, insanity, feeble-mindedness, alcoholism, consanguinity, chronic disease, special diathesis, lues, neurological conditions such as Friedreich's ataxia and Huntington's chorea, economic standards, and crime.

**Personal history.**—1. Life history; environment, education, occupation, habits, and health including all illnesses and accidents.

2. Epileptic history; cause to which attributed by relatives and family physician, first symptoms observed, type of seizure or psychic state, conduct following onset, mental deterioration, constipation, migraine, and all new tendencies and alterations of temperament noticed.

**Psychiatric examination.**—Intelligence measurement by some graduated scale as a check to refer to in the future, and examination to bring out any trends, false ideas, or conflicts under which the patient may be laboring. This should include a thorough psychanalysis which will not only furnish important facts, but bring the patient into confidence with his physician.

**Physical examination.**—Including all the usual medical and neurological procedures. The circulatory system should receive special attention in all cases. In young girls the generative organs need special observation, and in all young persons signs of defective function of the glands of internal secretion should be looked for. The gastrointestinal canal is one of the most popular objectives at the present time and probably deserves all the attention it is receiving. Reflex disturbances and chronic foci of infection must always receive attention. Other conditions having spasm as a symptom such as tetany, asthma, and Raynaud's

disease occur with unusual frequency in epilepsy and must receive appropriate treatment. Look for trauma of the head.

**Type of seizure.**—This must be accurately observed and every detail noted; whether psychic factors alone play a part, whether these with other conditions seem to determine the time and frequency of attack, whether a voluntary element is present and in just what ratio it exists as compared with the involuntary causes of the convulsion, whether attacks occur after certain experiences or dietary indiscretion, and whether they occur in series, status, or separate attacks.

*Laboratory tests:*

- (a) Blood culture.
- (b) Stool culture.
- (c) Total and differential blood counts.
- (d) Blood smears for parasites and blood diseases.
- (e) Smears and cultures from decayed teeth.
- (f) Agglutination of specific organisms by patient's serum.
- (g) Skin reaction to lepton.
- (h) Urinalysis including test for indican.
- (i) Abderhalden tests for ferments in relation to glands of internal secretion, sex glands, and nervous tissue.
- (j) Gastric analysis.
- (k) Skiagraphy to determine gastropnoia, enteropnoia, kinks, dilatation, and defective peristalsis; for alveolar abscess; for focal causes in the brain the result of trauma.
- (l) Blood pressure before, during, and after seizures.

When this point is reached other diseases should be ruled out, and all facts having any influence in the production or continuation of the symptoms, should have been elicited. After having treated or considered pertinent medical and surgical conditions, the treatment of the disease resolves itself into two lines of effort, one aimed at the symptoms themselves, and the other at the exciting causes of the symptoms. As the most deplorable symptom is mental deterioration and permanent dementia, and as this varies with the number of seizures and mental accessions, it necessarily follows that the most important achievement is reduction in number or total abolition of these manifestations.

PROCEDURE AND INDICATIONS.

The seizures and episodes should be recorded by the physician during the entire time that the case is under his observation on a daily and monthly percentage basis for statistical check on the treatment used and course of the disease in the case. Intelligence measurement should be made semi-annually.

In the isolated seizure itself when once in progress, the patient should be prevented from injuring himself or suffocating. If there is an aura, amyl-nitrite inhalation will often abort the attack, after which the intestinal tract may be cleared by a saturated solution of magnesium sulphate in two ounce doses and intestinal irrigation with from four to eight quarts of mild castile soap solution. Triple bromides either alone or with chloral hy-



drate in effective doses will lower the irritability of the cortex until more permanent steps can be taken. Chlorotone in three grain doses, t. i. d., over a long period of time will sometimes accomplish the same purpose. Epileptics soon acquire a tolerance for all the usual medicaments, and the dose has to be governed by the effect previously produced. When in series, gastric lavage, in addition to the treatment given above, is often of great benefit. To prevent exhaustion the seizures should be controlled by just sufficient chloroform to prevent their too frequent occurrence. The exhaustion produced in series often gives rise to pulmonary edema and this is a frequent cause of death. It calls for the fearless use of atropine to the therapeutic limit. There may be atony and dilatation of the smooth muscle fibres in the intestines to such an extent that irrigation produces no effect. For such cases, there are three good agents, pituitrin, physostigmine salicylate, and strychnine, all given hypodermically and the latter in large doses. As a prophylactic measure against such conditions the constant daily use of the aloin, belladonna, strychnine, and cascara pill is of service, and epileptics do not manifest a tolerance to it as they do to most medicaments. Hypodermoclysis with normal saline is sometimes useful in exhausted cases, and the intravenous use of sodium bicarbonate occasionally stops a series or status, but its use is in the main disappointing. The physician, or even the relatives of the patient, often recognize the premonitory signs of seizures, and in such cases these can usually be prevented by eliminative and sedative efforts. One will occasionally see a series in which the voluntary element is strong, in such cases apomorphine 1/10 grain works like magic. Croton oil in two minim doses is often valuable for its rapid action in impending attacks. Vapor baths sometimes assist the emunctories, and combined with potassium citrate, magnesium sulphate, and irrigation, form an excellent routine measure. These baths also lessen the irritability of the nervous system. For the episodes of excitement and transient insane states, if the patient's condition will permit, there is nothing so efficient as the continuous bath at 95° F., for from six to forty-eight hours with an ice cap to the head. The body should first be anointed with some oily substance. Bromides and chloral are here of little service, and sometimes produce a dangerous delirium themselves. As the excitements are usually transitory, hyoscine and morphine combined with the bath are usually sufficient. The hot pack will often suffice, and in mild cases the rapid alternation of the hot and cold shower or douche is sometimes efficient. In these excitements the main consideration is the prevention of injury on the part of the patient to himself or others, and these are real dangers, as anyone who has cared for epileptics will testify. Suicidal tendencies and delusional periods of religiosity call for early recognition and close attention afterward. The mental mechanisms here are very similar to those of manic depressive insanity. I have used the dark room and the continuous green light in epileptic excitements with success. Four or more compound cathartic pills are usually

given at the beginning of the latter treatment in the case of adults.

Alcoholism in some cases requires vigorous attention, but nothing short of custody will usually suffice. It has often been noticed that patients with severe pus infections, or who have recently had acute infectious diseases, do not have seizures for a long time afterward. This should furnish food for thought in the treatment of the disease. I have had colectomy and iliosigmoidostomy performed in a few cases, but prefer to reserve opinion as to their efficacy.

Status epilepticus is best treated by enemata containing six to eight quarts of soap solution, gastric lavage, and the control of the seizures with chloroform until elimination is sufficiently under way to prevent further immediate convulsions. Status epilepticus is not the very fatal condition that many believe it to be if treated by the simple methods given above. In a period of four months in the New Jersey State Village, which has a census of approximately seven hundred epileptics, I saw seventy-two different patients in one or more attacks of status, most of them low cases. They were all promptly treated by the above measures, and only one died in or as a result of status, which is a mortality rate of 1.38 per cent. The fatal case had over two hundred and eight light *grand mal* seizures in thirty hours which we did not succeed in controlling.

There is a certain circumscribed group of cases seen in private practice in whom psychanalysis, with removal of conflict, and readjustment produces some results. In these cases it is necessary often to map out a new course of life and to remove every element of friction and irritation possible. Even a new occupation may at times be necessary. Work in the open air with the least chance for mechanical accident is in general a good thing to advise. Some one must be responsible for each epileptic at large, and must give to this sufferer moral support as well as protection.

I believe that the treatment of the preepileptic personality and predisposition will soon become an accepted and accomplished fact. This refers to those with a determining heredity, and it is here that the eugenist can do something for the present generation as well as for posterity. Those having a positive skin reaction to specific antigens should receive attention whether they have ever had spells or not, especially if their heredity is tainted with the epileptic strain.

Reflex disturbances, such as eye strain, adenoids, nasal polyps, undeveloped uterus, etc., must receive the proper correction. I have thought that I observed some beneficial effect from high frequency currents over the spinal cord, head, and thyroid gland in status epilepticus, but it is of course possible that the symptoms subsided in spite of the emanations.

The eradication of infectious foci, especially carious teeth and cystic infected root canals is a matter of so much importance that it should receive routine consideration. Extraction based on skiagraphy is often the best procedure.

Hypopituitarism and hyperthyroidism sometimes

call for attention. A good deal of attention has been given the adrenals, and the "balance" between the secretions of these and other ductless glands. These factors seem to be merely contributory and based on the general inferiority shared by other structures, notably the nervous system. However, the use of parathyroid by mouth often proves beneficial. Dr. Harriet E. Chalmers, at the Massachusetts State Infirmary at Tewksbury, Mass. (reported by her permission and previously unpublished), treated thirty epileptics for one year, 1915 to 1916, with dry parathyroid gland and calcium lactate with some success. Her cases were all low ones in advanced degrees of dementia. Some who had done no work for years improved sufficiently to be able to do useful work about the institution; there were also fewer seizures and they occurred less frequently; they all had attacks of the *grand mal* type. The parathyroid was started at grains two three times a day and increased by two additional grains to the dose every month. The calcium lactate was given in a saturated solution and started on daily doses of one fluid dram. This was increased according to results obtained until many were getting ten drams a day at the end of the year. Some difficulty was experienced in getting these patients to take large doses of calcium lactate. At my instigation Dr. Ina L. Moore, at the New Jersey State Village for Epileptics, has been treating twenty young female epileptics with thyroid extract; they have been getting grains two three times a day for a period of six weeks, so far without any noticeable results.

Feeding experiments on twenty cases indicate that they are most comfortable and have least symptoms when the animal protein in the diet is cut down to the lowest possible point. This does not refer to fish and soft boiled eggs.

Allowing for suggestion and undue enthusiasm on the part of my patients, and myself perhaps, I believe that systemic immunization from the use of the specific antigens contained in leptin (Part II) is the most effective means at hand at the present time for the eradication of the seizures and episodes, and for the prevention of progressive deterioration. My results checked by dispassionate observers, I think, will bear me out in this.

In bringing this work to a close I wish to thank most heartily the superintendent and staff, as well as the board of managers at the New Jersey State Village for Epileptics, for the many kindnesses manifested toward me while conducting my investigations at that Institution.

271 AVENUE C.

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## CHOREA COMPLICATING LABOR.

By KARL B. BRETZFELDER, D. O., M. D.,  
New Haven, Conn.

The severe type of chorea complicating labor is a comparatively rare condition. The mortality of this grade of the disease is high. In a series of 438 cases recently reviewed, which included all grades of the disease, a mortality of 16.5 per cent. was found. It is interesting to mention two of the reported cases because of their similarity in many ways to the case here reported. Ashworth (1) reported a case of labor complicated by active chorea in which the patient died from exhaustion four and one half hours after delivery. The child, which was delivered by forceps, survived. The other case is that reported by Gallion (2), in which active chorea was present during two labors, in both of which the child was stillborn. Between labors no signs or symptoms of chorea were demonstrated.

The history of the case the writer wishes to present is as follows:

CASE.—Gertrude M., white, aged twenty-six, was first seen in labor at the Grace Hospital, New Haven, Conn. On admission her temperature was 98.6° F., pulse 92, respirations 28. The pelvic measurements showed a normal pelvis. The urinalysis including microscopic examination was negative. Heart and lungs normal. The polymorphonuclear count was 8,000. The extremities showed no edema or varicosities. Abdominal examination showed occiput to be left anterior. The fetal heart rate was 144 a minute in the left lower quadrant. The fundus uteri was three fingers' breadth below xiphoid.

The following family and personal histories were elicited: Mother, living and well at fifty-one. Father alive and well, age sixty-one. Three brothers, living and well. No sisters. There was no history of chorea or other nervous disorders in the family at any time. The patient had usual diseases of childhood. At sixteen, while a high school student, she suffered a prolonged attack of scarlet fever. Shortly after convalescence from this disease an attack of acute chorea necessitated her withdrawal from school one year. Convalescence was slow. There were no further manifestations of disease until the patient was twenty-three years of age, at which time a slight attack was experienced. Married at twenty-five, October, 1915. Shortly following marriage the patient became pregnant. During this, the present pregnancy, there were no untoward symptoms of any kind, no choreic manifestations or other nervous phenomena. In fact the history shows the patient to have been practically normal in all respects.

On entrance to the hospital the labor pains occurred every ten minutes and were not severe. At this time the patient was in a highly nervous state, but this was no more marked than the writer has often seen in nervous primiparae. The labor pains increased both in duration and frequency for the next few hours and nine hours after admission the membranes ruptured spontaneously and the patient was removed to the delivery room. At this time the labor pains came at very short intervals and marked twitchings of arms and legs were noted. This was accompanied by a hacking nervous cough which was continuous. Marked lachrymation of both eyes was also noted. At the end of the second stage of two hours' duration a female child was born spontaneously.

The child weighed at birth eight pounds three ounces, and cried immediately. The placenta was expelled spontaneously shortly after the birth of the child. During the latter part of the second stage the twitchings of the arms and legs became convulsive in character and it was with difficulty that the patient was restrained. Following delivery the convulsive seizures continued as well as the cough, and codeine sulphate gr. one quarter was administered hypodermically. There was no immediate result from this and two hours later a moderate dose of sodium bromide was given. This likewise had apparently no sedative effect. The patient remained in a markedly nervous condition and

**Vaccine in Actinomycosis.**—C. W. Dean (*British Medical Journal*, January 20, 1917) reports a case of facial actinomycosis which was cured by the administration, at weekly intervals, of four doses of vaccine, each containing twenty-five million fragments. Combined with this was the opening of the abscess and its curettage with dry gauze.

perspired freely. Lacrymation persisted. One hour later the cocaine was repeated. The temperature at this time was 102° F.; pulse, 132; respirations, 40. The patient complained of severe headache. The nervousness increased, the cough became more marked, and the respirations somewhat rapid and difficult. The patient was now given chloral hydrate, which was followed by a half hour of comparative rest. At the end of this period all of the previous nervous manifestations set in anew with further complications of severe choking paroxysms.

Examination of the patient at this time showed marked pulmonary edema, respirations extremely difficult and continued exhaustive coughing. Medication by mouth was impossible and camphor in oil was administered hypodermically. There was no response to this and in a short time the patient expired.

At the present writing, five months after delivery, the child is apparently normal, and no sign of chorea or other nervous manifestation has been noted. It is interesting to note that the child in the case reported by Ashworth showed choreic symptoms shortly after birth. The above case appears interesting mainly from the fact that other than the history of a choreic attack ten years previous there was no reason to believe that the nervous system manifested itself at the beginning of labor was other than that often noticed in nervous patients.

84 CLARK STREET.

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## Contemporary Comment

**Tub Baths in Typhoid Fever.**—As a therapeutic measure of first importance, the tub bath has established a place for itself in the treatment of typhoid fever. Indeed, since its use typhoid fever has become a new disease, so much so that by a great many it holds a place as a specific in the treatment of this very common infection, says the *Boston Medical and Surgical Journal*, January 25, 1917. Since its almost universal use in the hospitals, one now rarely sees cases with marked delirium or with so much toxemia as to be lapsed into the so called typhoid state. While the tub bath reduces temperature, perhaps even better than other forms of hydrotherapy, that is not its function in the treatment of this disease, since, except in hyperpyrexia, temperature is the usual evidence of the reaction of the body to the infection. But the bath induces sleep better than any other measure, improves the quality of the pulse, and has a tendency to prevent or to reduce the amount of the always troublesome and dangerous tympanites. Tubbing is credited with saving from five to seven more patients to the hundred than without it.

On the other hand, this measure does not seem to have any effect in reducing complications. On the contrary, the tendency to hemorrhage and perforation is, if anything, increased. In justice, however, it must be said that this tendency is not due intrinsically to the bath treatment, but almost entirely to mishandling of the patient at a time when even ordinary palpation, unless done with the utmost gentleness, is dangerous. Plenty of trained attendants are absolutely essential to the proper carrying out of this valuable measure. Moreover it has been held that this measure carries with it an increased

likelihood of relapses. Besides, it is not a measure that can be easily carried out under all circumstances. It requires a great deal of attention on the part of the medical attendants and a greater amount of perseverance if it is to be carried into effect with the proper frequency. It is a measure that cannot often be carried out in the home. And while it is true that if this remedy is of so much value that it forms the chief reason why all typhoid cases should be treated in the hospital, yet this convenience is not available in small communities, where typhoid seems to be more common. The tub bath is a measure that undoubtedly acts against the toxemia, as is evidenced by the reduction of the incidence of delirium and the typhoid state.

**Shall Nurses Be Permitted to Administer Anesthetics?**—In commenting on this question, which is now being discussed by a number of medical journals, the *Journal of the Indiana State Medical Association*, in its issue for February, 1917, says: Of course there are some who will say that there are two sides to the question, but in our judgment there is but one side, and that is that in routine practice nurses should not be permitted to administer anesthetics; and if it should not be done as a routine thing, then it should not be done at all on account of the difficulty in drawing the line. Already trained nurses, like druggists, are too often usurping the functions of medical men, with attending dangers to the public. This is not saying that some nurses and some druggists cannot prescribe for certain sick people about as well as some physicians do, but that is not an argument in favor of the general practice of permitting nurses and druggists to assume the functions of the doctor. Likewise there are some nurses who, through proper training and experience, have become expert anesthetists, but as a general proposition the person who gives an anesthetic should have a medical education, and, in our judgment, have in addition to that education, special training in the giving of anesthetics. There is nothing more disquieting to the surgeon than to feel that the patient upon whom he is operating is in the hands of an anesthetist with little or no experience, and in an emergency the patient would not stand the best chance in the hands of a person having no medical education.

We believe that the giving of an anesthetic is a specialty in itself, and that even the medical man, unless he has had training and experience under a competent instructor, is ill fitted to administer an anesthetic with anything like the degree of safety desired. For the protection of the public, no person should be permitted to administer an anesthetic unless he possesses the qualifications and fulfills the requirements provided by law for the practice of medicine and surgery. The responsibility of the anesthetist is second only to that of the surgeon himself, and to permit anyone to assume this responsibility who has not had medical training aside from instruction in the administration of anesthetics is dangerous to life and health. Furthermore, from a legal standpoint, the administration of an anesthetic is in reality an act which is amenable to any law governing the practice of medicine. Therefore, the one administering the anesthetic should comply with the medical laws.



# Our Readers' Monthly Prize Discussions

## Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CLXXIX.—How do you treat eczema in children? (Closed.)

CLXXX.—How do you treat ringworm? (Answers due not later than March 15, 1917.)

CLXXXI.—How do you treat thumb sucking and nail biting in children and adults? (Answers due not later than April 15, 1917.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

*The prize of \$25 for the best answer to Question CLXXXVIII has been awarded to Dr. Isadore Dyer, of New Orleans, La., whose paper appears below.*

### PRIZE QUESTION NO. CLXXXVIII. THE TREATMENT OF ACNE VULGARIS.

By ISADORE DYER, M.D.,  
New Orleans.

The treatment of acne vulgaris conceives the attack upon a local disorganization of the sebaceous glands resulting in the appearance of various sized papules and pustules, in all stages of development from a simple, plugged gland duct (comedo, or blackhead) to a deep seated, almost furuncular pustule. There is nearly always associated dietary inconsistency and intestinal irregularity expressed by occasional indigestion and by habitual constipation. The treatment must be both local and general. Local treatment should be begun with the systematic free opening of all pustules, discharging them, and applying to each equal parts of carbolic acid and tincture of iodine. The comedones should be removed and at each seance this can be materially aided by freely cleansing the face with benzine on cotton pledgets. This procedure not only removes the accumulated fat on the skin, but will remove the inspissated fat from the orifices of the ducts and superficial glands. The mechanical extraction of the comedones is therefore made easier.

Between visits, the patient may keep the skin softened and clean with an ointment containing:

R Acidis salicyli, .....	2;
Sulphuris precipitatis, .....	4;
Tinct. benzoini, .....	1;
Adipis benzoinati, .....	30.

Resorcin in three to five per cent. strength may be added when there is any suggestion of dandruff, which is frequently associated. With the defervescence of the pustules an astringent lotion may be employed, the lotio alba being an example:

R Zinci sulphatis, .....	8;
Aquae rosae, .....	60;
M. et adde, .....	
Potass. sulphuret, .....	8;
Aquae rosae, .....	60.

The liquid is to be applied freely and often and allowed to dry on. Another serviceable lotion would be:

R Zinci oxidi, .....	4;
Talci venetian, .....	4;
Sulphuris precip, .....	4;
Glycerini, .....	4;
Snts. camphorae, .....	30;
Hamamelis destillat., .....	120.

This lotion is to be applied freely and often and allowed to dry on.

The use of short exposures to the x ray; the use of compresses of one to 1,000 solution of bichloride of mercury; the destruction of individual lesions with a thermocautery point (microbrenner); and the free, rapid sparking with the high frequency current are offered as alternatives.

Autogenous vaccine or stock mixed vaccines, as Van Cott's, or the combined furunculosis, acne bacterine, and staphylococcus, are of service in the types of acne vulgaris, where the pustules predominate. The technic of using the vaccine is important. The dose should be small (250,000,000) at the beginning; should be repeated in three to five days in the same dose; then increased after five more days to not more than twice the original dose; after another five days, if no reaction, a dose with fifty per cent. increase may be employed and the treatment suspended pending observation of improvement. If there is no improvement some other treatment should be tried.

Internal treatment of acne is usually necessary. It should aim at keeping the bowels open and the skin active. Powdered rhubarb and bicarbonate of soda, thirteen grains of each, may be given before meals, and fluidextract of cascara, thirty minims, in combination with Fowler's solution, three to five minims, and citrate of soda, ten to fifteen grains, to be taken in water after meals. A serviceable combination is chlorate of potassium three grains, lactate of iron three grains, with extract of nux vomica one half grain, extract of cascara one fourth grain—to be taken in capsule or pill after meals.

The dietary should exclude all pastry, excess of sweets, and should employ the full use of fruits and green vegetables. Exercise is necessary and the free use of soap and water is to be commended.

*Dr. C. Wolf, of New York, writes:*

In considering the pathology of acne vulgaris briefly, there is a logical basis for treatment. Along with an increased activity of the pilosebaceous system, there is a corresponding increase in the process of keratinization, particularly in those portions of the skin which are abundantly supplied with sebaceous glands, as the face, back, and chest. This activity is so great as to produce an occlusion of many of the ducts of the sebaceous glands and the retention of degenerating epithelial cells and sebaceous material which form the comedo. Many observers believe that the comedones contain acne bacilli and cocci. Papules and pustules are later stages of the comedo.

The object of treatment is to cause the disappearance of existing lesions, and to prevent the occurrence of new ones. A classification of treatment may be outlined as follows:

*General Treatment.*—Symptomatic: 1, correction of digestion, pelvic, or circulatory disturbances; 2, correction of deficiency of ductless glands' secretions. Specific: 1, use of vaccines.

*Local Treatment.*—Surgical: 1, expression of comedones; 2, incision of pustules. Medical: 1, use of antiseptics; 2, use of keratolytics, as sulphur, beta naphthol resorcin, and salicylic acid. Actinic therapy: 1, use of the x ray, Kromayer lamp, or Alpine sun lamp. Mechanical: use of massage, and water.

To describe more fully the above outline of treatment, it is necessary to keep in mind that acne is only a manifestation of a systemic disturbance. Constipation, anemia, ovarian disease must be corrected. A diet must be enforced. Those foods which cause vasomotor disturbances must be interdicted; among these are tea, coffee, alcohol, highly seasoned foods, condiments, and gravies. Fats, sweets, and starches are harmful when taken in such excess as to cause gastric disturbance.

The administration of extracts of ductless glands, such as thyroid, pituitary, or adrenals, is indicated in small doses where there is a deficiency of any of these glandular secretions. In specific treatment, a vaccine, stock or autogenous, of the acne bacillus may be employed with the result of effecting a cure in a small percentage of cases, always to be used in conjunction with other measures. Gilchrist recommends the administration of large doses, as 100,000,000 bacilli a dose, in preference to small doses, as the latter give rise to anaphylactic reactions.

Under local treatment, the expression of the comedones with a comedo extractor, incision of the pustular lesions, and the use of keratolytic and antiseptic agents, as resorcin, sulphur, betanaphthol, and salicylic acid made up in the form of lotions, commonly known as the compound white lotion or in paste form, varying from ten per cent. to fifteen per cent. strength, are measures which help to remove the epithelial debris, and the keratotic plugs.

Exposure to x ray, in fractional or stimulating doses, is very effective. The same may be said of the Kromayer and Alpine lamps.

To maintain an open condition of the ducts, the circulation of the skin must be kept normal, and the use of massage, hot water, and tincture of green soap is indicated as a routine measure.

*Dr. Louis Frischman, of Yonkers, asserts:*

Dyspepsia or constipation should be corrected. The cascara preparations are indicated. For corpulent and plethoric individuals, the salines are most serviceable, but weak and anemic patients are better given the milder preparations. The following formula serves both as laxative and hematinic:

R Magnesi sulphati .....	5i
Terri sulphat .....	gr. iv
Acid sulphuric dilut. ....	55
Aquaementh. pip. q.s. ad. ....	5iv
M. et S. tablespoonful in water one half hour before breakfast.	

If the subject is overnourished, diminish diet, re-

stricting especially the meats, and replacing them with green vegetables and fruits. All highly seasoned food, eggs, pastry, and alcohol are prohibited.

Daily baths of hot water, followed by cold, improve the tonicity of the skin. A rough towel is used for drying the skin.

For local treatment the following routine is recommended to my patients: Every night they are advised to wash their face with green soap, and steam the face for ten to twenty minutes. Then a lotion or ointment is applied, and left on overnight, to be washed off in the morning. Cases accompanied by many comedones or pustules respond well to the application of Bier's suction cups, when the individual comedones or pustules will thus be extracted. Abscesses must be incised. The dull curette is also serviceable in removing pustules, and comedones can be extracted with a comedo extractor. The skin is then washed with hot one per cent. lysol solution, dried, and the lotion or salve applied. Sulphur answers the purpose of a stimulant, antiseptic, astringent, and keratolytic. The lotio alba may be used to advantage overnight, and in the morning a powder consisting of sulphur dram one to talcum ounce one is dusted over the skin.

Brief exposures two or three times a week to x ray, using a soft tube about fifteen cm. distant, is a very effective method in obstinate cases.

I confess I have had very meagre success with the use of vaccines, and will leave this phase of the subject undiscussed.

*Dr. H. Arthur Massey, of Chicago, Ill., remarks:*

Because the acne bacillus is recognized as the direct cause of acne vulgaris, involving the sebaceous glands, it has been heretofore considered merely obstructive in form. These dermic abscesses have received only local treatment, all predisposing factors being ignored, and the disease being allowed to become a chronic infection, with a deep seated inflammatory process, often coalescing, to produce larger cavities and confusing the treatment.

The treatment depends mainly upon the etiology. The local causes are: 1. Irritation, which may arise from massage and shaving, or cosmetics and lotions. 2. Autoinfections, due to scratching and finger nail infections. 3. Comedones, which have been evacuated and become infected with the organism.

The general causes are: 1. Gastrointestinal disorders. 2. Intestinal autointoxication caused by constipation, intestinal stasis, gastrocatasis, mucous colitis, and dyspepsia with hyperacidity.

It must be recognized that a difference of sex is an important factor. In women, including the above, we also have to consider anemia, menstrual disorders, and chronic appendicitis.

The treatment is local and general, including vaccines. The local treatment is indeed very important. Comedones should be removed mechanically, and pustules opened and swabbed out with one to five per cent. silver nitrate solution. No soap should be used. Hot boric acid solution ten per cent., used from ten to fifteen minutes every hour, so that the heat is retained for a longer period, softens the epithelium, removes the grease and many organisms.

thus increasing the efficiency of a resorcin or sulphur lotion.

The general treatment is hygienic, dietetic, and medicinal. Frequent bathing (tepid) or sponging should be insisted upon and has proved very effectual. Regular hours and outdoor exercise promote normal intestinal digestion and inhibit toxic decomposition. Dietetic treatment is important and must be regulated for the individual. All foods should be light and nutritious; fried greasy foods, rich soups, hashes, gravies, cheese, pickles, rich pastries, nuts, and spirituous liquors must be interdicted.

For gastrointestinal disorders you may increase the secretory and motor powers of the stomach by giving HCl, pepsin, and nux vomica in combination. Too much stress cannot be laid upon the treatment of anemia, not forgetting iron and Fowler's solution in increasing doses. Intestinal toxemia due to gastric indigestion has been found by Metchnikoff and other bacteriologists to respond to cultures of *Bacillus bulgaricus* in four c. c. to six c. c. doses three or four times a day, inhibiting the growth of putrefactive and other pathogenic organisms.

In skin diseases vaccines should not be substituted alone for therapeutic treatment, but in combination I have found that their efficiency is still in the experimental stage. To some it has proved effectual, but the number of failures and average successes are about equal. Never use them in acute cases, as they will not yield to the treatment; but in subacute and chronic cases, beneficial results are encouraging.

*Dr. Charles B. Graf, of New York, writes:*

Following the teachings of my late teacher, Professor Kaposi, of Vienna, I treat the general condition principally and the affected skin incidentally. Acne vulgaris is mostly a symptom of wrong metabolism—constipation and autointoxication—or the effect of strong irritating soaps, cheap cosmetics, filth, and many other external irritating agencies. Having diagnosed the case as acne vulgaris, my first step is the removal of the cause. In treating young adults be careful not to overlook their sexual habits, as masturbation is one of the causes of acne vulgaris. If I find anemia in connection with acne vulgaris, I make a blood test. Autointoxication and habitual constipation are very often the causes of this skin derangement. I discontinue red meats, spiced or pickled pork, and advise total abstinence of alcoholic beverages, black coffee, or strong tea. I persist in free use of buttermilk, pure water, cooked fruits—prunes and apples—changing gradually to a vegetarian diet. My internal treatment consists of Russian oil in  $\frac{5}{8}$ ss doses three times a day, and in some cases a half glass of imported or artificial Carlsbad or Hunyadi water before breakfast. I insist on daily warm baths taken at bedtime and a brisk shower bath, warm and cold, in the morning; Turkish towels should always be used to dry the skin to stimulate the circulation. I advise outdoor exercises, swimming, long walks, and sun baths. In stubborn cases vacuum electrodes, carefully adjusted x ray, and my acne lancet are also a help in curing these patients.

*Dr. Frank E. Tompkins, of New York, remarks:*

Acne vulgaris, or acne simplex, is one of the most common skin diseases of youth, making its appearance about the time of puberty and usually disappearing about the age of twenty-five years, when the body has reached its full development.

The principal treatment is the use of a suitable vaccine, either stock or autogenous; the kind of vaccine used will depend on the type of the skin eruption. In the stock vaccines, the acne vaccine, which is used in the popular form, may be secured in strengths which vary from 20,000,000 bacteria a c. c. to 100,000,000 a c. c. When the desired effect is not obtained by the use of these stock vaccines, it will be necessary to have an autogenous vaccine made from the contents of the components of the eruption.

In the past systemic conditions were credited with the production of acne vulgaris, but it is now known that these conditions simply aggravate the condition, hence hygienic and medicinal remedies, in addition to the use of vaccines and local measures, will be required to effect a cure of the condition. Frequent bathing of the entire body followed by a brisk friction with a coarse bath towel is indicated; massage of the face with the fingers dipped in a simple lubricant is a valuable adjunct. Attention should be given to the bowels, causing them to move by the use of mineral oil, mild salines, etc. Diet should be revised, excluding all articles which cause indigestion, or otherwise aggravate the local condition.

Tonics are indicated to improve the general tone of the body; these consist of the following or some combination thereof—arsenic, strychnine, iron, hypophosphites, glycerophosphites, etc.

*Dr. John B. Casale, of Newark, states:*

While under treatment avoid all pastries and restrict farinaceous foods. Walk one mile in the open air every day and keep bowels regular.

An autogenous vaccine should be made, as often the pyogenes staphylococcus aureus is associated with the acne bacillus. The vaccine may preferably be given subcutaneously and on every fourth day, beginning with 40,000,000 of each of the offending organisms, and running it up to double the amount, sooner or later, according to the severity of the local and systemic reaction. In stubborn cases it is advisable to alternate or substitute with stock vaccines to help enhance the systemic reaction, too long accustomed to the strain of its own organisms.

Acne vulgaris will, in spite of all outlined above, continue indefinitely unless it is treated locally. The patient is advised every night to wash the lesions with hot water and green soap, dry and sponge with absolute alcohol, and apply lotio alba. In the morning the whole surface should be rubbed for three minutes with ten per cent. white precipitate ointment. This is to prevent reinfection and infection of new areas by contact, since the skin is always besmeared with germ laden secretion from ruptured pustules. It is the physician's duty to insist on the patient's calling twice a week at the office, to have every comedo expressed and every pustule punctured, pus expressed, and its bed destroyed with pure carbolic followed by alcohol.



## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal  
and The Medical News*A Weekly Review of Medicine*

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Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MARCH 3, 1917

EMERGENCY PLAN FOR THE ARMY  
MEDICAL SUPPLY SERVICE.

The introduction into Congress of a bill providing for universal military training, which would mean the training of five hundred thousand young men annually, and the critical condition of our international relations now accentuate the necessity for providing for a sudden increase in all the supplies which would be needed by an army. The National Chamber of Commerce has passed a resolution to the effect that the basis of government requirements from private sources both in peace and in war should be such as to preclude a profit interest in war. The Chamber of Commerce has suggested that the basis of profits should be a guaranteed return of a small percentage on the book value of the assets of the company, saying that "the inevitable economic disturbances following a declaration of war should be minimized to the greatest extent possible for the use of government credit. . . . The result of a small guaranteed profit would be the instant stabilizing of industrial credit and the complete elimination of stock market speculation."

In no direction would there be greater need for such a stabilizing influence than in the purchasing of medical and surgical supplies. The increase in such

supplies needed in war would be much greater than the difference between the normal and the war supplies required in other lines. The principle proposed by the Chamber of Commerce is an excellent one, and it would seem that steps might be taken at once to apply this principle with slight modifications to the purchase of supplies of all sorts, including those required by the medical department. We have had the assurance of some of the largest manufacturers of medical supplies that they would gladly enter into a tentative contract with the government under which the manufacturers would be ready to furnish on short notice certain specified quantities of medical supplies to be paid for at the cost of manufacture plus a certain specified profit. When this was suggested to the authorities the proposal was declined with the statement "no funds are available." As a matter of fact such purely one sided contracts bind the government to nothing, and would give assurance of having adequate supplies ready on the shortest possible moment, and at a reasonable cost. If an act of Congress is necessary to give power to the authorities to make such contracts as are indicated above, though we do not believe that any such act is necessary, it ought not to be a difficult matter to obtain such legislation even on very short notice. We feel confident that a recommendation for legislation of this character from the Secretary of War would meet with instant approval from Congress.

## MORTALITY FROM CANCER.

An essential factor in combating a general disease condition in a population is the collection and publication of all data pertaining to it. The public is temporarily impressed and perhaps mildly shocked from time to time by more or less authoritative announcements and comments on the prevalence of cancer and the increase in the number of its victims. The actual facts have just been published by the Bureau of the Census in a monograph on the Mortality from Cancer and Other Malignant Growths in the Registration Area of the United States: 1914.

This monograph sets forth in cold figures the reality and extent of the menace of this disease. It was prepared in compliance with a suggestion of the American Society for the Control of Cancer and was published as a detailed statement supplementary to the Annual Mortality Report of the Bureau. Its statistics and tables constitute a valuable and authentic source of information regarding the trend of the development of cancer, particularly in the direction of the location of growths. The collection of data involved extensive correspondence with physicians in the registration areas, with most careful in-

quiry into the basis of diagnosis in cases where the growths were invisible or inaccessible to observation.

The main points in the report are as follows: 1. The death rate from cancer and other malignant growths for 1914 was 79.4 per 100,000. 2. Most deaths occurred in persons between the ages of sixty to sixty-four years. 3. More women than men died from this cause. 4. More women than men between the ages of twenty-five to fifty-five years died from this cause. 5. Cancer of the stomach and liver and cancer of the parts of the female genital tract showed by far the highest figures in mortality. 6. The death rate has been increasing slowly and steadily, except in 1906 and 1911, since 1880. It has moved from seventh place in 1900 to fifth place in 1914 in the mortality group, showing rates over one in 100,000. The higher death rates of two of the diseases, tuberculosis and pneumonia, while fluctuating, show a large gross decline. The other more frequent causes of death, organic heart disease and nephritis, are, in point of etiological and therapeutic knowledge, in a far more advanced stage in medical science.

The most disquieting feature of the situation with regard to cancer is the lack of absolute dependable knowledge of the real cause. Coincident conditions are known, but actual genetic factors are unknown.

The statistics and analyses of the monograph of the Bureau of the Census are the more ominous by reason of the lack of constructive comment—a lack, of course, usual in such tabulations. It is for professional journals and the public press to direct attention to the status of the disease in this country. Great and noble efforts are being made to add to the knowledge concerning it in laboratories and research institutions, but the death rate advances point by point. The distressing and too often hopeless nature of the disease should induce in the laity sympathetic and intelligent interest. Practitioners should keep in closest touch with the latest reports on experimentation and the literature on histological, etiological, and therapeutic study.

#### WHY DO MEN WANT COMPULSORY INSURANCE?

Conflict wages between the opinions for and against compulsory insurance. Men of authority differ in the conclusions which their investigations reach. Perhaps they overestimate on the one hand the theoretical utopian control by the State of measures to insure aid in sickness, disability, or death to the working man or his family, and on the other hand the workman's own ability to work out and maintain his salvation through the means which various forms of voluntary insurance provide.

In considering this matter we must not overlook two opposing characteristics. One of these, present in the majority of mankind, is an innate desire to lean upon some stronger person, to shirk responsibility, and to depend for security upon some one in authority. The opposing characteristic, which is found among the leaders in every walk of life, prompts to the assumption of leadership and responsibility and the exercise of authority. In discussing the arguments for and against compulsory insurance these characteristics tend to obscure the sense of propriety and justice and blind one to the real motives underlying a decision. The free manifestation of these inclinations tends to promote paternalism. Here the world old relation of parent and child is involved, a relationship which has retarded the progress of the world because humanity has not yet learned the proper balance which should exist between these opposing tendencies. Each individual must in his own life also experience the same inevitable struggle involved in this double phase of ego security.

In discussing the question of compulsory insurance, therefore, we must not overlook these basic tendencies in human nature. If the State assumes the role of paternal authority, as is proposed by the advocates of compulsory insurance, it will grant to those wielding power and authority a pretext for the assertion of their unconscious will to rule. On the other hand, it will tend to foster in the masses that readiness to be taken care of upon which such authority really rests. Since perfect health and actual progress in human welfare depend upon the overcoming of such an infantile attitude on the part of the individual, any measure which tends to promote this weakness on the part of the masses cannot be looked upon as advantageous on the whole. Progress demands not compulsion, but opportunity for personal choice and individual effort.

#### A PLEA FOR THE GROWING CHILD.

Familiarity breeds blindness and even a contempt of childish complaints. A sweeping epidemic calls forth the utmost attention and effort. No amount of skill is too much to devote to its understanding and control. In fact, no amount of diligent preparation is spared to train specialists to meet such crises or to put practical, efficient knowledge concerning it as far as possible into the hands of the general practitioner.

Yet there is far greater prevalence of nervous maladies among children. Countless individuals suffer lifelong crippling to a greater or less extent in the psychic realm. Efficiency is limited, self-expression is curtailed, interest fails to find its proper channel, or only partially attains outlet because of its misdirection or withdrawal on account of hidden

causes. Irritability, dissatisfaction, inability to make headway at school or elsewhere in life are some of the minor evidences of something wrong. Physical symptoms accompany the picture of disturbance, the apparent causelessness of which leads to ineffectual generalization in diagnosis and treatment. More seriously still, upon these foundations are built chronic conditions of mental illness.

What is at the bottom of such a state of affairs? Can the physician get any nearer to the source of the difficulty than have the fruitless efforts of the past? Rest from school, a sojourn in the country, these and similar measures may be palliative or not; surely there is nothing more fundamental in results. Concerning them Pfister exclaims: "How many a career has been cruelly blasted as a result!" And how many a psychoneurotic invalid echoes today the truth of Pfister's contention that the tired school child, the inefficient child, the unhappy child, in the majority of cases suffers only from mental conflicts.

We may have suspected it; many adult invalids, tracing their disturbances back into the secret fears and uncertainties of the childish past, are certain of it. The interests of prophylaxis against the increasing burden of mental suffering no less than the appeal of the actually invalidated child—the numbers of which we hardly begin to realize—demand the direction of our attention to this problem. It is time to know something about this epidemic and how to remedy this condition of things.

Pedagogy and medicine together must find the child who is sick and the way to help him. Therefore the profoundly psychological book of the pedagogue Pfister with its practical exposition of effectual work upon just these difficulties ought to be neglected by no physician who would understand and save the child brought to him.

### BOTULISM.

Botulism may well be ranked among the diseases whose prognosis is most serious and which are the more lamentable because preventable. It is hard to understand why the disease is not still more common. An extending acquaintance with its various habitats makes it seem a reasonable possibility that it may exist far beyond these areas where it is now known to be endemic. While one of the most dangerous forms of food poisoning, it has been supposed generally that the *Bacillus botulinus* could only produce toxin in media containing animal proteins. This has been questioned by E. C. Dickson, of the Stanford University Medical School, who has shown that vegetable media alone may be efficient for toxin production (*Journal A. M. A.*, 1915, lxx, 492). This he demonstrated on canned peas and

beans, and found cases apparently of botulism developing after ingestion of canned pears and apricots. Dickson emphasizes the gravity of the situation in regard to the home canning of vegetables and fruits. A single more or less perfect sterilization as conducted in the ordinary home canning process does not destroy the bacillus. Fractional sterilization is necessary, and yet it is to be remembered that even with fractional sterilization a dangerous amount of toxin may be produced, so virulent is the botulinus toxin.

In a more recent note, Dickson (*Proceedings of the Society for Experimental Biology and Medicine*, 1916, xiv, 2, page 47) discusses this question of virulence and shows that the toxin is extremely poisonous. Approximately 0.0002 c. c. of the filtered beef infusion culture from a strain of *Bacillus botulinus* taken from beans killed a small guineapig in eighteen hours, and 0.001 c. c. of a similar culture from corn killed a medium sized rabbit in twenty hours.

In the course of his investigations on the native habitat of *Bacillus botulinus*, Dickson found that not only was the pig a possible host, as reported earlier by Kempner and Pollack (*Deutsche medizinische Wochenschrift*, 1897, xxiii, 505), but also that chickens were probably carriers of the bacteria (*Journal of the American Veterinary Medical Association*, 1917, 1, 612). He found that in various California epidemics, chickens died in numbers from "limber neck," produced by botulinus toxin ingested from infected vegetables. The chickens showed the same characteristic thromboses and hemorrhage in the vessels of the meninges and central nervous system as have been described by Ophuls and Wilbur in human cases (*Archives of Internal Medicine*, 1914, October, 589). Dickson considers it highly probable that still other domestic animals may be carriers of the infection.

It is greatly to be hoped that these researches may be continued on an extended scale. The subject is of much wider interest than for California alone, where the chief endemic foci now seem to be. So dangerous a disease, and withal one apparently so preventable, requires the best study and investigation as a matter of public health precaution.

### THE MEDICAL SERVICE OF THE ARMY.

The timely article by Dr. William H. Steers, of Brooklyn, on the army medical service, which appears in this issue of the JOURNAL, contains much of interest to every physician whose sense of patriotic duty would lead him to tender his services to his country in case of war. It will be observed that Doctor Steers does not mention the medical reserve corps and says that service in the National Guard



or in the regular army is the "only practical way" to prepare for service in case of war. While this may be literally true since there is no "practical" training in the medical reserve corps, it by no means follows that the theoretical knowledge which can be gained through membership in the medical reserve corps would not be an asset for any physician who might join a volunteer army. Moreover, as members of the reserve officers' corps the members of the medical reserve will have an opportunity for at least a fortnight of practical training in camp annually, and even this brief training, when associated with such theoretical study as is provided in the correspondence course for medical reserve officers, will be some aid to the physician who may find himself called upon to perform unfamiliar duties as a medical officer of volunteers. Through the courtesy of Rear Admiral Braisted, surgeon general of the United States Navy, we shall be able to present in an early issue a study of the medical service in the navy by Surgeon R. C. Holcomb, U. S. N., which will cover very much the same ground for that branch of the service as has been covered by Doctor Newcomb in our issue for February 17th and by Doctor Steers in the current issue regarding the army.

## Obituary.

GEORGE HUDSON MAKUEN, A. B., M. D.,  
Of Philadelphia.

Dr. G. Hudson Makuen died at his birthplace in Goshen, N. Y., on Wednesday, February 21st, in his sixty-second year. He was graduated from Yale University in 1884 and took his degree of M. D. at Jefferson Medical College, Philadelphia, in 1889. He acted as instructor in the Centenary Collegiate Institute of New Jersey, the National School of Elocution and Oratory, and at the Jefferson Medical College from 1889 to 1892. He was professor of defects in speech at the Philadelphia Polyclinic since 1896, and was laryngologist and otologist to the Chester Hospital, Philadelphia. Doctor Makuen was president of the Section in Laryngology and Otology of the American Medical Association in 1902; was president of the American Academy of Medicine in 1900, and president of the American Laryngological Association last year, presiding at the Washington meeting in May with a degree of tact and skill which made him conspicuously successful in that capacity. Doctor Makuen not only occupied a high position in the esteem of his fellow workers as a laryngologist of great skill and profound knowledge, but also possessed a winning personality which made him one of the most popular members in the American Laryngological Association. He was a frequent contributor to the *NEW YORK MEDICAL JOURNAL* and his reports in this journal and in those in his own special field were always informing, interesting, and well written. His work on defects in speech was probably his most valuable contribution to medicine. His loss will be severely felt among his confrères both professionally and personally.

WILLIAM MABON, M. D.,

Of New York.

In the death of Dr. William Mabon the state of New York has lost a most valuable citizen, and not only will his death remove from the New York City Lunacy Medical Service a most efficient officer, but the State will be deprived of a collaborator in its practical charity program, who will be hard to replace. Doctor Mabon was born in New Jersey in 1860, and was graduated from Bellevue Medical College, where he, after a number of years spent in the State hospital service, became superintendent. After retiring from the superintendency, he again entered the State hospital service as superintendent of the Manhattan City Hospital, Ward's Island, where he has served for the past ten years. Under his direction this institution has become one of the leading hospitals of the State by reason of his widespread sympathies and his knowledge of the practical aspects of psychiatry. As a committee worker and before legislative committees Doctor Mabon was most effective. His heart was in the work of the care and treatment of the insane of New York State. He died very suddenly of pneumonia.

## News Items

**Harvey Society Lectures.**—The eighth lecture in the course will be given Saturday evening, March 17th, by Professor Francis W. Peabody, of Harvard University, on Cardiac Dyspnea. The ninth lecture, which is the last in the course, will be given on April 7th by Professor W. H. Howell, of Johns Hopkins University, his subject being Coagulation of the Blood.

**A National Leprosarium.**—A bill appropriating \$250,000 for the purpose of establishing a national home for lepers passed the House of Representatives on May 4, 1916, and was passed by the Senate on January 25, 1917. This provides a national institution for the care and treatment of lepers and solves the problem of preventing the spread of leprosy in the United States.

**New Antinarcotic Law in France.**—Both Chambers of the French Parliament have passed an act of the most drastic character regulating the sale and use of cocaine, morphine, and similar narcotic drugs. This measure is an amendment to the poisonous substance act of July 18, 1845. Opium, morphine, and cocaine are specially treated. Violation of this law is punishable with a fine of from 100 to 3,000 francs (\$20 to \$600), or imprisonment for from six days to two months, or both.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, March 5th, Academy of Surgery, Clinical Association, Blockley Medical Society; Tuesday, March 6th, Willis Hospital Ophthalmic Society, Laryngological Society, Medical Examiners' Association; Wednesday, March 7th, Physicians' Motor Club (directors), College of Physicians; Thursday, March 8th, Pathological Society; Friday, March 9th, Psychiatric Society, Northern Medical Association, Atlantic County Medical Society.

**American Review of Tuberculosis.**—The National Association for the Study and Prevention of Tuberculosis has issued a prospectus of its new publication, the *American Review of Tuberculosis*, the first number of which will appear this month. It will be issued monthly, the price to members of the association being \$2 a year, to nonmembers, \$3. Its editorial staff is made up of men who are recognized as authorities on tuberculosis. The new publication will act as a medium for the dissemination of authentic information regarding tuberculosis in all its phases.

**Chicago Physicians Opposed to Compulsory Health Insurance.**—The Chicago Medical Society has issued a pamphlet condemning in no uncertain terms compulsory health insurance, and urges the Illinois legislature to kill the bills now before it which have been drafted by the American Association for Labor Legislation.

**Development of Saratoga Springs.**—Mr. George D. Pratt, conservation commissioner, appeared before the New York State Legislature in Albany on February 23d to ask that financial provision be made for the development of the springs at Saratoga. The necessity for prompt action in the matter was emphasized, in order that the springs might be more generally used while European spas were inaccessible on account of the war.

**Portrait of Doctor Polk Presented to the Academy.**—At a stated meeting of the New York Academy of Medicine, held Thursday evening, February 1st, a three quarter length portrait of Dr. William M. Polk was presented to the academy, thus completing, as Dr. Walter B. James, the present president of the academy said, a full line of portraits of the distinguished men who have been presidents of the New York Academy of Medicine. Dr. George D. Stewart accepted the portrait for the academy with a few well chosen words of appreciation.

**Ohio County, W. Va., Medical Society.**—A regular meeting of this society was held in Wheeling, Friday evening, February 23d. Dr. Alfred Stengel, of Philadelphia, read a paper on the Diagnosis and Treatment of Chronic Nephritis, which was discussed by Dr. J. O. Howells, Dr. Andrew Wilson, Dr. J. T. Thornton, and Dr. H. E. Oesterling. The new state law prohibiting fee splitting was discussed and resolutions were adopted endorsing this law and promising the support of the society in its rigid enforcement.

**The Philadelphia Alumni Society,** of the Medical Department of the University of Pennsylvania, held its mid-winter smoker Saturday evening, February 17th, when a grandfather's clock was presented to Dr. B. Franklin Stahl, who, after twenty-five years' service as secretary, was elected president of the society. Other officers were elected as follows: Provost Smith, honorary vice-president; vice-presidents, Dr. William S. Wray, Dr. S. P. Bernard, and Dr. S. A. Brumm; secretary, Dr. S. E. Tracy; treasurer, Dr. B. M. Miller; recording secretary, Dr. F. V. Keene; executive committee, Dr. H. E. Schock, Dr. C. E. Franklin, Dr. W. E. Cariss, Dr. McCluney Radcliffe, Dr. C. F. Martin and W. O. Hermance.

**New Antinarcotic Law Proposed for Pennsylvania.**—Under the terms of a new antinarcotic law, which has been introduced into the Pennsylvania legislature, it becomes a crime for any person except a druggist, a physician, or other authorized person to possess a habit forming drug, and it becomes unlawful for any physician to prescribe narcotics to patients who seek to be cured of the habit without filing with the director of health, or other local health officer, the name, address, and other information concerning the patient, as well as a diagnosis of each case, and the nature and amount of drugs prescribed. Druggists are forbidden to dispose of habit forming drugs except upon the written prescription of a physician.

**Historical Medicine.**—On Wednesday evening, March 7th, the newly organized section in Historical Medicine of the New York Academy of Medicine will meet, at 8:30 o'clock, with Dr. James J. Walsh in the chair. Dr. Charles L. Dana will address the members giving suggestions for a program of work for the section. Dr. Charles B. Davenport, of Cold Springs Harbor, will present, by invitation, a project for the collection of medical biographical memoirs. Dr. James J. Walsh will present to the section some of the historical material of the academy, and Dr. Charles M. Williams will donate some early works on syphilis and will discuss the question of the American origin of the disease. Members are requested to bring books, prints, autographs, and other material of historical interest which they may have in their possession. Pictures will be shown of the first amputation ever done by man, probably 25,000 years ago.

**Civil Service Examination for Dentists in the Indian Service.**—The United States Civil Service Commission announces an examination for dentist, open to men only, to be held on March 21, 1917, in various places throughout the United States. There is a vacancy at present in the Indian Service at Large, which carries a salary of \$1,500 a year. All dental supplies and instruments are furnished by the government. Graduation from a recognized dental college is required for consideration for this position. For further particulars address the Civil Service Commission, Washington, D. C.

**Antivaccination Legislation in Pennsylvania.**—An antivaccination bill has been introduced into the Pennsylvania legislature, with the following amendment:

That it is shown by the sworn certificate of a regular practicing physician that the health or physical condition of the child is such that vaccination would endanger the life or health of the child but that the child is free from any contagious ailment or affection such child shall be permitted to attend school until such time as it may be vaccinated without danger to its life or health when the provisions of this section shall be enforced.

The bill has been referred to the Commission on Education. Dr. Samuel G. Dixon, State Health Commissioner, warns the public that the bill should receive sharp attention and its disadvantages brought out, on account of the strong prejudice against vaccination which still exists in Pennsylvania.

**Base Hospital Offered Red Cross as Memorial.**—Eli Lilly & Co., of Indianapolis, has offered the local chapter of the American Red Cross the sum of \$25,000, in the event of this country being drawn into war, to establish a base hospital of 500 beds, with surgical and medical equipment, and tentage. The offer was made to commemorate the services of Colonel Eli Lilly as a soldier and a citizen. It is the intention of the local medical society to form a staff to operate the Colonel Lilly Memorial, which will be made up of twenty-three medical officers, two dentists, a chaplain, fifty nurses, twenty-five nurses' aids, fifty men for administrative duties, and ten civilians for general assignments. In event of war the unit staff will be available to move forward with the equipment of the hospital. Steps have already been taken to organize classes of men and women for training in first aid. The entire equipment and staff will be under the command of the Red Cross.

**Change Proposed in New York Narcotic Law.**—The Joint Legislative Committee of the New York State Legislature on the abuse of narcotic drugs has presented a report accompanied by a bill which is intended as a preliminary emergency measure to check the spread of drug addiction and to offer relief for confirmed addicts. The principal features of the bill are: The establishment of a state dispensary system for supplying addicts pending treatment; the use of a triplicate order blank for narcotic drugs; the registration of addicts; the appointment of state inspectors to enforce the law; the authorization of magistrates to commit addicts to the care of individual physicians as well as state institutions, and prohibition of the sale of unmixed narcotic drugs under the guise of compound medicines. The chairman of the committee said that investigation had shown that great hardship and suffering had been inflicted upon addicts by the refusal of physicians to treat them on the ground that such treatment might incriminate the physician. As a matter of fact this is not the case at all, and no restriction is or will be imposed upon the legitimate treatment of addicts carried out in good faith by qualified physicians.

**Personal.**—Dr. Charles S. Potts has been elected neurologist to the German Hospital, Philadelphia.

Dr. Alfred Gordon, of Philadelphia, delivered an address on the Relation of Legislative Acts to the Problem of Drug Addiction before the Medicolegal Society, of New York, on Wednesday, February 21st.

Dr. L. Webster Fox, of Philadelphia, has been reelected president of the Pennsylvania Home Teaching Society and Free Circulating Library for the Blind.

Dr. James P. Warbasse, of Brooklyn, met with an accident while bob-sledding with his daughter at Buckhill Falls, Pa., on Saturday, February 17th, which resulted in a broken rib and other less serious injuries. It is said that he is making a prompt recovery.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE TREATMENT OF LEAD POISONING.

By LOUIS T. DE M. SMOUS, B.S., M.D.,

Chadodphi.

(Continued from page 273.)

The measures appropriate for warding off further lead manifestations in the cases of beginning toxic action having already been mentioned, a consideration of the treatment of fully developed instances of poisoning is next in order. These are the cases in which, often after such preliminary indications as pallor and the blue line, followed sometimes by a period of anorexia and metallic taste in the mouth, violent colic appears, associated with obstinate constipation, vomiting, and frequently signs of beginning nervous involvement. The colic may rapidly become so severe as to strike the victim to the floor from the standing position, or, if recumbent, to render bodily rest quite impossible. The abdomen is to some extent retracted, though free from the manifest rigidity of intraabdominal inflammation. The facial expression is one of anxiety, the output of urine is likely to be reduced, and the pulse is often found tense and of abnormal frequency. During the paroxysms of colic, the pain is in many instances most severe along the course of the descending and ascending colon, at or somewhat below the level of the umbilicus; in the intervals, tenderness is likewise apt to be marked in these areas, as also sometimes in the McBurney region and epigastrium. Backache is sometimes complained of. Not infrequently a progressive weakening of the forearm muscles, tested by having the patient tightly grip the hand, can be noted during the attack as a precursor of lead paralysis; a more or less constant aching in the forearm and often the arm and shoulder is simultaneously experienced and upon pressure over the tissues of the extremity, especially along the course of the large nerve trunks, marked tenderness may be elicited. Tremor of the hands is frequent but inconspicuous. Headache, if noted, is typically severe, but even more than in the case of the blue line, its absence is to be expected in a distinct proportion of otherwise well characterized cases. Severe headache is occasionally the forerunner of delirium or of convulsive seizures—the latter at first typically unilateral and sometimes mistaken for those of brain tumor because of concomitant vomiting and retinal changes due to the lead intoxication.

In addition to the removal of the patient from exposure to lead through cessation of his ordinary work, certain other simple measures may be of service. Care should, for example, be taken that the clothing worn by the patient during the attack be entirely free of lead. The skin should be cleansed of whatever lead has remained on it by a full bath with friction sufficient for the purpose, or, if the patient is too ill to undergo this procedure, by successive local washings of the various skin surfaces, with special attention to the hands and scalp. For the

elimination, in so far as possible, of lead present in the gastrointestinal tract a saline purge should at least be tried, though there is a distinct possibility that it will fail to act owing to the spasmodic closure of the bowel at one or more points. Removal of any lead inhaled through or otherwise introduced in the mouth should be effected by mouth washing and careful cleansing of the teeth. Irrigation of the nasal cavities with warm physiological saline solution, either by spraying or preferably with the nasal syringe or Birmingham douche, may also perchance be of value to free the nasal mucosa from lead compounds recently taken in with the respiratory air current and as yet unabsorbed.

In undertaking the subsequently necessary eliminative treatment, due attention to the indications for and contraindications to the use of potassium iodide in lead cases may save the patient considerable distress. This agent has been supposed to convert the compound in which lead exists in the tissues into a more soluble one, thereby favoring diffusion of the metal in the blood stream and its elimination with the emunctories. According to Sollmann, however, this is hypothetical. No definite evidence seems available that the soluble potassioplumbic iodide which potassium iodide is supposed to form with the lead in the tissues actually occurs in the system. Possibly the effect of iodides in decreasing the viscosity of colloids may play a part in the mobilization of stored lead. Gazzetti ascertained in 1913 that other haloid ions likewise diminish colloid viscosity, though less markedly than the iodides—a fact which may seem significant when compared with the earlier finding of Lehmann, that potassium bromide and potassium chloride are equal to potassium iodide in power to accelerate elimination of lead in the urine. The diuretic and expectorant properties of the iodide hardly appear sufficient *per se* to account for an increased elimination of lead.

From the clinical standpoint, although some observers have of late denied potassium iodide all utility in lead poisoning, the drug is still well nigh universally relied upon, and definite evidence of its power to mobilize lead accumulated in the system is not wanting. Thus, Sir Thomas Oliver refers to the case of a lead worker absent from the factory for a few months, exhibiting no blue line on the gums, in whom administration of potassium iodide brought on both a double wrist drop and the appearance of a blue line. Likewise suggestive, though less convincing, is the case, mentioned by the same author, of an old woman who after a week of unsuccessful treatment for paresis of the arms, constipation, and other symptoms indicative of lead poisoning, was given seven grains of potassium iodide with each dose of her medicine and found dead in bed the next day. The autopsy was negative, but there were found in a drawer powders containing lead acetate and sulphur which the patient had used to dye her hair. Her illness was definitely learned



to have been due to the use of these powders, and the rapidly fatal intoxication is ascribed to dissolution by the potassium iodide of lead stored in her tissues. In view of these and other similar clinical experiences, it would seem advisable in the treatment of lead poisoning not to begin giving potassium iodide until the severity of the symptoms has already been diminished by other measures and a bowel movement secured. When the iodide is first administered, its effects should be carefully watched, especially if the dose is increased beyond five grains three times a day. Premature or excessive iodide medication may not only increase colic and nerve pains, but, as Sir Thomas Oliver's first case indicates, accentuate motor paresis—a condition less easily remedied.

(To be continued.)

**Treatment of Epitheliomata.**—C. J. Braeman (*Urologic and Cutaneous Review*, February, 1917) considers the prophylactic treatment of utmost importance. All precancerous foci such as ulcers, chronic inflammatory skin conditions, senile keratosis should be attended to. All benign changes in the skin should be removed in early life. This may be done by means of the electric needle, carbon dioxide snow, and the curette and caustic. In all suspected cases of cancer the Wassermann test should be performed. The treatment of epithelial cancer may be carried out by excising it. The objections to excision are the resulting scar and deformity, the knife opens up lymphatic channels and the underlying cells often extend beyond the apparent border of the growth. Radium is an excellent form of treatment but at present it is very expensive. Another objection is that it is prone to cause burns which are painful and heal slowly. The results with the x ray have been rather gratifying, but it is not the method of choice as a routine measure. Pastes have been used, but they are only of service in very superficial and early cases. The author has used the following treatment for some time: The part is first washed with green soap and warm water and the crusts removed. One per cent. solution of novocaine is injected under the skin, or two per cent. solution is applied locally. With a sharp curette the growth is completely removed until the surface is perfectly smooth. Novocaine is again applied and the base and the edges are cauterized with the following mixture:

R. Liquor formaldehydi. ....	2 parts.
Comp. sol. of cresol. ....	2 parts.
Tr. ferri chloridi. ....	2 parts.

A little cotton on a toothpick may be used as an applicator. An ointment of ichthyol, dram one to diachylon ointment, ounce one, is then applied. There may be considerable reaction which usually disappears in a day or two. The ointment is applied twice daily after previous removal of the secretion with a warm alkaline solution. The cauterized area sloughs in from five to ten days. It is a very simple method and is recommended because it can be used to advantage in locations near the important organs and because it necessitates the destruction of very little healthy tissue.

**Treatment of Syphilis of the Central Nervous System with Intraspinal Injections of Mercurialized Serum.**—Julian Mast Wolfsohn (*American Journal of the Medical Sciences*, February, 1917) reports one case of Erb's syphilitic spastic spinal paralysis, and four of tabes dorsalis out of a total of twenty-five cases treated in the following manner. For one week the patient is given full doses of mercury, preferably an inunction of one dram of the ointment every night. Forty c. c. of blood are collected in dry sterile centrifuge tubes, centrifugated immediately and then placed in a refrigerator for eighteen to twenty-four hours, when it is centrifugated again for fifteen or twenty minutes and eighteen to twenty c. c. of serum are pipetted off. One c. c. of a solution of mercuric chloride in distilled water, which contains a fiftieth of a grain of bichloride, is added to the serum. This prepared serum, which should be perfectly clear, is then heated at 56° C., or 132° F., for half an hour. A lumbar puncture is performed, spinal fluid is removed until the pressure reads about thirty mm. Hg., and the prepared serum is administered slowly by gravity at the body temperature. The patient is placed in bed, the foot of which is elevated eight inches, for four hours. Liquid diet is ordered, and a quarter of a grain of morphine is prescribed if necessary. He states in favor of this method of treatment that there is no danger in its administration; that for local treatment it is very efficacious in syphilis of the central nervous system, especially in tabes dorsalis, in which lancing pains are the predominant symptom; that, due to its stability, the serum may be used at any time after its preparation; that it is inexpensive, and that there is no objection to a combined salvarsanized and mercurialized treatment. Because of the short space of time that has elapsed since the beginning of this form of treatment it must not be concluded that relief is going to be permanent. Such a conclusion cannot be justified until at least three years have elapsed. The results obtained so far show that it mitigates pain.

**Intravenous Injections of Vaccines in Gonorrheal Infections.**—Harry Culver (*Journal A. M. A.*, February 3, 1917) made comparative observations upon the effects of treating gonorrheal infections with three vaccines. The vaccines used were gonococcus vaccine in a dose of 100 million killed organisms, meningococcus vaccine in the same dose, and colon bacillus vaccine in a dose of twenty-five million organisms. Very careful observations were made on all cases and the results were found to be identical from all of the vaccines. The intravenous injection of the vaccine was followed after twenty minutes to an hour by a chill, with or without transitory headache and nausea or vomiting, severe pain in the affected part, a slight fall of temperature followed by a slow rise to a maximum in from one to four hours. The temperature then falls to normal in twenty-four hours. Usually there was a mild leucocytosis just before and during the first part of the chill, followed by a marked leucopenia, which, in turn, was followed by a gradually developing hyperleucocytosis. This returned to normal in about

forty-eight hours. The average maximum temperature was found to be about  $104^{\circ}$  F. and the average maximum leucocytosis to be somewhat over thirty thousand. The pain of gonorrheal arthritis and epididymitis was usually relieved after the first injection and recovery from these complications was usually quite prompt. The injections had a variable effect upon urethral discharges, some being uninfluenced, some increased and then decreased, and others decreased after each injection. No beneficial effects were observed in any of the cases, either upon the discharge or upon the complications when the dose of vaccine was insufficient to provoke the typical reaction. The mechanism of the action of these injections is not yet clear, but the author discusses several suggestions which have been made to cover the use of other nonspecific protein injections. No ill effects were observed in the author's cases, but the method is not yet applicable for general use owing to the inability to fix a safe, yet effective dose of any nonspecific substance for injection.

#### Transplantation of Fat for Cosmetic Purposes.

—Dean Lewis (*Surgery, Gynecology, and Obstetrics*, February, 1917) discusses the above method as follows: It has been stated in discussing tenolysis and neurolysis that the strips of fat usually used for these purposes remain viable. While certain changes occur leading to absorption or liberation of fat droplets, collections of other groups of cells, probably derived from the original fat cell, are found which indicate definite growth changes, so that the term of growth atrophy may not be inappropriately applied to the changes in the fat following transplantation. The possibility of transplanting large masses of fat widens considerably the field of plastic surgery. Czerny was probably the first to attempt the transplantation of large amounts of fat. He reported to the German Surgical Congress in 1895 a successful transplantation of a lipoma to replace a breast which had been removed. Neuber soon after reported cases in which he had transplanted fat subcutaneously to raise a depressed scar over the infraorbital margin resulting from an earlier tuberculous osteitis. His attempts to transplant large pieces of fat all failed, and he came to the conclusion that pieces of fat which exceeded in size a bean or almond could not be successfully transplanted. The use of fat to fill bone cavities resulting from osteomyelitis has been frequently attempted, and as is the case with most operations designed to do this, the final result depends upon the amount and virulence of the infection. If the cavity can be so cleansed that the chances of infection are greatly reduced or removed, fat may be used to fill the cavity, but the experience with fat transplantation in the closure of osteomyelitic cavities is much like that with the Moseitig Moorhoff plug and Beck's paste. Tuffier has used fat transplants to cover the end of the bone after amputation of the femur, after resection of an elbow joint, etc. In two cases he attempted to close an empyemic cavity by transplanting a lipoma, while in a third he transplanted a piece of omentum which had been kept on ice. But few attempts have been made to use fat to correct deformities about the face. Bier operated upon a facial hemiatrophy and increased the

size of the half of the face affected by inserting strips of fat removed from a lipoma beneath the skin. Neuber used it to raise a depressed scar over the frontal sinus; Kanavel to correct an unsightly scar of the chin which followed ulceration following the application of arsenic paste. Ophthalmologists have used fat transplantation both after enucleation and evisceration of the eye. All of the uses to which fascia and fat transplantation have been applied have not been touched upon. I have attempted to give some of the underlying principles. The use of fat or fascial transplantation in arthroplasties has recently been the subject of much discussion and their value demonstrated. The use of fascia to occlude intestinal loops in gastrointestinal surgery, and to produce temporary closure of vessels in the treatment of aneurism has been tried out sufficiently to determine its distinct value in these fields of surgery.

#### Gastric Juice in Duodenal and Gastric Ulcers.

—Lester R. Dragstedt (*Journal A. M. A.*, February 3, 1917) points out the fact that it is well known that ulcers in the stomach or duodenum heal readily in the presence of active gastric juice. In spite of this fact the usual plan of treatment of such ulcers has been based on the supposition that the gastric juice induces chronicity. To test the matter experiments were conducted on dogs, in which Pawlow pouches had been produced, either so as to be constantly drained, or so as to be constantly filled with gastric juice. Ulcers of uniform size were then produced in these pouches by the injection of silver nitrate and the rates of healing were compared for the two types of pouch. No difference was found between the rates for those filled as compared with those drained of gastric juice. The interesting observation was also made that many of these ulcers artificially produced became infected with organisms of the same kind as are found in the spontaneous ulcers of man. This suggests that these organisms may be secondary invaders from the gastrointestinal tract even in the case of man.

#### Treatment of Acne with the X Ray.

—Walter I. LeFevre (*Ohio State Journal of Medicine*, February, 1917), basing his treatment on the result of fourteen years' experience, concludes that it is not necessary for patients to diet. The face should be cleansed once a day with pure alcohol in order to remove the excess of oil and prevent the spread of pus infection. The patient should drink large quantities of water. The blackheads should not be removed by mechanical means. The treatment with the x ray is carried out as follows: The patient's eyes, brows and hair are protected with a thin lead sheet. A fresh piece of waxed paper is placed under the lead. A medium hard tube which will back up a four inch spark gap is used at a distance of fifteen inches from the anode to the skin. The milliamperage is one and a half to two. The duration of the treatment is five minutes to each side of the face once a week until the skin clears; if a slight erythema appears, every two weeks. The first thing noticed is a dryness of the skin followed by a slight tanning. A series of treatment lasts usually three months. In some cases a second series is necessary.

**Treatment of Pneumonia.**—A. P. Ship (*Dominion Medical Monthly*, January, 1917) reports a case of lobar pneumonia treated with pneumonia phylacogen. The dose administered varied from one half to one and three fourths c. c. and was administered subcutaneously at first, later intravenously. Most of the injections were followed by a sharp reaction, consisting of a chill, and a rise of temperature. This reaction was followed in several hours by a reduction in the temperature and an improvement in the patient's condition.

**The X Ray Treatment of Tuberculous Peritonitis.**—Paul Eisen (*American Journal of Röntgenology*, January, 1917) states that he had the opportunity of treating eleven cases of tuberculous peritonitis with deep therapy during the past two years. The results were very satisfactory, the treatment proving unsuccessful in only one case. The average duration of the treatment was from eight to twelve weeks. The area treated depends upon the strength of the individual patient. The dose is regulated by the gain in weight.

**Röntgen Indications for Surgical Procedure in Postpyloric Ulcer.**—Lewis Gregory Cole (*Interstate Medical Journal*, January, 1917) gives the results of the examination of one thousand cases of gastrointestinal disorders, in one hundred of which a diagnosis of postpyloric ulcer was made. Serial röntgenography not only reveals the pathology in these cases, but also gives definite indications for treatment. Cases characterized by simple cap deformity, with or without slight stenosis, with a normal or compensating peristalsis, without deep crater or secondary gastric involvement, are more completely relieved of their symptoms by medical treatment than by surgical intervention. Practically all other cases demand surgical operation.

**Value of Emetine Hydrochloride in Amebic Dysentery.**—E. Job and L. Hirtzmann (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, October 26, 1916) assert, after experience with 254 cases in Morocco, that of all drugs used in amebic dysentery, emetine hydrochloride is much the best. It should be given subcutaneously in a dose of at least 0.08 gram and sometimes 0.12 gram a day, and for at least three days. After the injection treatment a course of ipecac by the mouth should be given. The writers use Segond's ipecac pills, which excite less nausea than ipecac in other forms. Six pills are given on the first day after completion of the emetine cure, five on the second day, and four on the third. To minimize nausea, the pills should be given at least two hours apart. This treatment completely cured the dysenteric attack in 131 out of 254 cases, but failed as regards certain protection against recurrences. In sixty-six cases the sole remaining evidence of the attack was the persistence of two or three pasty stools a day, but in forty-nine cases the stools remained diarrheic in form. This is explained by chronic specific changes in the mucous membrane of the large bowel, by nonspecific changes following repeated previous attacks, and by concomitant parasitic invasion of the intestine. Where examination of the feces reveals eggs of parasites, one or more courses of thymol should be administered. These are all

the more indicated in that ingestion of thymol is supposed to favor disappearance of the amebic cysts. In eight cases of the series death occurred in spite of the use of emetine; these fatalities were accounted for, however, by intercurrent infection or a poor general condition of the patient. Six samples of emetine obtained from different sources gave practically equal therapeutic results. Injections of acid emetine were observed to be painful.

**Sterility Due to Weak Spermatozoa.**—V. D. Lespinnasse (*Journal A. M. A.*, February 3, 1917) finds this a fairly frequent cause of sterility and suggests the following plans of treatment. The first is based upon the apparent close relation between the functions of the pituitary and the suprarenals and spermatogenesis and consists in the administration of desiccated anterior lobe of the former and the desiccated suprarenal gland, especially the cortex. As much as two and a half grams of the former and almost one gram of the latter may be given daily. From such treatment the author has observed a decrease in the proportion of abnormal forms of spermatozoa and an increase in the motility of the remainder in several cases. The second method of treatment is directed to the immediate relief of the sterility and consists in the direct injection of freshly discharged semen into the uterus shortly before or just after menstruation. This is intended to overcome the marked destructive effects of the vaginal secretions upon the weakened sperm. Aseptic precautions should be observed, both in the collection of the seminal fluid and in the intrauterine injection.

**Treatment of Prostatitis.**—W. J. Wallace (*Southwest Journal of Medicine and Surgery*, January, 1917) divides the treatment into that of acute and chronic prostatitis. The patient should be kept at rest, given a hot sitz bath three times daily for thirty minutes at a time, followed by a rectal irrigation of two gallons of water at a temperature of 120° F. An icebag should be applied to the perineum and over the bladder. Potassium salts in large doses should be administered. If the rectal and vesical tenesmus is severe a suppository containing morphine sulphate, one third grain, and extract of belladonna one third grain in cocoa butter should be given every two hours. Internally, large quantities of water and no copaiba, sandalwood oil, etc. An excellent prescription is:

℞ Tr. Hyoscyami, .....	drams vii.
Potassii Citratis, .....	drams viii.
Tr. Belladonnae, .....	drams iiss.
Antipyrin, .....	drams lss.
Elixir Lact. Pepsin, q. s., .....	ad ounces iv.
M. et Sig.	Teaspoonful every three hours.

For retention of urine the sitz bath should be tried first, and if this is unsuccessful the patient should be catheterized, with a soft rubber catheter. Gentle massage of the prostate should be carried out. In the treatment of chronic prostatitis the prostate and the seminal vesicles are massaged, followed by a posterior retrojecting irrigation of silver nitrate solution one to 3,000 or a deep instillation of three per cent. argyrol or one quarter per cent. silver nitrate solution. Every seven to ten days a local application of ten per cent. silver nitrate solution is made to the eroded prostatic urethra.



**Treatment of Nævi.**—W. S. Newcomet (*American Journal of Röntgenology*, January, 1917) enumerates the different methods of treatment: Surgical, caustics, electrical methods, ultraviolet light, and radiation. As far as nævi are concerned the best results are to be expected in the cavernous type. Among the available methods the electric needle, galvanism, or diathermy will destroy the enlarged veins without injuring the underlying skin. If the skin is involved and the superficial layer discolored, radium will give the best results. The superficial and widely disseminated variety present the greatest difficulty. For these cases radium, the high frequency current, and the ultraviolet light have been employed. The pigmented nævus yields better results under radiation either from the Röntgen rays or radium.

**End-to-End Anastomosis of the Colon.**—P. Lockhart-Mummery (*Surgery, Gynecology, and Obstetrics*, February, 1917) says that the principal and obvious disadvantages of lateral anastomosis are: 1. It requires a much greater length of bowel, and consequently either more extensive freeing of the colon or less extensive removal of the diseased portion as compared with axial union. This is a particularly serious disadvantage when dealing with the colon, as the amount of bowel is always strictly limited. 2. The operation takes longer to perform, as in addition to the actual anastomosis the ends of the bowel have to be sealed off. 3. The subsequent anatomical condition is not a normal one, and the blind end of the proximal portion of the bowel sometimes gives trouble from dilatation and pocketing beyond stoma; in some cases this has even led to ulceration and abscess.

**Drainage for Pelvic Abscess during Pregnancy.**—F. Reder (*American Journal of Obstetrics*, December, 1916) states that the best evidence of pus in Douglas's pouch in pregnancy is obtained by rectal examination. The examining finger, introduced three or four inches, recognizes a tender mass of variable size, hard or fluctuating, with the rectal mucosa opposite it swollen and covered with mucus. Flattening of the rectum against the sacrum can also be made out. Prompt recognition of the pus is of great importance, for any infectious process terminating in suppuration is one of the greatest dangers to a pregnant woman. The life of the fetus is imperiled, and abortion will follow in fifty-seven per cent. of cases. In the earlier stages of pregnancy abdominal section to evacuate the pus may be followed by a happy termination; but in the later stages miscarriage becomes more likely and the operative wound heals with difficulty because of the enlarging uterus. In two cases of pelvic abscess in the sixth and seventh months, respectively, Reder decided upon rectal incision as the only promising alternative, vaginal section being likewise exclusive owing to the probability of miscarriage. The results were good, both patients recovering without miscarriage. The procedure consisted in first gently dilating the anus, then douching the rectum well, finding the most fluctuating spot in the tense mass with the ungloved finger, and introducing a bistoury along the finger. Pus having been encountered, the opening was at once enlarged with dressing forceps to admit

the index finger, and a large winged rubber tube, long enough to protrude from the anus, passed into the abscess cavity. The tube was removed at the end of a week. The operation may be carried out either with or without a superficial anesthesia. Advantages of the rectal drainage under these conditions are that even if miscarriage occurs, the danger of infection from pus can be readily controlled. The abdominal wall, being intact, can fully cooperate during labor, and there is no wound to give anxiety.

**Modern Treatment of Syphilis.**—Frederick W. Smith (*Medical Record*, February 3, 1917) states that the consensus of syphilologists is that treatment should be begun as soon as the diagnosis is made, and if this be efficient and persistent ninety-five per cent. of end results may be prevented. In florid cases it is better to begin with deep intramuscular injections of mercury. Smith suggests intravenous injections of salvarsan every five to seven days alternating with the intramuscular injections of mercury, giving a series of ten or twelve treatments of each. Sometimes a rest from all treatment for three to four months has a beneficial effect. When involvement of the spinal fluid is found, intraspinal treatment is indicated, preferably the Swift Ellis method.

**The Palliative Treatment of Inoperable Carcinoma of the Cervix by Means of Radium.**—Frank (*Journal of Cancer Research*, January, 1917) reports twelve cases that were under his care. The technic is described, the clinical effects noted, the histological findings given, and the case histories reported. The author's conclusions are quoted in full: "1. Radium is our best palliative measure in inoperable cancer of the cervix. 2. Far advanced cases may be treated. 3. Radium not only rapidly relieves the pain, hemorrhage, and discharge, but indirectly improves the general health and condition. 4. The minimum quantity of radium substance needed is fifty mgm. 5. Borderline cases or operable cases should be submitted to an operation after a short preliminary course of radiation. 6. Operated cases should be subjected to postoperative, prophylactic radiation, beginning not later than four weeks after operation. 7. The technic of radium treatment of cervical cancer is simple."

**Treatment of Obstructive Enlargement of the Prostate.**—E. Starr Judd (*Interstate Medical Journal*, January, 1917) considers that these cases should have their treatment divided into two stages. In the first stage the residual urine should be withdrawn gradually and infection of the bladder cleared up as much as possible. At the Mayo clinic it is preferred that patients be prepared for prostatectomy by using a urethral catheter two or three times in twenty-four hours at first and then when they have become accustomed to it the catheter is permanently fastened in. As soon as the reaction from the preparatory treatment has subsided prostatectomy may be performed with comparative safety. The preparatory treatment almost always produces a very salutary lowering of blood pressure, which in fifty cases averaged twenty-one points, bringing the average systolic pressure down from 166 to only 145. Judd considers that this two stage treatment considerably reduces the mortality.

# Miscellany from Home and Foreign Journals

**Botulism.**—Schede (*Medizinische Klinik*, December 10, 1916) states that this condition is due to the absorption of the toxin formed in meat and certain other food products from the growth of the *Bacillus botulinus*. One of its chief characteristics is that the poison is often not uniformly distributed through a given sample of contaminated food, so that of several persons eating such food some may escape and others be severely affected. Just such an experience is recorded by the author, who saw three cases occurring in a family of five. Two of the cases resulted fatally. The incubation period is usually about twelve hours, due to the slow absorption of the toxin and the symptoms are fairly constant and typical. The onset is gradual with nausea and vomiting and usually obstipation. Next there is dryness in the mouth, hoarseness, diplopia, disturbance of secretion, deglutition and speech, and the most intense prostration. Objectively there are dilatation of the pupils, paralysis of accommodation, of the ocular muscles, of the soft palate, and paresis or paralysis of the pharyngeal and laryngeal muscles. Other muscle groups may be affected, usually those of the cranial nerves. There are typical symptoms of bulbar paralysis and death usually results from respiratory paralysis or a secondary pneumonia. The patellar reflex is uniformly absent and there may be paralysis of the bladder muscles. Marked tachycardia is usually present. The condition is typically one of the action of a toxic substance which selectively paralyzes or depresses the medullary structures. The treatment of the condition is not very satisfactory and must be largely symptomatic unless one can secure the antitoxic serum which has recently been elaborated. It is possible that the administration of diphtheria antitoxin may be of some value as it is known to combine with some of the toxin of this disease, but this serum failed in the author's cases.

**Malaria and Traumatism.**—Laurent Moreau (*Bulletin de l'Académie de médecine*, January 2, 1917) asserts that the majority of wounded men brought back to France from the Balkans on hospital ships exhibit malarial paroxysms. Occasionally the malarial manifestations have been mistaken for the febrile reactions attending infected wounds. Systematic blood examinations revealed a marked influence exerted by trauma in awakening malarial symptoms. The duration of the subject's stay in the Balkans seems a relatively unimportant factor, but the severity of the malaria closely parallels that of the wound preceding its appearance. Thus, a man subjected to thigh amputation for crushing shell injury followed by gas gangrene died in a pernicious malarial paroxysm, while cases of simple trauma such as fractured clavicle led, as a rule, to mild tertian paroxysms. The first paroxysm often appeared on the day after an operative procedure—sometimes at a considerable interval after the wound itself. The fever was even induced by incision of a felon. In subjects known to be malarial, incision of an accidental abscess at the site of a quinine in-

jection sometimes sufficed to provoke a violent malarial recrudescence. In subjects previously free of malaria two to four weeks elapsed between reception of a wound and the first febrile attack; in others, the period was shorter. The malarial parasites found in the blood were either of the benign tertian or, somewhat oftener, of the tropical type. In many additional cases, no parasites could be found, though the febrile attacks were clearly malarial. These are taken to have been cases of "closed" malaria, with the parasites restricted to the deep circulation. Quinine salts by mouth or injection gave good results in posttraumatic malaria. In the severe cases, intramuscular, or better intravenous, injections of quinine urethane uniformly caused marked reduction in the schizonts and crescents. In a pernicious case, novarsenbenzol intravenously caused complete disappearance of parasites from the peripheral circulation, adrenalin being simultaneously given to combat asthenia and low blood pressure. Wound healing and consolidation of fractures were perceptibly retarded by malarial infection. Prophylaxis under war conditions is necessarily confined to individual, portable mosquito netting and preventive use of quinine in large doses. Quinine should be given to all the wounded to prevent initial or renewed activity of the malarial organism.

**Blood Pressure during Operations.**—C. W. Moots (*American Journal of Obstetrics*, December, 1916) lays stress on the value of blood pressure estimations during operations as a safeguard to the patient against the production of a dangerous degree of shock by operative procedures. Owing to its susceptibility to variations from relatively trifling causes the systolic blood pressure, taken alone, is not nearly so important as the diastolic, which is the truest index of arterial tension. If compared, however, with the diastolic, it is invaluable in clearly showing what efforts the heart is making to maintain circulatory equilibrium. The most important finding of all is the pressure ratio, which is obtained by dividing the pulse pressure (difference between diastolic and systolic pressures) by the diastolic pressure. Thus, in a normal case with systolic pressure of 120 mm. Hg. and diastolic of eighty mm. Hg. the pulse pressure is forty and the pressure ratio one half or fifty per cent. A pressure ratio between forty and sixty per cent. is a safe one. If there is vascular contraction and rigidity with high diastolic pressure, but the pressure ratio remains near fifty per cent., a needed surgical operation can be continued without fear; but if the pressure ratio is about twenty per cent. or greater than eighty per cent. the prognosis is grave, slight shock being likely to lead to serious results. In Moots's routine pressure estimations the auscultatory method is used. The anesthetist (McKesson), using nitrous oxide oxygen as a routine anesthetic, has to his right an eight inch pressure dial and stand for writing on the record sheets. Long rubber tubes connect the dial with the arm band and the Bowle's stethoscope over

the brachial artery with the anesthetist's ears. By frequent observations thus made, the anesthetist is able to forecast approaching circulatory depression long before it can be determined by any other method. Treatment can thus be applied, or the operation curtailed, before the heart is exhausted by rapid contractions in its attempt to maintain the circulation. Careful study of the records enables the surgeon and anesthetist gradually to eliminate peculiarities of technic promoting shock. Experience in eight thousand cases showed that the following elements in technic have marked and constant effects on the blood pressures: Psychic or emotional state of the patient; posture, the extreme Trendelenburg being the worst; anesthetic overdosing; cutting and tearing of tissues and the packing of large gauze packs, instead of rubber tissue, into the abdomen; preservation of the fluids in the body up to the hour of operation.

**The Prognosis of Duodenal Ulcer.**—Max Einhorn (*Medical Record*, February 10, 1917) states that simple duodenal ulcer offers a comparatively good prognosis providing some form of rest cure can be carried out, such as rectal alimentation, then von Leube-Ziemssen milk diet, duodenal alimentation, or simply a milk and egg diet with rest in bed for two or three weeks. With the occurrence of repeated attacks the prospect of cure by medical measures becomes doubtful and operative intervention may be required. In the event of operation gastroenterostomy preferably with pyloric exclusion offers a good prognosis. In cases accompanied by pylorospasm and hypersecretion the prognosis is not good under ordinary methods of treatment such as the alkalies and milk diet. Duodenal alimentation gives a better prognosis but where it is not effectual in two or three weeks then the gastroenterostomy with pyloric exclusion should be done. In those cases complicated by pyloric or duodenal stenosis the outlook is much better when the operative treatment is employed. In the fourth group of cases where there are periodically recurring hemorrhages the best results are obtained by a gastroenterostomy in the interval between the attacks of bleeding.

**Paralysis of the Superior Facial in Cerebral Hemiplegia.**—P. Le Damany (*Presse médicale*, January 4, 1917) divides cases of cerebral hemiplegia into three groups, according to the condition of the superior facial. In a few instances, the superior facial is paralyzed in complete conformity with the inferior facial and extremities. In a second, much more numerous group, the superior facial is paralyzed for only a short time, but distinctly enough to exclude all doubt. Finally, in a certain number of instances the superior facial seems absolutely unaffected, even upon attentive observation. The prevailing theory accounts for the relative lack of involvement of the superior facial on the ground that the centre of each superior facial acts bilaterally and either centre can therefore make up for destruction of that of the opposite side. Le Damany adduces, however, much evidence to show that this theory is insufficient. In a case he reports, the autopsy proved that a unilateral brain lesion may cause complete superior facial paralysis. A better

explanation of the facts rests upon consideration of the ansa lenticularis as the exclusive pathway of the superior facial fibres in the brain, while the inferior facial paths pass through the internal capsule, nearer the midline. Involvement of the inferior facial distribution may thus occur with little or no effect on the superior. Paralysis or paresis of the superior facial is manifested in inertia of the frontal and orbicularis muscles. Often in recent hemiplegia closure of the lids is more or less impaired on the affected side. Wrinkles of the forehead on this side tend to disappear. Sagging of the eyebrow as compared to the sound side is noted either at rest or upon attempting to contract the frontalis. Paresis of the orbicularis is manifest in that the eye is either larger or smaller than that on the sound side, the eyelid cannot be closed alone, and when shut with the other eye, is closed less forcibly.

**Fat Embolism a Cause of Shock.**—W. T. Porter (*Boston Medical and Surgical Journal*, February 15, 1917) says that the fat in bones is in a condition peculiarly favorable to its entrance into the bloodvessels after fracture, and that large quantities of fat have repeatedly been found in the bloodvessels after fracture. The entrance of fat into the bloodvessels begins immediately after the wound, and frequently, if not always, there is fat embolism of the brain and other organs. From his observations and experiments the writer concludes that fat, often in large quantities, is known to enter the bloodvessels in traumatic shock, the essential feature of which is a characteristic fall of blood pressure. A similar fall, with the same resultant symptoms of shock, may be produced experimentally by the injection of fat into a vein. Fat in the blood stream is not injurious of itself; its injurious effects are the product of fat embolism. Fat embolism is a cause, though not the only one, of shock after fracture of the bones.

**Lichen of the Porcelain Type.**—H. Gougerot (*Paris médical*, December 30, 1916) describes a form of lichen characterized by the brilliant, opaque, porcelain or enamel like white tint of the lesions. The condition resembles lichen planus in that the lesions consist of small polygonal papules, frequently aggregated to form more or less extensive and, as a rule, very irregular shaped patches. The surface of the porcelain like lesions is flat and smooth, usually without desquamation, and their margins are well defined, slightly elevated, and surrounded by a narrow zone colored pink, red, reddish brown, or rarely reddish purple, sometimes diffused peripherally in the form of a broader, reddish brown halo. On palpation the patches seem hard and dry. Occasionally capillary vessels coursing in them can be perceived. The patches are less numerous than in lichen planus—usually one to twelve—and occur chiefly in the upper part of the thorax and back, sometimes irregularly, at others in the midline or symmetrically. Itching is rare, but pain and especially tenderness are usual symptoms. The lesions increase in size but slowly and may remain stationary for long periods. Some of the patients were of the "nervous" type. The usual measures for lichen planus, including salicylic acid, proved useless or even increased the disfigurement.



**An Organism in the Blood in Trench Nephritis.**—Robert L. Thornley (*British Medical Journal*, December 16, 1916) asserts that a coccus has been cultivated by him in every one of twenty-seven consecutive cases of so called trench nephritis in which blood cultures were made. The coccus was the same from all of the cases. It produced illness in a rat and after the animal was killed was cultivated from its heart's blood.

**The Isolation of Bacteria of Secondary Infection from the Sputum in Pulmonary Tuberculosis.**—Harvey (*Journal of Medical Research*, January, 1917) states that by employing a modification of the Kosh-Kitasato method for isolating secondary organisms from tuberculous sputum he found that the *Streptococcus nonhemolyticus* is the most frequent pyogenic organism found in association with pulmonary tuberculosis. In addition, staphylococci and diplococci were found, but not in abundance.

**The Virulence of Diphtheria Bacilli from Diphtheria Patients and Diphtheria Carriers.**—Weaver (*Journal of Infectious Diseases*, January, 1917) made cultures at varying intervals after the onset of the disease from thirty-six patients with typical diphtheria and from eleven carriers. In testing on guineapigs he found that the bacilli are practically always virulent and usually remain so up to the time of disappearance, even though a long time elapses. For this reason carriers should be isolated until the bacilli have been gotten rid of, or until they are shown to be nonvirulent.

**Physical Phenomena in Pleural Effusions.**—J. Curtis Lyter (*Journal of the Missouri State Medical Association*, February, 1917) asserts that a great percentage of moist pleuritis do not give the classical physical signs. Massive quantities of fluid may by producing extreme tension give auscultatory findings characteristic of pneumonic consolidation; dense adhesions causing encysted pleurisy cause suspicion of lung abscess; the chronic hyperplastic pleura found in pleural tuberculosis may so closely simulate a pleural effusion that an accurate diagnosis can be made only by combining physical examination with exploratory puncture and roentgenography.

**Syphilitic Lesions Simulating Tuberculosis.**—Arthur L. Fisher (*Journal A. M. A.*, February 3, 1917) has seen some eighteen cases of bone or joint syphilis which have simulated very closely tuberculous lesions of these structures. The cases could be divided into two groups: the first having little else in the way of symptoms than pain in the affected bone, often worse at night; the second presenting pain, some swelling and stiffness of a joint with some degree of lameness. In both groups the x ray showed, either definite or probable absence of any tuberculous process. The Wassermann reaction was found to be negative and the diagnosis of syphilis as the cause of the process was made by a process of exclusion, combined often with a history or other evidence of syphilis and by the result of the therapeutic test. Attention is here called to the fact that the Wassermann reaction may be negative in other syphilitic lesions than these described, but that the therapeutic test should nevertheless be given a trial.

**Early Diagnosis of Pulmonary Tuberculosis.**—George Halperin (*Illinois Medical Journal*, February, 1917) considers that the most important symptom of all is the presence of fever, and next to this is acceleration of the pulse. Next in importance are loss of weight and strength, while a hoarseness due to reflex relaxation of the vocal cords and not to any tuberculous process is a common early symptom. A negative sputum in the early stage is the rule rather than the exception, and for its examination the antiformin method is the best. Inspection and palpation of the chest, and especially of the muscles overlying the apex of the lung are really of great importance. The tuberculin test is of limited value while x ray examination is of help in estimating the extent of the disease.

**Throat Infections.**—James J. King (*Journal A. M. A.*, January 13, 1917) states that the frequent presence of the Connellan King diplococcus in the crypts of the tonsils or at the roots of the teeth in arthritic patients suggests that it may be specific, and that a simple tonsillitis may be followed by serious complications, due to an absorption of chemical toxins. If the focus of infection in arthritis exists in the tonsil, the treatment should consist in the injection of an autogenous vaccine until all infection is cleared up, and then the tonsils should be removed by enucleation. The throat is more or less characteristic. The color of the mucosa is purplish, distinctly darker than normal, and decidedly unhealthy in appearance. The tonsils of the patients who have suffered from the more serious complications, as rheumatism, arthritis, and cardiac lesions, are usually rather small and submerged, with a brownish yellow serum exuding from their crypts. The Connellan King diplococcus is a small Gram negative organism and has never been found out of the mouth. It is not pyogenic, but is a powerful toxin producer.

**A Study of Some Diagnostic Reactions for Malignant Disease.**—Coca (*Journal of Cancer Research*, January, 1917) reports his results in the use of the von Dungern and the Freund-Kaminer tests for malignant disease. The Freund-Kaminer tests were based upon the assumption that isolated cells of carcinoma are dissolved by the serum of noncancerous individuals, whereas this property is lacking in the serums of cancer patients. In more than 150 experiments no cytolysis was observed. It therefore seems evident that this reaction cannot be made the basis of a differential test for malignant tumors. The von Dungern reaction is a complement fixation test in which an antigen composed of an acetone extract of human blood corpuscles is used. Thirty-six cancer serums and an equal number of noncancerous serums were tested and in no instance was a fixation of complement obtained that could not be explained on other grounds. In a further series of ninety-eight serums from cases of carcinoma and sarcoma thirteen were Wassermann positive and of these four caused complement fixation also with the blood extract, which was prepared from washed blood corpuscles from a case of tertiary syphilis. In no other case was complement fixation observed that could be interpreted as a reaction of diagnostic value.

# Proceedings of National and Local Societies

## MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

*Forty-second Annual Meeting, Held at Indianapolis, Indiana, October 10, 11, and 12, 1910.*

The President, DR. WILLARD J. STONE, Toledo, Ohio, in the Chair.

*(Concluded from page 382.)*

**New Methods of Pyloroplasty for Congenital Pyloric Stenosis.**—Dr. ALFRED A. STRAUSS, of Chicago, drew the following conclusions: The advantages of pyloroplasty over posterior gastroenterostomy are: 1. The incision required is very small, in contradistinction to that necessary in performing posterior gastroenterostomy, large enough to deliver the partially distended stomach, transverse colon, and then to find the right loop of jejunum. 2. Those who have performed gastroenterostomies in these infants will appreciate the saving of a tremendous amount of shock thus secured. 3. The methods of operative procedure described cover every form of pathologic condition so far found in congenital pyloric stenosis. 4. The operations reconstruct a pathologic pylorus to a more normal pylorus, particularly as to its lumen and enormous thickness of musculature.

Finally, the normal anatomic relation of the stomach to bowel is preserved by the pylorus remaining the normal connecting tube between stomach and duodenum. The developing liver and pancreas in the infant, which we know from experiments in physiology are stimulated reflexly by food passing through the duodenum, must certainly be considered in a more normal condition here than with a closed off pylorus, as occurs after a posterior gastroenterostomy. Moreover, the duration of the operation is one third the time taken by posterior gastroenterostomy. The most important fact regarding this operative procedure is that these children come back from the operating room with no more shock than from the smallest minor operation. The projectile vomiting has ceased, no peristaltic waves are seen, they take their nourishment, and do not appear ill, as one would expect from an abdominal operation.

**Tumors of the Kidney and Stone.**—Dr. H. H. MARTIN and Dr. H. O. MERTZ, of LaPorte, Indiana, reporting a case of a primary alveolar carcinoma of the pelvis associated with multiple stone, concluded: 1. Epithelial tumors of the kidney are most frequently associated with renal calculi and that of these the relative proportion of association is greater in epithelial tumors of the kidney pelvis. 2. Cystic tumors, associated with renal stone are next in frequency. 3. The coexistence of renal calculi and mesotheliomatous and sarcomatous tumors is rare. 4. There does exist a definite and constant relation between the stone and epithelial tumors of the same kidney. The stone in the majority of cases, fifty-six per cent. in epithelial tumors of the parenchyma and sixty-two per cent. in epithelial tumors of the pelvis and ureter, being the primary lesion, "which because of its irritation, direct and consequent, is

the principal etiological factor in the production of the neoplasm." 5. In cystic tumors of the kidney, in the true polycystic degeneration the calculus is invariably secondary, or but chance, while in a large cyst it is not infrequently one of the etiological factors. 6. In mesotheliomatous tumors the stone is always secondary, or but chance occurrence, while of the sarcomatous neoplasms the authors collected two cases with an uncertain relationship existing, while in the third case the stone was secondary. 7. That the coexistence of stone and neoplasm in the kidney of a child must be extremely rare.

**High Frequency Electricity in Treatment of Uterine Fibroids Refusing Operation: Also in Prostatic Enlargements.**—Dr. NATHAN ROSEWATER, of Cleveland, Ohio, summarized as follows: 1. High frequency currents applied through glass vacuum electrodes upon the mucosa of the vagina and rectum are not painful, irritating, nor seemingly harmful in moderate doses over long periods of time. 2. High frequency currents given as described do not tend to cause sterility, but on the contrary several cases of pregnancy occurred after treatment in married women who had been sterile over periods of eight to eleven years. 3. In cases of acute specific prostatitis, immediate cessation of painful symptoms and rapid cure without recurrence, occurred in the cases treated. 4. In the cases of enlarged prostate of the senile, without inflammatory conditions, a slower but equally positive improvement was observed. The first noticeable passage of urine, after two years' absolute cessation except with a catheter, was after one month's treatment, biweekly, and the next six weeks later, followed by others soon after. 5. In cases of even extremely large uterine fibroids an extra prolonged treatment weekly, or even once a month, was followed by decided reduction in size and in restitution to normal function. It is uncertain how many treatments should be given and over what period of time they should be repeated; but most of those who stopped treatment later submitted to operation; none died subsequently of malignancy. 6. One patient was not given iodides, ergot, or other medication nor was she bandaged, yet her fibroid was materially reduced in size, and normal function returned, so that the high frequency current stands credited with mass reduction and uterine tonicity. The reverse is also true; the use of the bandage in appropriate cases together with the iodides and ergot is not incompatible with a successful result in the treatment of uterine fibroids. 7. High frequency electricity applied in the rectum and vagina for tuberculous peritonitis is not incompatible with a successful recovery after laparotomy, reserving laparotomy for those cases that show no improvement without it.

**The Value of the Cystoscope in the Differential Diagnosis of Abdominal Lesions.**—Dr. COURTNEY W. SHROPSHIRE, of Birmingham, Alabama, stated that the best results in the differential diagnosis of abdominal lesions were obtained

by the combined efforts of the surgeon, cystoscopist, röntgenologist, and laboratory technician. It was impossible in a great many cases to say without the aid of the cystoscope whether an existing lesion was within the abdominal cavity or represented some pathological condition of the urinary tract. It was therefore his belief that a cystoscopic and radiographic examination should be made in every case which bordered on uncertainty. For it was only in this way that we would avoid serious errors in diagnosis and increased risk to our patients. Chute, of Boston, reported some time ago a case of renal calculus causing marked intestinal symptoms referable to the splenic flexure of the colon. The patient was advised that laparotomy was necessary, but for some trivial reason refused operation. During a similar attack some time later an examination of the urine revealed the presence of pus and blood. These findings were followed by a cystoscopic and röntgenographic examination. A large calculus was discovered in the left kidney. Following an operation relief was immediate and the patient had had no further symptoms. The fact which impressed him more than any other in this instance was the failure to make a cystoscopic examination in this very obscure condition, for neither the symptoms nor the radiographic examination of the intestinal tract was of great value, and it was not uncommon for lesions of the left kidney to produce symptoms simulating obstruction at the splenic flexure of the colon.

Symptoms somewhat similar to the above occurred in a patient Doctor Shropshire saw in consultation at one of the local infirmaries. There was intense general abdominal pain, accompanied by marked tenderness to pressure along the lower border of the ribs on the left side. After the bowels had been emptied he was very comfortable and remained so for several days. His pain then returned and the original symptoms again developed. At this time an examination of the urinary tract was deemed necessary. A cystoscope was easily introduced, bladder negative, right ureteral opening negative, left ureteral opening very much congested. Catheter passed to right pelvis with difficulty, left catheter was introduced, meeting with some resistance about five cm. above ureteral opening, but it was gradually forced higher by gentle manipulation. Urine dripped from left ureter continuously and rapidly until 150 c. c. were collected. Functional test with phthalein as follows: Right: appearance three minutes, thirty minutes, forty-eight per cent.; left, appearance ten, thirty, ten per cent.

Thorium was injected into the left pelvis and the radiographic examination showed a large irregular shadow extending from the kidney region downward to the brim of the pelvis. Diagnosis, hydronephrosis of left kidney. The surgeon who operated on this patient made an incision anteriorly, removing the left kidney with great difficulty. On examination, a large hydronephrotic kidney was found, the kidney substance proper being reduced to a mere shell. This sac was filled with a gelatinous substance. The patient died on the third day following operation. No autopsy was held. In concluding his paper Doctor Shropshire said: 1. Too

much reliance should not be placed upon pain or even tenderness to pressure in vague abdominal lesions. 2. Lesions of the left kidney often produced symptoms referable to the intestinal tract. 3. Renal colic was caused by an overdistention of the renal pelvis and that an obstruction in the lower third would often cause symptoms referable to the kidney region. 4. A cystoscopic and radiographic examination were an absolute necessity in the differential diagnosis of abdominal lesions.

**Treatment of Fractures of the Long Bones.**—Dr. F. P. CORRIGAN, of Cleveland, said that reduction under anesthesia should be the procedure unless strongly contraindicated by age or infirmity. Immobilization was indicated only in the sense of maintenance of reduction. Complete immobilization with splints was not possible, nor was it necessary. If reduction was maintained slight motion between the fragments did no harm, and it was even held by some authorities that it was in a sense physiologic and an important factor in stimulating osteogenesis. The form of immobilization apparatus was not important, but there was a very decided trend toward the made to measure splint of plaster of Paris, silicate of soda, etc., rather than the ready-made splints turned out by the manufacturers to fit all fancies.

The principle of extension and early reduction were the ones upon which he wished especially to lay stress, because extension had never been given the attention in this country that it deserved. The work of Bardenhauer, of Cologne, which was well known and largely accepted in Europe, had been very little mentioned in this country, and it was his belief that the greatest advance in fracture treatment would come from a wider study of the principles of extension laid down by him. In order to facilitate the early application of extending force to the limb, he had devised an extension bandage or sleeve woven in such a fashion that when pulled upon from below it became smaller and gripped the limb. The advantage of this extension bandage was primarily that it did away with the disagreeable and annoying features of adhesive plaster. Moreover, it was easily and quickly applied, easily removed, and was sterilizable.

**Technic of Nephrectomy for Renal Tuberculosis and Other Infections of the Kidney.**—Dr. PAUL MONROE PILCHER, of Brooklyn, N. Y., said that leaving out many of the points upon which most surgeons agreed, such as a sufficiently large incision to expose the kidney region, resection of the ribs, if necessary, and removal of much of the perinephritic fat, he wished to direct attention to three points: 1, the adhesions of the kidney to the surrounding tissues; 2, the treatment of the pedicle; 3, the treatment of the ureter.

1. *Dividing the perinephritic adhesions.*—In studying the specimens which he had removed, it had been repeatedly noted that at those points where the active tuberculous lesions came to the surface of the kidney, the surrounding tissue always threw out a defensive line of plastic material, forming adhesions covering this point. This was especially true at the upper pole of the kidney. He respected these protective barriers thrown out by nature by care-



fully ligating the adhesions and cutting the adhesions between ligatures, leaving a considerable portion attached to the kidney itself. As soon as the capsule beneath the point of attachment of these adhesions was lifted up, active tubercular foci were almost invariably discovered. It was his contention, then, that the stripping up of these adhesions in removing the kidney was a source of danger, for if the kidney surface be left unprotected during the manipulation of nephrectomy, it was very easy for caseous material to be squeezed into the wound, and infection to take place. He had found it of advantage as a rule to attack the upper pole, for it was here the adhesions were strongest, and while it took some time to tie and cut these adhesions, the result was a freely movable upper pole which allowed a more rapid approach to the vessels which were in the superior half of the pedicle.

2. *The ligation of the vessels.*—If the upper pole had been freed, it was usually possible to pass the finger down beneath the pedicle and by careful dissection to expose the elements of the pedicle. There was very little danger of rupturing the pedicle if too much strain had not been put upon it. By a certain blunt dissection and use of gauze, the fat which made up the chief bulk of the tuberculous pedicle could be stripped down and the artery usually became plainly evident. Then in most cases the ureter was found and easily differentiated. Having controlled the pedicle by the finger beneath it to hold it up, a ligature carrier was passed between the vessels and the ureter, and a chromic gut ligature was applied to the vessels before they were cut. Then a second ligature was applied to the vessels near the kidney itself, a clamp applied near the ligature which controlled the vessels, and the vessels were then divided. Before going further, a second ligature was placed around the vessels and if possible, the artery and the vein were also tied separately. It was needless to say that this was not always possible.

He then allowed the kidney, with its ureter still attached, to hang out from the lower end of the wound and proceeded to close the wound from which the kidney had been removed, draining together all of the deeper tissues, bringing together the fascia and the muscles in their proper relations and entirely closing the wound, suturing the skin, leaving the kidney still attached by its ureter coming out at the lower angle of the wound.

*The final step.*—Suture was passed through the skin just above the ureter and this was used as a ligature to tie off the ureter. Then the needle of a hypodermic syringe containing ninety-five per cent. phenol was inserted into the upper portion of the ureter and ten to fifteen drops of phenol was injected into the ureter. Then the upper portion of the ureter was clamped and was cut between ligature and clamp. The stump was cauterized and dry dressings applied. His experience since he had employed this technic had been more uniformly satisfactory than it had been with any other method.

**The Röntgen Examination in Fractured Skulls.**  
—Dr. WILLIAM H. STEWART, of New York, said that the frequency with which fracture of the skull was mistaken for various other conditions, espe-

cially in cases of coma, called for any method which would make a rapid and positive diagnosis. This, with many other difficulties which were encountered in the correct interpretation of this lesion, rendered the routine Röntgen examination of the skull of the greatest importance in all head injuries. It offered an actual visual demonstration of the presence or absence of fracture, its location, character, and extent. It was a noteworthy fact that each succeeding collection of statistics of the relative frequency of fractures gave this lesion an increasing percentage; thus Guilt gave 1.45 per cent., von Bruns 3.4 per cent., and Chudovsky 3.8 per cent. These figures, he believed, in view of the more accurate diagnosis with the Röntgen ray, were altogether too low. If a systematic röntgenographic examination was properly made of all injuries, direct or indirect, of the head, he felt confident that the relative frequency of fractures of the skull would show a much larger percentage. He based this statement on the number of cases in which the diagnosis could only be made by means of the Röntgen examination; especially when the patient had no symptoms, objective or subjective; only a history of a fall. In one of the institutions he was connected with, 250 cases of head injuries had been examined since January 1, 1915, forty-five of which were positive for fractures—about twenty per cent.

Patients were often in a comatose or irritable condition when referred to the röntgenologist; therefore, extreme patience and perseverance were required. It must be borne in mind that the minimum amount of disturbance and movement was the rule. In the examination of these cases, the head must be absolutely fixed and all respiratory movement overcome. If the objective symptoms, such as bleeding from the ear, nose, or mouth, laceration of the scalp, hematoma, or paralysis be present, they were a clue as to the possible site of the fracture and attention was naturally directed toward that area. This must not mislead one, however, for every examination should cover the frontal, both parietotemporals, occipital, and basilar regions. Having obtained satisfactory röntgenograms, it was necessary to have the experience and anatomical knowledge to make the correct interpretation. In the reading of röntgenograms of the base of the skull, beginning behind, we saw the foramen magnum and within the odontoid process of the axis. Just forward from this opening on either side the mastoids were distinctly reproduced with the associated shadows of the petrous portion of the temporal bones. Anterior to this was a clear view of the middle fossa. If we had not produced too much extension of the chin, the anterior fossa could be seen well in front of the overlying shadow of the lower jaw. Fractures of the zygomatic arch with the amount of displacement were usually beautifully shown in these base plates.

In the interpretation of the frontal, lateral, and occipital regions we had to remember the normal radiating lines cast by the grooves on the inner table of the skull which accommodated the meningeal bloodvessels. These grooves spread out fan shaped from an anterior point backward. The shadows cast by the diploic spaces, between the in-

ner and outer tables of the skull, were lines extending vertically upward from a point at the base, directly in variance to the shadows representing the meningeal grooves. Fractures usually show as light, sharply cut lines of varying width, depending upon the amount of separation; they may be vertical, horizontal, or curved, but were seldom directed in the same manner as the bloodvessel grooves.

**Röntgen Studies in Bone Pathology with Special Reference to Spontaneous Fractures.**—Dr. LEON T. LE WALD, of New York, stated that in two cases the spontaneous fracture occurred in the femur, one in the middle of the shaft, and in the other at the junction of the shaft with the neck. In neither case could complete reduction be accomplished, but as the final outcome proved, this appeared to be a desirable rather than an unfortunate outcome, as the general alignment was better than the corresponding bone on the other side in each instance. This would almost make it appear as if the spontaneous fracture were an attempt on the part of nature to straighten the extreme deformity which one saw in these cases. Rapid and complete union of the fragment occurred in both cases. In his series of pathological fractures, bone cyst merited most careful consideration, for without careful Röntgen examination an ordinary fracture would have been diagnosed, and inadequate treatment would have been instituted. In two cases a perfect result was obtained, in one by open operation and curettage, in the other a similar procedure supplemented by a bone graft. A rare form of bone cyst was encountered in the skull of a young woman. This was successfully dealt with by removal. Without Röntgen examination which showed the absolute limitation of the process, sarcoma would have been thought of and either no operation or a very extensive one might have been the method of treatment. In the past, without doubt, many cases of bone cysts had been dealt with too radically even by amputation of an extremity under the supposition that one was dealing with a sarcoma. Spontaneous fracture might give the first clue to a primary or secondary new growth in bone.

#### BROOKLYN MEDICAL ASSOCIATION.

*Regular Monthly Meeting Held February 14, 1917.*

The President, Dr. WILLIAM H. STEERS, in the Chair.

**The Medical Department with the Mobile Army.**—With some remarks relating to the New York National Guard in the Mexican Border Service, Dr. WILLIAM H. STEERS read this paper, which is printed in full at page 388 of this issue of the JOURNAL.

MAJOR JOHN J. LYONS, surgeon of the Fourteenth Infantry, New York National Guard, spoke of the character of the service on the border, saying that the men had complained much of the arduous labor involved in clearing up the ground on which they were to camp. He outlined the daily duties of the military surgeon, which, as a matter of fact, involved very little medicine or surgery. The principal duties were to enforce proper sanitary regulations by inspections of the latrines, kitchens, and tents of the men. It had been his dis-

agreeable task to inspect the women referred to by Major Steers and on the strength of the findings of this inspection he had posted guards to keep the soldiers from visiting them. Efficient service meant a low sick list and this meant the most careful scrutiny of every aspect of camp life by the medical inspector, who was one of the most important and one of the best hated officers with the command. The number of reports required seemed interminable. In August he had started out on a hike with his regiment and had supposed that he could cut out some of the reports. He soon learned his error and had to get up the reports just the same. He said that the venereal prophylaxis had been undoubtedly helpful in keeping down the venereal sick rate. The efficiency of venereal prophylaxis was shown by the fact that on mustering out the eleven hundred men of the Fourteenth not a single case of venereal disease was discovered by the mustering officer, a regular army surgeon.

COLONEL CHARLES RICHARDS, of the regular army, who was introduced by the president as the chief surgeon of the Department of the East, congratulated the members upon the clear and accurate explanation which had been given them by Major Steers of the military duties of the medical department. He said that the point referred to by Major Lyons, namely, the numerous reports required, was generally a stumbling block to physicians from civil life, but that if the medical officer would remember that the accuracy of these reports would determine the fate of many applications for pensions in the future he would, both in the interests of the deserving soldier and for the protection of the Government against false claims, be willing to attend to this wearisome part of his duties. He said that in active service in the field the one essential point was to get the wounded to the rear as quickly as possible so as not to embarrass the fighting force. He spoke of the important part which sanitation and the personal hygiene of the soldier played in keeping the personnel in fighting trim. One of the important functions of the medical officer was to see that the supplies needed for the men of his command were provided. To do this it is necessary for the officer to be informed as to the channels through which these supplies could be obtained and the proper method of making requisition for them. In response to a written inquiry regarding the medical reserve corps, Colonel Richards read a letter from the Surgeon General regarding the instructions given to members of the corps and urged those who were unable to get the training given in the National Guard to join the medical reserve. He said that even men of more mature years could be of service at base hospitals in case of hostilities and that wherever it was feasible to do so they would be given work in the neighborhood of their own homes and in their own specialties, and very likely in the hospitals with which they were already affiliated.

Dr. HUBERT ARROWSMITH moved a vote of thanks to the president and the speakers who had discussed the paper, and in view of the special character of the paper, moved that it be made public for the information of the people at large, which motion was carried.

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Social Insurance with Special Reference to Compulsory Health Insurance.* A Report Prepared for the Committee on Insurance of the Chamber of Commerce of the State of New York by JOHN FRANKLIN CROWELL, Executive Officer. Published as Supplement to Monthly Bulletin. February, 1917. New York Chamber of Commerce, 65 Liberty Street, New York.

A substantial faith in the constructive possibilities that lie in the existing factors of American industry characterizes this report. The actual freedom in our national character which permits of unlimited transition from one industrial status to another, and a standard of living undoubtedly superior to that of the working classes abroad necessitate a consideration of the question of compulsory insurance in accord with these American conditions unprejudiced by the different state of affairs in Europe.

Compulsory insurance in Germany, the author believes, has fostered a dependent attitude toward state paternalism which prevents individual selfreliance and development. Great Britain's experience has been as yet of too short duration to be instructive. There has been already, on the other hand, wide experience in the United States in voluntary insurance through trade unions, benefit societies, and health insurance funds of various industrial establishments. These have seemed to tend toward a more complete individual and social health through individual responsibility and freedom of action.

The report recommends definite investigation to determine whether on the whole the condition of the wage earner is such, as alleged, to make necessary a change of policy to compulsory insurance. Investigation should also discover whether existing conditions for social insurance are not adequate for a basis for constructive development and whether this would not be furthered by state coordination and cooperation similar to state supervision and control of private banking. The factors of prevention and conservation of forces already play a large part under voluntary insurance, while they are excluded in favor of merely palliative measures in the compulsory form advocated. For the regulations of the latter would hamper the cooperative and progressive work of scientific groups. Voluntary insurance, on the contrary, affords opportunity and stimulus for engineering, industrial, hygienic, and medical service combined toward a conserving and constructive end.

The report, written with careful review of the facts and suggesting a well directed investigation on the broadest lines, is well worth thoughtful perusal.

*Notes on the Causation of Cancer.* By the Honorable ROLLO RUSSELL, author of *Strength and Diet*, *Preventable Cancer*, *First Conditions of Human Prosperity*, etc. London, New York, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1916. (Price, \$1.25 net.)

Although the author of this small volume was not a physician he had had a scientific training and had written several scientific documents on subjects outside of the field of medicine. With the spirit of the scientific investigator he approached the problem of the causation of cancer from the statistical point of view. It was his aim to collect and record facts from all over the world which bore in any way upon the problem in hand and, while these were not treated numerically, they were none the less statistical observations. The essence of his conclusions may be summed up by the statement that all evidence points to some form of prolonged irritation as the main cause of this human scourge. This irritation may be of the external body covering or of the internal tissues. When involving the former it may arise from a host of external causes, or from within as the result of the excretion of toxic irritant substances. In the case of the latter the same two classes of irritants may also be found—either in the form of ingested irritant substances or as the result of toxic materials which

bathe and irritate the tissues. It is admitted that the ultimate factors which lead to the development of uncontrolled cell multiplication—the chief characteristic of cancer—are still quite unknown, but the author contends that the causative role played by irritants is so uniformly demonstrable that it is not necessary to go further to effect an enormous reduction in the prevalence of this fatal malady. He points out the ways and means whereby the occurrence of chronic irritations can be avoided and strengthens his pleas for their adoption by citations of many communities from which the causes of irritation are absent and in all of which there is striking freedom from cancer. Not a few flaws can be picked in the author's arguments and in his evidence, but the sincerity of his efforts and the validity of so many of his arguments are such as to demand the attention of the medical profession. No one can read this work without some profit and much interest, even though he might not concede all of the points made.

*Mentally Deficient Children. Their Treatment and Training.* By G. E. SHUTTLEWORTH, B.A., M.D., etc., Fellow of King's College, London; and W. A. POTTS, M.A., M.D., etc., Medical Officer to the Birmingham Committee for the Care of the Mentally Deficient, etc. Fourth Edition. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. xix-284. (Price, \$2.50.)

This book stands for the awakening of medical attention toward mental abnormalities in children and the opportunity which they present to both the medical and educational world. The authors speak with the authority of knowledge in regard to these conditions in children and as to what is being done for them. They describe briefly the various abnormalities, discussing under each classification the etiology, diagnosis, and prognosis. They deal also with possibilities of treatment, especially through industrial educational training with subsequent supervision, and review these measures as in effect in England.

The concise yet comprehensive treatment of the book gives it a special value. One thing, however, is conspicuously absent. The recognition of psychical factors both in etiology and in treatment is coming to play too large a part to be justifiably omitted from such a work at the present time. Had the authors added this they would have directed their readers to a basis of understanding of these mental difficulties which would offer greater promise of interpretation and reeducation.

## After Office Hours

"Twenty-four Hours in June," in the *Saturday Evening Post* for February 10 fairly revels in youth.

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A copy of *Jim Jam Jems* for February has fallen into our hands; it is the usual mixture of obscenity, personal abuse, and sentimentality. The editor is not without trenchant phrases, however.

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The *Wide World* magazine for March is replete with advertisements of health cults, matrimonial agencies, and "portfolios of bewitching poses for the den." The editor specializes in what some call "red blooded" fiction, with the colors daubed on profusely.

\* \* \*

Read "A Fatal Defect in Our Battle Cruiser Designs," on the editorial page of the *Scientific American* for February 17th. Read it again. Then think about it for a few minutes. Then turn to the first page of your daily paper and read the latest news of international complications.

\* \* \*

The first number of the *Birth Control Review* has appeared, dated February. It is a tremendously courageous thing. Even those who do not believe in the principle for which it stands must admit to it the same sort of splendid obscenity with which the Old Guard spoke at Waterloo. Margaret Sanger strikes the keynote in a stirring appeal, "Shall We Break This Law?" Havelock Ellis, Scott Nearing, H. G. Wells, and Theodore Schroeder are quoted in favor of this movement.



## Meetings of Local Medical Societies

**MONDAY, March 5th.**—Clinical Society of New York Throat, Nose, and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Poly-clinic Medical School and Hospital; West Side Physicians' Economic League.

**TUESDAY, March 6th.**—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Association of Troy and vicinity.

**WEDNESDAY, March 7th.**—Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Psychiatric Society of New York; Society of Alumni of St. John's Hospital, Brooklyn; Schenectady Academy of Medicine; Long Island Society of Anesthetists.

**THURSDAY, March 8th.**—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Society Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua.

**FRIDAY, March 9th.**—New York Academy of Medicine (Section in Otolaryngology); Society of Externes of the German Hospital in Brooklyn (annual); Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York; Clinical Society of the German Hospital and Dispensary; Manhattan Dermatology Society.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending February 21, 1917:*

- ACKER, R. B.**, Assistant Surgeon. Granted two days' leave of absence en route to station.
- CLARK, T.**, Surgeon. Directed to proceed to Framingham, Mass., to advise with local authorities in regard to hygiene of schools in that city.
- FOSTER, M. H.**, Surgeon. Directed to conduct an examination in First Aid at headquarters of Women's Section, Navy League, Washington, D. C., February 26, 1917.
- HASSELTINE, H. E.**, Passed Assistant Surgeon. Ordered to proceed to Jackson, Miss., and Bowling Green, Ky., to confer with State health authorities in regard to Wasserman examination in the bacteriological laboratory of the Kentucky State Board of Health and the manufacture of typhoid vaccine by the Mississippi State Board of Health.
- MCCOY, G. W.**, Surgeon. Directed to represent the Service at a conference on problems connected with the milk industry at Philadelphia, Pa., February 26, 1917.
- MCMULLEN, JOHN**, Surgeon. Ordered to proceed to Columbus, Ohio, to deliver an address on trachoma before the Academy of Medicine, February 26, 1917; also directed to advise with the State health authorities in regard to the proposed campaign for the eradication of trachoma.
- MILLER, K. E.**, Assistant Surgeon. Ordered to proceed to Columbia, S. C., Greenville County, S. C., Bowling Green, Ky., and such other counties in the State of Kentucky as may have full time health officers, to observe methods and practices of county health administration.

**RUOFF, JOHN S.**, Assistant Surgeon. Granted six days' leave of absence on account of sickness from February 6, 1917.

**SAFFORD, M. V.**, Assistant Surgeon. Detailed to represent the Service on the committee designated by the National Association for the Study and Prevention of Tuberculosis to supervise experiments being conducted at Framingham, Mass., for community control of tuberculosis.

**SMITH, F. C.**, Surgeon. Detailed to represent the Service on the committee designated by the National Association for the Study and Prevention of Tuberculosis to supervise experiments being conducted at Framingham, Mass., for community control of tuberculosis.

**STEWART, P. M.**, Assistant Surgeon. Ordered to proceed to Spartanburg, S. C., for duty in field studies of pellagra; relieved from duty at Ellis Island, N. Y.

**WHITE, J. H.**, Senior Surgeon. Granted fourteen days' leave of absence from February 18, 1917.

**WITTE, W. C.**, Assistant Surgeon. Ordered to proceed to Irving, Texas, to advise county health officer relative to proposed survey and to present address on rural sanitation.

## Births, Marriages, and Deaths

### Born.

**CALDER.**—In Providence, R. I., on Wednesday, February 14th, to Dr. Augustus Calder and Mrs. Calder, a son.

### Married.

**DORAN-CONNICK.**—In New York, N. Y., on Tuesday, February 20th, Dr. William Guy Doran and Miss Constance Catherine Connick.

**GLUCKSTEIN-DAVIS.**—In New York, N. Y., on Thursday, February 22nd, Dr. Alexander Maxwell Gluckstein and Miss Frances Davis.

**HORWITZ-ZINBERG.**—In Baltimore, Md., on Wednesday, February 21st, Dr. Morris T. Horwitz, of Bridgeport, Conn., and Miss Sabina M. Zinberg.

**HUTCHINSON-MONTGOMERY.**—In Rutland, Vt., on Thursday, February 15th, Dr. Abbott Trask Hutchinson, of New York, N. Y., and Miss Edith Montgomery.

### Died.

**ABBOTT.**—In Otwell, Ind., on Tuesday, February 13th, Dr. Clarence Abbott, aged fifty-four years.

**ANDERTON.**—In New York, N. Y., on Friday, February 23rd, Dr. William B. Anderton, aged sixty-one years.

**BRINKMANN.**—In New York, N. Y., on Friday, February 16th, Dr. Morris Weil Brinkmann, aged fifty-seven years.

**BURNETT.**—In Wrentham, Mass., on Sunday, February 18th, Dr. William W. Burnett, aged sixty-nine years.

**ENGLISH.**—In Utica, N. Y., on Thursday, February 15th, Dr. Gustavus P. English, aged sixty years.

**HAILE.**—In Rock Hill, S. C., on Sunday, February 11th, Dr. Joseph E. Haile, aged fifty-seven years.

**HALLETT.**—In Clyde, N. Y., on Sunday, February 11th, Dr. Thomas H. Hallett, aged fifty-six years.

**HAZELTON.**—In Barnet, Vt., on Friday, February 16th, Dr. Hiram Hazelton, aged seventy-nine years.

**HOOLE.**—In Somerville, Mass., on Thursday, February 15th, Dr. J. Edward Hoole, aged forty-eight years.

**KOEMPEL.**—In New York, N. Y., on Wednesday, February 14th, Dr. Robert A. Koempel, aged sixty years.

**LITHGOW.**—In Boston, Mass., on Friday, February 16th, Dr. Robert Alexander Douglas Lithgow, aged seventy years.

**MAKUEN.**—In Goshen, N. Y., on Wednesday, February 21st, Dr. G. Hudson Makuen, of Philadelphia, aged sixty-two years.

**MINARD.**—In East Barre, Vt., on Sunday, February 11th, Dr. Roswell Mason Minard, aged eighty years.

**MITCHELL.**—In Denver, Colo., on Wednesday, February 7th, Dr. George W. Mitchell, aged eighty-three years.

**MULLEN.**—In Apopka, Fla., on Sunday, February 11th, Dr. Ernst Emil Mullen, aged fifty years.

**PICKERING.**—In Zavalla, Tex., on Sunday, February 4th, Dr. John C. Pickering, aged one hundred years.

**STUCKY.**—In Louisville, Ky., on Sunday, February 18th, Dr. T. Hunt Stucky, aged fifty-eight years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 10.

NEW YORK, SATURDAY, MARCH 10, 1917.

WHOLE No. 1997.

## Original Communications

### ORAL SEPSIS.\*

#### *A Note of Warning with Regard to Its Treatment.*

By J. M. ANDERS, M. D., LL. D.,  
Philadelphia,

Professor of Medicine, University of Pennsylvania.

At the outset I wish to say that I fully appreciate the benefits to the human race of the recognition of local septic foci as a cause of secondary infections, both acute and chronic, and also the debt which medicine owes to the early contributions to the topic of focal sepsis by Miller, Rosenow, Billings, and Hartzell. I have also followed with sympathy and keen interest the development of our knowledge pertaining to the subject of the relation of oral sepsis to general or systematic disease. In an article (1) I referred to a group of cases in which a primary chronic septic focus in some organ other than the heart, e. g., the teeth, is present and may operate as a cause of pathological cardiac conditions, and further cited a case of chronic myocarditis associated with an infected tooth root, in which the removal of the latter was followed by a symptomatic cure of the cardiopathic patient. Like instances could be multiplied indefinitely from the literature, if space permitted here. The list of acute and chronic diseases which may be caused by focal sepsis is of great length, including some of the commoner complaints, such as endocarditis, myocarditis, pericarditis, arthritis, arthritis deformans, appendicitis, cholecystitis, neuritis, nephritis, thyroiditis, gastric and duodenal ulcer, furunculosis, and many others.

The tooth root theory of disease, however, is not yet accepted by some, at least, of the more progressive dentists, who contend that the mouth is amply provided with defenses and that in septic states nature is, as a rule, equal to the situation. Says Percy R. Howe, D. D. S. (2): "It is our office as dentists properly to attend to root canal filling; to see to it that our patients keep their mouths clean and hygienic; and I believe that the arthritis and endocarditis that occur in our patients are not the result of faulty root work nor lack of cleanliness, but proceed from other and deeper seated causes. What is the significance of a filthy mouth in a hospital patient? It is significant of illness or bodily derangement. Clear up the filth, turn the patient loose, and the

filth will return. Clear up the filth—pyorrhea if you choose—and give the patient good hospital care, and the filth will recur, or not recur, just in proportion as the patient responds to the scientific treatment which his systemic condition receives."

We are obviously in need of higher average standards of knowledge on the subject of the relation of diseased tooth roots to secondary systemic diseases; and this is particularly true of the major portion of the dental profession. On the other hand, physicians should be cautious not to diminish the masticating surface of the patient without reliable scientific evidence of an existing necessity for so doing. The reasonableness of my position in this matter will be, I trust, conceded when it is learned that within the past six months not less than six leading dentists have declared to me that countless teeth are being removed without justification merely because physicians, usually following an x ray examination, by amateurs in many instances, have so decreed. It seems to me that such a state of things must tend to arouse the most ardent activity on the part of the dental profession in opposition to this rapidly growing custom among physicians. To advise the extraction of teeth that are merely suspected of being septic, will surely prove the ultimate disappointment and chagrin of the medical profession.

Dr. E. T. Darby, an acknowledged authority, informs me that he is strongly of the opinion that many teeth are being extracted which should be saved by judicious treatment, but he also contends that it is better to sacrifice a tooth that has an incurable abscess than to jeopardize thereby the health of the patient. In a personal note to the author Dr. J. A. Woodward, a prominent dental surgeon, says: "The possibility of a misleading x ray picture of abscessed conditions about the roots of teeth and the fact that a large percentage of these abscesses can be made to heal make it much the best practice to refer all cases of suspected oral sepsis to a competent dentist before ordering the extraction of teeth." Surely to our progressive dentists must be accorded the technical skill and knowledge necessary to advise regarding and to treat dead, filled, or capped teeth which may or may not be septic. Hence, before peremptorily requesting that the teeth of their patients be sacrificed, physicians should seek a consultation with a specially skilled dentist. It would appear that an amazingly low estimate is placed upon the value of human teeth by a profession that knows, or should

\*Read before the Philadelphia County Medical Society, December 27, 1916.

know, the importance of a good masticating apparatus to the digestive function—to health.

In well authenticated cases, in which one or two teeth were the seat of peripheral infection, physicians have gone so far as to give emphatic directions to the effect that all remaining teeth be extracted. For example, one of Philadelphia's best known specialists in extraction was requested by a physician to pull out all of a certain patient's teeth, twenty in number, but he courteously, though firmly, declined to do so. In this case, an x ray examination failed to show anything pathological, except that one of the wisdom teeth was impacted.

Perhaps the needless and ruthless sacrifice of teeth has been greatest in patients suffering from arthritis deformans. With respect to this class of subjects, Dr. J. Howard Gaskill has written me as follows: "I have seen several cases recently where all the teeth have been extracted, and where it not only failed to help the arthritis, but actually made the condition worse." He continues: "It may be of interest to you to learn of this case:

CASE. "Mrs. X. For several years there has been a gradual development of arthritis deformans, so that at the present time there is a complete loss of motion at hips and knees; she still has some use of arms and hands, but there the trouble seems to be progressing. In view of the work of Rosenow and Hartzell, her teeth were suspected by the attending physician, and careful radiograms were taken of her masticating apparatus, but there was not a spot in the mouth indicating that the teeth could be the source of the trouble.

"Such being the case, I feel that we must be careful in attributing too much to dental disturbances."

An investigation has revealed the fact that the offices of not a few dentists are truly overburdened with x ray plates, which they are supposed to respect, often against their better judgment. In connection herewith, it may be pointed out that the results obtained by expert röntgenologists from an examination of teeth have shown much faultiness in operative work, and, as a consequence, have brought about the exercise of greater care and thoroughness on the part of dental surgeons in the treatment, and filling, of root canals. Says William M. Wright, D. D. S., in a recent article (3): "Basing conclusions on the examination of a great many Röntgen ray pictures, we believe it is safe to say that the great majority of these abscesses are found in the apices of roots, the canals of which have been imperfectly filled."

In cases of secondary systemic infection, our present day views of treatment demand the removal of the focus or foci on which they depend. A cure, or permanent improvement even, is not possible by pursuing any other course, but the physician should be thrice certain that the teeth are septic and not amenable to skillful dental management before he advises their extraction. Moreover, it is to be recollected that in a certain percentage of such instances there are multiple foci of infection, and while this is often true of the teeth, it not infrequently happens that additional and larger ones harboring more virulent microorganisms are to be found elsewhere, e. g., in the tonsils and sinuses, and unless these be removed, failure to relieve the systemic infection is an inevitable result.

The fact that chronic septic foci are exceedingly difficult to diagnose in the majority of cases needs to be emphasized. A single examination, however carefully made, fails to clear the diagnosis in many cases at least. Periapical infection and abscess offer the greatest difficulty in this respect. Here, even an x ray examination may fail to render reliable aid. In these cases, the dental specialist investigates the condition of the pulp canal from apex to the extreme base. Should this exploration still leave the case in doubt, he should take a further step and aspirate the periapical space under strict antiseptic precautions and culture the withdrawn material. If now one of the salivarius group of streptococci, e. g., the viridans, hemolyticus, or mucosus, be discovered, then the diagnosis is settled.

I quite agree with Daland (4) that the diagnosis of mouth sepsis should be made by a dental surgeon specially trained for this work, to whom, if there is any reason to suspect the teeth, the patient should be referred by the physician, and the combined judgment of the two—physician and dentist—should prevail as to whether these organs should or should not be extracted. To assist them in arriving at a conclusion, a röntgenogram is always required. Physicians and dentists must work together to obtain the best results in such cases. Attention cannot be too strongly drawn to the fact that before consulting an expert dentist, the physician in charge of a suspect must by a process of exclusion eliminate all foci of infection other than those that may be present in the mouth.

In preliminary examinations, the advice of a competent nose and throat specialist is always necessary. Without observing this precaution, either before or after consultation with a skilled dentist, with a report of the results, an unfair advantage is taken of the dental profession. From the foregoing facts, it appears to me that a plea for great care and caution in the diagnosis of chronic septic foci and equally great conservatism in the matter of sacrificing the masticating apparatus is timely.

Within the memory of most readers, time was when ovaries were removed to an unwarrantable extent. It is my firm belief that one day not far distant the indiscriminate resort to tonsillectomy for chronic septic foci, including cases in which no, or supposed slight pathological alterations in these organs exist, will be condemned by the medical profession. The pathfinder who gives forth what is mature, although new, and sound as an indication for surgical procedure, often lives to regret that others coming after and oppressed by a narrower range of diagnostic skill, advocate and practise more or less indiscriminately the operative procedure. The latter finally precipitate a total loss of the original professional concept of the scope and purposes of the operation in question. This condition of things indexes an unfortunate state of mind on the part of the medical profession which is ever in need of stabilizers who will balance and model sane views of surgical procedures having vogue.

If perchance it be thought that I have stated the case with too much fervor, let it be clearly understood that it has not been my purpose to attempt to disparage the importance of these latent, chronic



foci as a cause of secondary systemic infection, nor to depreciate investigations in this new and promising field of endeavor, but to utter a note of warning with a view to lessening what I believe to be an unwarrantable and often reckless sacrifice of the masticating surface.

In conclusion, let us build our diagnosis of chronic septic foci broadly and securely on general pathology and bacteriology, which is the one sure foundation for both diagnosis and treatment, and thus save ourselves from the invasion of recklessness in the removal of teeth and other organs.

It is a false and dangerous doctrine that helps a physician either to ignore or undervalue the importance of a normal masticating power. Granting that a certain percentage of loss of dental surface is inevitable as the result of recent advances in oral pathology as related to general medicine, the weight of our influence should ever be thrown against the present day tendency to underrate the physiologic significance of an efficient denture by a too great readiness to extract teeth.

Lastly, this paper was dictated by a desire to spare the medical profession the adverse criticism of the future, by a broader conception proper to the subject of oral sepsis in the present.

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2. HOWE: *Journal of the United Dental Societies*, 2, p. 10, number, 1916.
3. WRIGHT: *Pennsylvania Medical Journal*, November, 1916.
4. DALAND: *NEW YORK MEDICAL JOURNAL*, June 19, 1916.

1605 WALNUT STREET.

### MEDICAL NOTES OF EARLY NEW ENGLAND.\*

By EDWARD E. CORNWALL, M. D., F. A. C. P.,  
Brooklyn, New York.

Between 1620 and 1650, and mostly in the middle part of this period, nearly twenty-five thousand English emigrants settled in New England. From the close of this period until after the American Revolution emigration to New England was so small in amount as to be almost negligible. A few English people came in the reign of Charles II, but their number probably did not exceed that of the earlier comers who returned home; a few Dutch sifted in from the adjoining colony of New York, who were probably more than equalled by those who went from New England to other colonies; a few French Huguenots came at the close of the seventeenth century, and a small company of Scotch Irish came in 1719. But these slight accessions had very little influence on the population; and in 1790, when the New England people numbered nearly a million, it is estimated that ninety-eight per cent. of them were of English stock, and that practically all were descendants of those who came before 1650. In view of the rapid modification which in a few generations produced in New England the type which is recognized as so distinctively American, and which in persons of English blood differs so markedly from the present English type and from that of the English emigrants themselves, this fact of the colonization of the country in one generation, with almost com-

plete freedom from admixture with elements from outside during the next five or six generations, has an interest which touches on the medical; as does also the fact that the original colonists came from all parts of England, and not from a restricted locality: which may have had a bearing on their general healthfulness and prolificity, for they doubled by natural increase every twenty-five years or less; and which also may have had something to do with the development of that versatility which has been a notable characteristic of their descendants. Another interesting fact concerning the original colonists, which is not without its bearing on their medical history, is their general high average of character and intelligence and the large proportion of educated men among them. Of their general superior character they were themselves well aware, and one of their number somewhat vaingloriously says: "God sifted a whole nation that He might send choice grain into the wilderness." In education, judging from the number of them who could sign their names, not a universal accomplishment in those days, they probably compared favorably with any equally large contemporary body of people anywhere in the world; and the number of graduates of Oxford and Cambridge in the population of Massachusetts Bay in 1643 is stated to have been one in every hundred and sixty, which is an extraordinary proportion of college graduates for any people and any time. Most of these graduates of English universities were clergymen, many of whom had studied medicine with the intention of practising that profession if they should be put out of their churches for nonconformity; and there were also some who had been educated strictly as physicians. It is probable that New England in this period was better cared for medically than any other contemporary American colony.

The facts which we can glean about the doctors, diseases, and medical treatment of this earliest period of New England history are scanty, and the interest which attaches to them is largely antiquarian; but they also have the peculiar interest which small things possess when they relate to great things; and that great thing, the American Nation, extends its tap root into the beginnings of New England.

The Pilgrim Fathers, during their voyage in the little one hundred and eighty-ton *Mayflower*, lost only one of their number, William Butten, servant of Doctor Fuller, who died when the ship was nearing land; and one of the crew also died. The latter, according to William Bradford, who was the principal annalist of the Pilgrims, made a bad end. Says Bradford: "There was a proud and very profane yonge man, one of ye seamen, of a lustie, able body. . . . He would always be contemning ye poor people in their sickness & cursing them dayly with greeveous execrations, and did not only let to tell them that he hoped to help to cast halfe of them overboard before they came to their jurneys end . . . and if he were by any gently reproved he would curse and swear more bitterly. But it pleased God before they came half seas over, to smite this young man with a greeveous disease of which he dyed in a desperate manner." Query: Was it delirium tremens of which the sailor died? There was also one birth during the voyage.

\*An address before the Brooklyn Medical Library Association, December 4, 1916.

When the Pilgrims arrived in New England they found that the country had been almost depopulated two years before by an infectious disease, which was communicated to the Indians by the European fishermen who frequented Cape Cod. In thus preparing the way for the Pilgrims the deadly microbe did a good service. But alas! The deadly microbe is no respecter of persons, and attacks both the just and the unjust; and the Pilgrims were no sooner landed than they were attacked with great fury.

There are reasons for believing that one of the worst of the microbes, the tubercle bacillus, came over as a stowaway in the *Mayflower*, landed with the Pilgrims, and immediately began to produce "Mayflower descendants" at their expense. The descendants of these *Mayflower* bacilli in this country today, still perniciously active, are incalculably more numerous than the descendants of the Pilgrims, although the latter showed an extraordinary aversion to race suicide. It is an interesting, though a melancholy speculation, how many of the descendants of the Pilgrims may be now keeping up the fight with lineal descendants of the identical germs which killed so many of their ancestors in the winter of 1620-1621.

The Pilgrims disembarked in the late fall and early winter. In this inclement season they suffered much from exposure. In Mourt's *Relation* appears the following reference to their experiences while in Cape Cod harbor: "The discommodiousness of the harbor did much hinder us, for we could neither go to nor come from the shore but at high water, which was much to our hindrance and hurt; for often times they waded to the middle of the thighs and often times to the knees to goe and come from land; some did it necessarily and some for their own pleasure, but to the most, if not to all, it brought coughs and colds, the weather proving suddenly cold and stormy, which afterward turned to scurvey, whereof many died."

In the second exploring expedition in which twenty-four of the Pilgrims were engaged with eight of the crew, their experiences were as follows (Mourt): "When we set forth it proved rough weather and crosse windes so as we were constrained, some in the shallop and some in the long boat, to row to the nearest shore the wind would suffer them to goe unto, and to wade out above the knees. . . . It blowed and did snow all that day and night and froze withal; some of our people that are dead tooke the original of their death here." Among the reasons given why the Pilgrims wished to get settled speedily on dry land, is this:

"Also, cold and wet lodging had so taynted our people, for scarcely any of us were free from vehement coughs, as if they should continue long in this state it would endanger the lives of many and breed diseases and infection among us."

The first house built by the Pilgrims after landing was used as a hospital, and "it was full of beds as they could lie one by another." After they were settled in Plymouth, Bradford says they were "weak, many of them growing ill with colds, for our former discoveries in frost and snow and the wadings at Cape Cod brought much weakness among us, which increased every day more and more, and was the

cause of many of their deaths." "But that which was most sadd and lamentable was that in 2. or 3. moneths time halfe their company died, especially in Jan. and February, being ye depth of winter and wanting houses and other comforts; being infected with ye scurvie and other diseases, which this long voiage and their inaccomodate conditions had brought on them; so as ther dyed some times 2. or 3. of a day, in ye aforesaid time, that of 100 and odd persons, scarce 50 remained. And of these, in ye time of most distress, ther was but 6. or 7. sound persons, who, to their great commendations be it spoken, spared no pains, night nor day, but with abundance of toyle and hazard of their own health fetched them woode, made them fires, drest them meat, made their beds, washed their loathsome clothes, clothed and unclothed them; in a word, did all ye homly and necessarie offices for them wch dainty and quesiie stomachs cannot endure to hear named, and all this willingly and cheerfully." So general was sickness among the Pilgrims that only two of them, William Brewster and Miles Standish, kept entirely well during this first winter.

The mortality list was as follows: In December, six died; in January, eight; in February, seventeen; in March, thirteen; and during the rest of the year, six more; making a total of fifty, which was exactly one half, if we estimate the number of the Pilgrims as one hundred, and omit the two sailors who stayed with them for one year after the *Mayflower* left. The causes of two of these deaths are recorded: Dorothy Bradford was drowned, and Governor Carver died apparently of apoplexy: "he came out of ye feild very sick; he complained greatly of his head, and lay down and within a few howers his senses left him so he never spake more until he dyed, which was within a few days after." Also, we may guess that the infant born on the voyage over, Oceanus Hopkins, died of insufficient nourishment during the sickness of his mother, for the Pilgrims had no cow. The remaining forty-seven deaths, according to Bradford, were due to "scurvey and other diseases."

Bradford's loose statement of the causes of this great mortality has been accepted without much investigation or question by most historical writers, although some have seen the necessity of predicating an acute infection. E. T. Harrington (1), conjectures that the principal cause of these deaths was typhus fever, typhoid fever, or smallpox. The writer, as may be inferred from his statements in a previous paragraph, is of the opinion that acute pulmonary tuberculosis was the cause of many, perhaps most, of the deaths which occurred among the Pilgrims during their first winter in New England. His reasons for this opinion were given in a paper (2), which, as far as he is aware, was the earliest suggestion of this diagnosis. These reasons were: First, the Pilgrims, weakened by a long voyage, were exposed to cold and wet for over a month after arriving in New England before they settled on land. As a consequence nearly all were afflicted with pulmonary diseases. We are told that "scarce one was free from vehement coughs and colds"; and we are also told that these coughs and colds "turned to scurvey whereof many dyed." This is the loose language of a layman: we can, in the light of the other

facts, substitute for scurvy or add to it consumption. Note Bradford's further statement, that the Pilgrims, after settling at Plymouth, "were weak, many of them growing ill with colds, for our former discoveries in frost and snow and the wading at Cape Cod brought much weakness among us which increased every day more and more and was the cause of many of their deaths." The clinical picture here presented vividly suggests quick consumption. Second, they were crowded together in the little *Mayflower* for over a month after coming to land, where the conditions for infection were most favorable. It is not an unreasonable assumption that the tubercle bacillus was present. In this company of one hundred, mostly young adults, to say nothing of the ship's crew, there could hardly fail to have been at least one case of incipient tuberculosis, which the hardships incident to the long voyage, including the poor diet, and especially the exposures and "catching cold" after arriving at Cape Cod, could change into an active condition. Careless expectoration on board ship could scatter the seeds of the disease, and the debilitated condition of the Pilgrims could supply a suitable soil. The climatic conditions of the New England winter were favorable for the spread of the disease, particularly as the Pilgrims were unacclimated. Third, the ages of the Pilgrims who died is significant. Susceptibility to pulmonary tuberculosis is greatest in young adult life. The sixty-one adult Pilgrims were mostly between twenty and thirty years of age, and of those thirty-six died. The nine servants were probably all not far from twenty years of age, and of those eight died. Of the thirty-two youths and children only seven died. Thus it is seen that by far the greatest number of deaths occurred among those who were of the age most susceptible to tuberculosis. Fourth, the time when they died accords well with the supposition that acute pulmonary tuberculosis was the chief cause of death. Infection, presumably, took place in November and December; and the greatest mortality was in February and March. Death in many cases was doubtless hastened by lack of proper care and feeding and by scurvy. Fifth, the fact is significant that the crew of the *Mayflower* began to be sick after the Pilgrims had left the ship, when they probably occupied the vacated quarters of the Pilgrims. Says Bradford: "But I may not pass by another remarkable passage not to be forgotten. As this calamity fell among ye passengers who were left here to plant and were hasted ashore . . . the disease began to fall among the seamen also, so as almost half their number dyed before they went away." [April 5, 1621.] Sixth, there are specific allusions to circumstances which would not have been likely to happen with any other infectious disease equally fatal, but which could easily have happened with quick consumption. For example: One of the sick Pilgrims, was able to go over his accounts the night before he died; and one of the sailors, who was afflicted with the "general disease," feeling himself dying, gave all his little possessions to a comrade on condition that the latter would take care of him until the end. The comrade made him "one or two spiced messes of beef," and then heartlessly refused to care for him further, an-

nayed because he died so slowly, "yet the pore fellow died that night." Patients with advanced consumption might feel able to go over their accounts the night before death, to dispose of their property, and to eat a "mess of spiced beef," but patients with typhus fever, typhoid fever or smallpox could scarcely do so. Those diseases, moreover, are often attended with high fever and delirium, which are not mentioned by Bradford, who could hardly have overlooked them; and they run their course in a few days or weeks, instead of months, as described by the annalist.

Besides consumption, there were other diseases from which the Pilgrims suffered during their first winter in New England. Bradford specifically says that they had scurvy, and that disease was well known to them, and also its treatment; for Edward Winslow, in a letter dated December 11, 1621, in which he advises prospective emigrants to New England what to bring with them, says: "Bring juice of lemons, and take it fasting; it is of good use."

Rheumatism and sciatica seem to have afflicted the Pilgrims during this first year. Bradford suffered as follows: "Thursday, the 11 [Jan., 1621], William Bradford, being at work (for it was a fair day) was vehemently taken with a greefe and pain, and so shot to the huckle bone it was doubted he would finally have died. He got cold in the former discoveries, espially the last, and felt some pains in his ankles by times. He grew a little better towards night, and in time through God's mercy in the use of means recovered." His recovery was apparently not complete, for in April following he was still too ill to attend to the duties of the governorship, to which he had been elected. That others of the Pilgrims were similarly afflicted may be inferred from allusions to "lameness" among them. Bradford in one of his letters writes as if many were so afflicted.

Mourt tells of a general attack of gastroenteritis which occurred while the *Mayflower* lay in Cape Cod harbor, which came from eating "great mussels, very fat and full of sea perle . . . they made all sick that did eat, as well saylors as passengers; they caused to cast and scour. But they were soon well again." It is also recorded that the Pilgrims were much troubled by "musketoes."

With the advance of spring the sickness diminished. Probaby most of the consumptives had died, but not all, for we find the following suggestive allusion to the case of Desire Minter, Governor Carver's maid: "She returned to her friends and proved not very well, and died in England." Possibly Elder Brewster's wife, who died a few years after the landing, may have had consumption, for Pastor Robinson, in a letter dated at Leyden, December 23, 1623, "hopes Mrs. Brewster's weak and decayed state of health will have some repairing by the coming of her daughters and the provisions in the ships." Also, her son, Wrestling Brewster, who, it is recorded, "died a young man, unmarried," may have had the disease. But this, of course, is only conjecture.

The Pilgrims who survived the first year proved hardy. They passed successfully through two peri-



ods of famine in the two following years, in the second of which they were for a considerable time entirely deprived of bread and compelled to live on clams, fish, an occasional bit of game from the woods, and ground nuts. Often they "went staggering for want of food." Their peculiar and insufficient diet, together with absolute deprivation of beer, to which they had always been accustomed, and which they missed keenly, reduced their flesh and took away the ruddiness of their complexions, and caused many of them to be troubled with "bloating." In the summer of 1622 Winslow went on a foraging expedition among the fishing ships off the coast of Maine, from which he secured a small amount of bread. With the gathering of the harvest of that year the famine abated. In 1633 an "infectious fevoure," possibly typhus, raged at Plymouth and carried off twenty of the settlers, including two of the Fathers, Peter Brown and Dr. Samuel Fuller.

Doctor Fuller deserves special mention as the first physician in New England. He was a creditable representative of the medical profession of his time. The disadvantages under which he labored in the matter of drug supplies were not so serious as might seem. In view of the extraordinary pharmacy of the time, it is possible that the nursing and common sense which were often all he had to work with were better for his patients than the contents of the largest drug store in London would have been. If he only could have lost his lancet the sum of his good works might have been greater. He was highly esteemed in Plymouth, and in Massachusetts Bay as well. He made several professional visits to Massachusetts Bay, and during one of them visited Dorchester, where he records that "he let some twenty of them blood." He was a deacon in the Church and a pillar of the Pilgrim society. Altogether he was not unworthy to head the long line of New England workers in the most useful of the professions. Bradford notes his death in the following choice words: "And in ye end, after he had much helped others, Samuel Fuller, who was their phisitian and surgeon, and had been a great help and comfort unto them, as in his facultie, so otherwise, being a deacon in ye church, a man godly and fond to do good, being much missed after his death." Besides Doctor Fuller there was another of the Pilgrims who had some pretensions to medical knowledge, viz., Edward Winslow, whose recommendation of lemon juice for scurvy has been alluded to. The most interesting instance of Winslow's medical skill of which we find record was in the case of the Indian chief, Massasoit. Massasoit was reported to the Pigrims to be dying, and as a mark of respect to him, who had been their staunch friend, they sent Winslow and another to visit him and attend his funeral if necessary. When the ambassadors arrived they found the old Indian barely conscious, unable to see, with tongue badly swollen, and unable to swallow. He had been in this condition for about two days. Winslow scraped his tongue and "got abundance of corruption out of same"; then succeeded in getting him to swallow liquids; and in about half an hour so revived him that his sight returned. He followed up this good treatment by administering broths which he made from game shot

in the woods. Of course he had to give some "medicine," so he made a decoction of wild strawberry leaves and sassafras root, and gave that. As there is no mention made of bleeding, it is probable that he did not have his lancet with him, or did not know how to use that universal remedy of the time, which may have been fortunate for Massasoit. With Winslow's good treatment the chief speedily recovered.

By 1650 the number of the Pilgrims was reduced to thirty, and of the twenty deaths between 1621 and 1650, we know approximately the cause in the following cases: Peter Brown and Doctor Fuller died of the "infectious fevoure," as above noted. Elder Brewster died of apoplexy at the age of eighty. Bradford, who must have watched at his bedside, thus describes his end: "His sickness was not long and til ye last day thereof he did not wholly keepe his bed. His speech continued til somewhat more than half a day and then failed him; and 9. or 10. a clock that evening he dyed without any payn at all. A few howers before he drew his breath shorter and some few minutes before his last he drew his breath long, as a man fallen into a sound slepe, without any pangs or gasping." William Latham was shipwrecked in the West Indies and starved to death. John Crackston, Jr., froze his feet, which "put him into a fevoure whereof he dyed." John Billington was hung for the murder of an Indian. In 1670, fifty years after the landing on Plymouth Rock, twelve of the Pilgrims were still living; and it was not until the last year of the century that Mary Allerton, the last survivor, died at the age of ninety.

In the history of the first settlement of Massachusetts Bay we find references to sickness, though not such full ones as in the history of the first settlement of Plymouth. The Salem settlers had a particularly hard time. Bradford in one of his letters speaks of the "infection that grew among ye passengers at sea [in ships that came to Salem with Endicott in 1628;] which spread also among them ashore of which many dyed, some of ye scurvey, others of an infectious fevoure which continued some time amongst them." When the fleet arrived that brought the great emigration of 1630 to Massachusetts Bay, the Salem settlers were found to be in an "unexpected condition of distress." More than eighty of their small number had died during the preceding winter; and Rev. Francis Higginson, their clergyman, was "wasting with a hectic fever." The second division of the Salem company, which came with Higginson, had a very healthy passage out, according to Higginson's diary, "freed from scurvey and other maledictions . . . none dyed of the Pockes but that wicked fellow that scorned fasting and prayer;" and the only other deaths on the voyage were of two small children.

Of the medical allusions found in the early records of Massachusetts and Connecticut, only a few can be referred to in this paper, which must be limited as to length.

The first case of syphilis noted in New England, 1646, is thus quaintly recorded by the elder John Winthrop: "There fell out also a loathsome disease

at Boston, which raised a scandal on the town and country, though without just cause. One of the town having gone cooper in a ship, at his return his wife was infected with lues venerea which appeared thus; being delivered of a child, and nothing then appearing, but the midwife finding her body as sound as any other, after the delivery she had a sore breast, whereupon divers neighbors resorting to her, some of them drew her breast, and others suffered their children to draw her, and others let her child suck them (no such disease being suspected by any) by occurrence whereof about sixteen persons, men, women, and children, were infected, whereby it became at length to be discovered by such in the town as had skill in physic and surgery, but there was not any in the country who had practiced in the cure. But, (see the good providence of God,) at that very same time there came by accident a young surgeon out of the West Indies who had had experience in the right way of the cure of that disease. He took them in hand, and through the Lord's blessing recovered them all in a short time. And it was observed that though many did eat and drink with those who were infected and had sores, etc., yet none took it of them but by copulation and sucking. It is very doubtful how this disease came at first. The magistrates examined the husband and wife, but could find no dishonesty in either, nor any probable occasion how they should take it by any other, (and the husband was found to be free of it.) So it was concluded by some that the woman was infected by the mixing of so many spirits of men and women as drew her breast, (for thence it began.) But this is a question to be decided by Physicians."

In 1647 an epidemic of influenza swept over New England and the neighboring regions, which took away among others Rev. Thomas Hooker, of Hartford. Concerning this epidemic, Winthrop has the following suggestive note: "An epidemical sickness was through the country among Indians and English, French and Dutch. It took them like a cold, and a light fever with it. Such as bled and took cooling drinks died; those who took comforting things for the most part recovered, and that in a few days."

The first provision for medical education in New England was made by the Massachusetts Bay Company, when, in 1629, they sent out Nicholas Lambert to Boston to serve as a contract surgeon, and also as a teacher of surgery. A summary of his contract is as follows: He was to "serve the company and the other planters that live in the plantation for 3 years, and in that time apply himself to cure not only such as come from hence, . . . but also for the Indians. . . . And moreover, he is to educate in his art one or more youths . . . that may be helpful to him, and if occasion serve, succeed him."

But Doctor Lambert was not the only contract surgeon which the Massachusetts Bay Company engaged for the Puritan Settlement. That company's records, under date of May 5, 1629, state that: "Robert Morly, servaunt to Mr. Andrew Matthews, late barber surgeon," was employed to serve the Company in New England, as "a barber and a surgeon," for three years, at a salary of twenty

nobles for the first year, and thirty marks for the third year.

We also find records of a contract surgeon early in Connecticut. Dr. Thomas Lord, who was one of the early settlers in Hartford, was engaged in 1652 by the Connecticut General Court "to continue his abode in Hartford for the next ensuing year, to exercise his best skill amongst the inhabitants of the towns upon the river within their jurisdiction, both for setting of bones and otherwise. . . . This Court doth grant that he shall be paid by the country the sum of fifteen pounds for the said ensuing year, and they do declare that for every visit or joineye that he shall take or make . . . in Hartford, twelve pence is reasonable; . . . in Windsor, five shillings; . . . in Wethersfield, three shillings; . . . in Farmington, six shillings . . . in Mattabesec, eight shillings: (he having promised that he will require no more,) and that he shall be freed for the time aforesaid from watching, warding, and training; but not from finding arms according to law."

An important though scanty provision for medical education in Massachusetts Bay appears in the following legislative act of the year 1639: "Lastly, we conceive it very necessary yt such as studie physick or chiurgery may have liberty to read anatomy and to anatomize once in foure years some malafactor, in case there be such as the court shall allow of." The medical practice law of Massachusetts Bay, enacted in 1649, was evidently drafted by a legislator with a fondness for rhetoric. It reads as follows: "No persons whatsoever that are implied about the bodies of men, women or children, for preservation of life or health, (as phisitions, chiourgyons, midwives, or others) psume to exercise or put forth any act contrary to the known rules of art, nor exercise any force, violence, or cruelty upon or towards the bodies of any whether young or ould, (no, not in the most difficult & desperate cases) without advice and consent of such as are skilful in the same art, if such may be had, or at best of the wisest & gravest then present, and consent of the patient or patients, if they be mentis compotes, much less contrary to such advice & consent, upon such punishment as the nature of the fact may deserve; which law is not intended to discourage any from a lawful use of their skill, but rather to encourage and direct them in the right use thereof and to inhibit and restrain the presumptuous arrogance of such as, thrugh prefidence of their own skill or any other synester respects, dare be bould to attempt to exercise any vyolence upon or towards the bodies of young or ould, to the preiudice or hazard of life or lime of men, women or children."

Physicians at this date were allowed exemption from military duty and granted precedence at ferries. In 1647 the General Court at Boston being "credibly in formed yt ye plague or like greevous infectious disease, hath lately exceedingly raged in ye Barbadoes, Christopher, and other islands in ye West Indies," established a quarantine on ships from the West Indies by the following regulations: The ships had to remain in the outer harbor; no persons coming on them were allowed to "go ashore in any

town, village or farm, or come within four rods of any other person but such as belongs to the vessel's company yet he or shee came in, or in any way land or convey any goods brought in any such vessels ashore . . . except it be upon some island where no inhabitant resides."

In the legislative enactments and court decisions of the first settlers of New England may be found not only examples of political enlightenment far in advance of their age, but also examples of an enlightened regard for public health which may well excite the admiration of the present age. Two instances of such legislation are here given. A magistrate in the early days of Plymouth refused to marry a couple unless the man would bring to him certificates from two physicians, to the effect that he did not have the "falling sickness." In 1630, the year of the settlement of Boston, a Massachusetts court rendered the following judgment: "Nicholas Knapp is fined 5 L for taking on himself to cure the scurvy with a water of no worth or value, which he sold at a very deare rate, to be imprisoned until he pay the fine or give security for it, or to be whipped, and shall be liable to any mans action of whom he has received money for the same water."

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1218 PACIFIC STREET.

## THE KIDNEY IN PREGNANCY.

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As my subject, the kidney in pregnancy, is to be considered from the pathological standpoint, and inasmuch as our knowledge concerning this organ in life is obtained from an examination of its chief secretion, the urine, I may properly substitute for the above title *The Urine in Pregnancy*, and consider its anomalies.

An increased output, polyuria, is very common and generally physiological. A diminished output, with high color and specific gravity, due to loss of fluids by vomiting, etc., may be present without any bad significance, but it should have the attention of the physician, for it may be the prodromal stage of kidney breakdown and remedies addressed to the insufficiency at this time may avert further trouble. Blood in the urine, hematuria, is not common in pregnancy as a result of the condition. I will recall an instance of this where the patient later gave birth to a premature dead fetus without previous or subsequent disorder of the kidneys or urinary tract. Whence it came was never determined. Pus in the urine, pyuria, is oftener seen. A few pus cells, or perhaps I should say leucocytes, are generally present where there is vesical irritation. A considerable gush of pus following a pain in the groin, attended with elevation of temperature, points to a pyelitis. This pain is commonly on the right side, occurs during the latter half of pregnancy and is often mistaken for appendicitis. It is caused by the pressure of the enlarged uterus on the ureter at the brim of the pelvis, dam-

ming back the secretion to which an infectious process is added. It is a condition requiring energetic treatment. If rest in bed with ordinary remedial measures does not bring relief, induction of labor is called for. A neglected case may result in complete destruction of the kidney and even death.

Sugar in the urine, glycosuria, is said by some investigators to be very common. Williams states that Fehling's test will show a distinct reaction for sugar in about five per cent. of all women in the last months of pregnancy, but emphasizes the fact that most of these reactions are due to lactose which is without clinical significance. If a genuine diabetes mellitus is present, which does not yield to anti-diabetic treatment, and the characteristic symptoms of thirst, emaciation, and dyspnea occur, termination of pregnancy is in order, for the prognosis of continued gestation is regarded as serious for both mother and child.

Albuminuria is the most common disorder of the urine in pregnancy and will at once suggest the most appalling complication of pregnancy, namely, eclampsia. A light cloud of albumin is frequently found in the urine of patients who have no grave symptoms, and is due to kidney irritation from some undetermined toxin elaborated in the process of gestation. The expression "toxemia of pregnancy" is often employed to include the albuminuria and associated symptoms, and serves to differentiate that nephritis, which may have nothing to do with, or may complicate pregnancy, from the kidney condition which occurs in the later months of pregnancy and is wholly due to it and which may clear up entirely when the cause is removed. The latter is recognized by the time of its occurrence more than by the urinary findings. If the urinary signs of nephritis appear after the sixth month of pregnancy they are most commonly due to the toxemia of pregnancy. Of course, they may be due to an acute exacerbation of an old but latent nephritis; and an acute nephritis may arise at any period of gestation just as well as at any other time and from the same causes, to wit, exposure to cold, improper diet, etc. When it does occur it adds distinctly to the gravity of the condition because of the increased work put upon the kidneys by the pregnancy. It is possible for a nephritic to pass safely through a pregnancy, but it is more common to manifest insufficiency. Nephritis is also a well recognized cause of stillbirths, and is perhaps a factor in some cases of premature detachment of the placenta. Some patients who pass safely through a severe eclampsia are left with a nephritis which does not clear up, but passes into a chronic condition, so irreparable is the damage done to the kidneys.

Some authors have written of this subject under the title of "preeclamptic toxemia," and this is a worth while conception of the subject, for it focuses one's thought upon the early and significant symptoms of the disorder without identifying them with any definite cause. It is at this early period also when the physician can be of most service to the patient. The lesson to be drawn, therefore, is that during the later months of pregnancy the prospective mother, whether sick or well, should be under the more or less constant supervision of her physician,



in order that the beginning of the toxic breakdown may be recognized and dealt with.

What are the symptoms which denote this oncoming insufficiency? Fortunately for the busy practitioner, they are quite simple so far as the urinary examination is concerned. Much splendid effort has been spent by well trained laboratory workers in searching for some obscure element added to or removed from the urine of these toxic patients by processes which would be too complex for use in daily practice, without adding, as far as I know, distinctly to the clinical value of the simple determination of the quantity, specific gravity, the presence of albumin and casts in the daily output of urine.

The mere finding of albumin in the urine should start an investigation to determine its source, whether from contamination, as with pus, blood, or secretions, whether from a previous existing nephritis, or whether from toxemia due to pregnancy. In the latter condition, one is aided by associated symptoms. Of these edema is perhaps the most constant. Puffiness about the ankles is very common in the later months of pregnancy and may be due to pressure and varicose veins, but when the edema extends well up the tibia and involves the hands, and especially the face, giving rise to a fairly characteristic changed appearance, and is present in the mornings, it is most likely toxic in origin.

An early and significant symptom is an increased blood pressure. A systolic pressure of 140 and upward is a fairly constant evidence of toxemia. Irritability, insomnia, and especially headache, are concomitant symptoms. Impaired vision, severe epigastric pain, and scanty or suppressed urine are late signs and betoken impending eclamptic seizure. When this syndrome is present the condition and gravity of the case is unmistakable, and the most radical measures for relief are justified.

Williams believes that eclampsia may occur without prodromal symptoms, and the victim be struck down as with a bolt from a clear sky. These instances must be very exceptional. I believe that if we could examine every patient carefully before the crisis occurred we would find some evidence of increasing toxemia. These rapidly developing and exceptional cases nullify in a measure the argument for a routine fortnightly examination of the urine during the last two months of pregnancy. However, in order to benefit the patient as far as I can, I am in the habit of telling her to return with a sample of urine in two weeks if she is well, and if she feels out of sorts to come at any time. There are so many little discomforts during the terminal period of gestation that this advice brings more patients suffering from other causes than from grave toxemia, but now and again it brings to light a toxic case at a time when treatment is of the greatest service.

Writers give widely varying figures as to the frequency with which eclampsia occurs, up to one in 500 cases. In a hospital, which naturally becomes a resort for the severe cases of all the physicians in the zone in which it is located, a very much larger percentage of cases will be seen than will occur in the experience of any single practitioner. Thus, in the service of the Kensington Hospital for Women, since it opened its maternity ward, ten out of a total

of 418 admissions were for eclampsia, not to mention those who were treated successfully for pre-eclamptic toxemia.

I have been impressed with the fact that these patients, who are brought into the hospital after convulsions have occurred, had no treatment at all or surely no adequate treatment until they had fallen into labor or had had a convulsion. They are often in the care of midwives, or belong to a class that do not consult the doctor until labor sets in. The time to see these patients, the time when medical direction can be of the most use to them, is during the preeclamptic period. Then prophylactic measures can be adopted with highly beneficial results; and this is an added reason for the prenatal study of maternity patients. It is unwise to depend upon the women to take the initiative in the matter of seeking advice at this important period for the reason that some of the most significant symptoms, to wit, the urinary findings and the edema, are unattended with pain and are therefore passed over lightly. It is better for the physician to inspect and interrogate the patient as a routine procedure, for he will sometimes be rewarded by discovering the beginning of toxemia, and by judicious management prevent one of the real tragedies of a doctor's experience.

Eclampsia occurs more frequently in primiparae. Multiple pregnancy increases the liability; and second attacks are not common.

Dr. Martin H. Fischer, in his book on *Edema and Nephritis*, says respecting this condition: "The beginning of the intoxication with pregnancy and its prompt cessation with the birth of the child, together with the fact that an organism is immune to its own proteins, makes me believe that the foreign protein of the male brought in with the spermatozoa marks the starting point of the intoxication. In this sense the morning sickness, the nausea, etc., occurring early in the pregnancy, mark the beginning of the intoxication, but as immunity is usually established, they are likely to pass away. When immunity is not established, the severer signs of the later months of pregnancy supervene. A woman who has been pregnant is less likely to be a second time the victim of an intoxication because the immunity developed in a first pregnancy protects her against the intoxication consequences of a second. Moreover, a woman married more than once may show intoxication with one and not with another man, because the foreign protein is different in the two. Termination of the pregnancy (removal of the foreign protein as contained in the developing embryo) cuts short the intoxication."

The same author has demonstrated that the abnormal accumulation of acid in the system, and especially in the kidneys, causes a decrease and, in sufficient amount, an arrest of urinary secretion. Based on this demonstration he has formulated the general rule that nephritics should avoid and remove as far as possible every condition that favors the abnormal production or accumulation of acids in the kidney or of such other substances that in their effects on the colloids behave like acid. In its practical application, he restricts the diet in the direction of reducing meat products which in their metabolism yield an excess of acid and favors a fruit and vege-

table diet, which by their change in the system tend toward alkalinity of the body tissues. He still further advises restriction of muscular and mental effort, through rest in bed and an adequate supply of fresh air to promote oxidation. In addition to these measures he combats the condition by the administration of alkali, salt, and water. To this end he employs his so called hypertonic salt solution to which has been added an alkali, in the following formula:

Sodium carbonate ..... 10 grams.  
Sodium chloride ..... 14 grams.  
Distilled water ..... q.s. ad 1,000 c.c.

This formula he administers by enema or intravenously. In the latter instance the greatest care must be taken in its preparation. This medication is given until the urine becomes neutral or alkaline to litmus. The milder measures as to diet will naturally be resorted to first, and as the toxemia deepens the treatment becomes more aggressive.

I usually restrict these patients to milk diet, direct them to take enough saline—and none is better than Epsom salt—each morning to bring about one to three watery stools daily, and once or twice a week give one or two grains of calomel at bedtime, sometimes substituting compound jalap powder for the salt in the morning. Activity of the skin is favored by hot baths, and if the patient is in the hospital or under the care of a trained nurse, a cabinet sweat bath is given as often as two or three times a day if the case is urgent. In this way most of these patients can be carried along until term, or until spontaneous premature birth occurs. I am in the habit also of giving these patients thyroid medication, as suggested some years ago by Nicholson, of Edinburgh. It at least reduces the blood pressure and helps in this way if not in some specific manner.

If in spite of treatment the patient's condition becomes worse, or if the doctor first sees the patient when convulsions are impending, or, as is so often the case, after the first convulsion has occurred, he is immediately confronted with a new problem, namely, that of delivery of the patient; for since the cause of the disorder resides in the product of conception, obviously its relief is logically sought in the removal of the product, and this practice has the endorsement of most authors.

There is, however, a most important medical side to the treatment at this critical stage. In the first place, reduction of blood pressure is usually an urgent need and is promptly secured by bleeding, and may be maintained by the hypodermic use of veratrum viride in five minim doses every hour or two until the pulse rate is reduced to sixty if the tension is high. On the other hand, if it is low I would not give the veratrum. I recently saw a patient who had a convulsion when the systolic pressure was recorded at 130, but this is very exceptional in my experience. This first step not only reduces blood pressure, but contributes toward a most important indication, namely, elimination of the poison. To meet this situation, I thoroughly wash out the stomach, preferably with an alkaline—sodii bicarbonate—solution and leave in at the finish two ounces of Epsom salt and three drops of croton oil. At the same time I wash out the colon and leave in a pint of Fischer's

solution and perhaps thirty to forty grains of chloral hydrate. Under favorable circumstances the Fischer's solution may be given intravenously with prompter results. The Epsom salt in one ounce doses is continued every two hours, unless rejected by the stomach, until copious evacuations are secured. When, happily, this result is obtained, I feel the utmost satisfaction in the progress of the case. The earlier this is accomplished the better. And it is for this reason that I have in several instances reluctantly adopted the morphine treatment for the arrest of convulsions, a treatment which has the unqualified endorsement of the Stroganoff and Rotunda Clinics. In my experiences the one half grain doses of morphine have not always stopped the convulsions. Under such circumstances removal of the fetus has seemed imperative and then the baneful effects of the opiate were much in evidence. These are nausea, vomiting, abdominal distention, and long delay of action, if not complete inability to get the bowels moved. It seems to me better practice, when a patient is brought into the hospital in a comatose condition following convulsions, to proceed at once to get rid of the cause rather than to give morphine and thereby hamper the subsequent conduct of the case in the manner alluded to above.

How, then, shall we proceed to get the baby? This will depend on the condition of the patient when she is struck down with convulsions. If she is already in labor at term and has had previous children, I would speed up the procedure as rapidly as would be consistent with the welfare of the mother by the application of forceps, provided the os was sufficiently dilated; or by bag and manual dilatation if it were not. Ether anesthesia, or gas and oxygen would be employed, if any were needed. If, however, convulsions occur during the seventh or eighth month of pregnancy, before labor has begun, even before there is any obliteration of the cervix, a vaginal Cæsarean operation is in order. This is conditioned on a previously dilated birth canal. I would scarcely undertake it in a primiparous woman. If convulsions occur in a primipara, as is most commonly the case, before labor has set in or before material effacement of the cervix has occurred, and hence with an undilated birth canal, it is far better, in my judgment, to treat the case by an abdominal Cæsarean operation, and especially is this true if the child is living and viable, although the welfare of the child is not the paramount consideration in this procedure. These babies participate in the toxemia of the mother and are not good risks, even though they may be well developed and appear vigorous at birth. The operation should be undertaken, of course, only when technically clean work can be done, which means practically in a hospital, for a patient in a city at least could be carried to a hospital and brought more promptly to operation, than could conditions in a home be made suitable for operation. The operation can be conducted by using local anesthesia for the abdominal wall. The uterine incision and suturing do not cause pain, and unless the organ is subjected to dragging no anesthetic is needed at this stage of the operation. These patients have seemed to me to bear the operation well. Prompt relief is afforded by removing the

cause of trouble. The bleeding which attends the operation meets an important indication, namely, reduction of blood pressure. Access to the uterine cavity is through a clean incision which should heal by first intention, instead of through a possibly infected birth canal. But the most important consideration of all as far as the future health of the patient is concerned, is that a clean incision perfectly closed leaves the patient in as good a condition as before operation, whereas the injury resulting from a rapid delivery through an undilated birth canal cannot be so satisfactorily repaired, and the ills growing out of injuries so received are at the root of much of the invalidism due to childbearing.

I have performed the abdominal Cæsarean operation upon nine women for eclampsia after they had had one too many convulsions with the result of death of one mother. In two other instances I delivered the baby by the same route before convulsions had occurred, making eleven operations of this kind for toxemia, with one death, or a percentage of 9.1. I feel sure that this record is a better one than would have resulted from delivery through the natural passages of this particular group of patients.

No single rule for treating these patients may be laid down; some should be dealt with surgically; some obstetrically; some medically; or by a judicious combination of the methods, as, for example, by rupture of the membranes, the administration of sedatives and timely use of forceps; and these are to be decided by the environment of the patient, the urgency of the condition, and the experience of the attendant.

1739 NORTH SEVENTEENTH STREET.

## THE GASTRIC ONSET OF PULMONARY TUBERCULOSIS.

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While the subject of pulmonary tuberculosis has been a thoroughly advanced one in medicine during these latter years, it may be of moment to present pulmonary tuberculosis from a rather different point of view, since a small proportion of cases come under observation in that way and are liable not to be recognized until the pulmonary symptoms are established. My associates and myself have noticed and have been interested for some months in cases that come under observation for digestive disturbance which eventually manifest symptoms of pulmonary tuberculosis. At first we were inclined to treat these patients along the lines of gastric or intestinal disorders upon a diagnosis of conditions made at the time, and we felt a reasonable degree of assurance that they would respond to treatment. It was not until two or three of them eventually showed pulmonary symptoms that our attention was directed to the fact that perhaps those gastric disturbances which they had had were really initial symptoms of pulmonary tuberculosis. It is from that point of view that I desire to mention our experience.

I need not present in detail all of the cases seen in the clinic, to which there were added three from

private practice, making altogether thirteen. Of these thirteen cases the individuals came under observation for the following conditions: Eight of them for distinct anorexia; two for anorexia plus distinct distress of an indefinite type, after meals. These presented the colloquial symptoms of some form of chronic disturbance and there were no distinct findings in the test meal to prove that there was anything locally wrong with the stomach. Two more had conditions of gastritis with complete achylia in several test meals. While the chests were examined in all of these cases at the start, there were no findings definite enough to warrant a belief that a condition of pulmonary tuberculosis existed. In the first seven cases observed there was no fluoroscopic examination made of the chest; the patients were treated on the basis of gastric disturbance, and we believed the treatment was of value to them. The other five, however, were fluoroscoped at the time of the examination of the abdomen and in each of them a condition of active tuberculosis was noticed. They were treated on the basis of digestive disturbance and the condition of the lungs carefully observed, and in each of them, as the condition of the lungs got worse (they were all progressive), the symptoms in the digestive canal ran along with it. The point I desire to make in this article is that in gastric disturbance cases the possibility of pulmonary tuberculosis should be kept in mind, and in taking the history of young patients attention should be paid to any slight symptoms referable to the respiratory tract, and a fluoroscopic examination of the chest made.

Leaving out of consideration the cases of pulmonary tuberculosis which begin with an initial hemorrhage and those cases of tuberculosis which, because of the advance of the lung condition, finally manifest digestive disturbance, I would draw attention particularly to the type of case which comes as a neurasthenic condition, in which there is some nervous depression and a condition of insomnia with the gastric disturbance; these particularly, in my opinion, deserve a fluoroscopic examination of the chest in every instance as a part of the gastric procedure. If, whenever in the case under observation no benefit is noticed from diet or medication and there is a degree of anemia, this should make one suspect the possibility of tuberculosis. In these instances we have observed that the temperature curve—rise in temperature in the afternoon and early evening and possibly subnormal in the morning—pulse running at all times accelerated with a sensitive facility to mount up high on slight exertion, a rather short winded condition in which the patient is easily tired, and so on, are factors in directing attention to the chest. Of course, when hoarseness and cough comes on, our suspicions are usually aroused. We have noticed in cases as they develop that often there has been an infiltration of the arytenoids, or a swelling and serration of the interarytenoid region, these appearing rather early before the pulmonary symptoms. I would suggest, at least, that in cases which come under observation for and do not respond to gastric treatment, that the matter of the possibility of gastric symptoms being due to a pulmonary tuberculosis not developed enough to give any physical or



chest symptoms be kept in mind, and that a fluoroscopic examination be made and possibly an inoculation test as well. If we are to do full service to the victims of pulmonary tuberculosis, early diagnosis must be made when possible, and these gastric onset cases, most probably, are a type not commonly diagnosed as early as might be.

21 WEST SEVENTY-FOURTH STREET.

### WASSERMANN PARADOXUS.

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A weakly positive Wassermann reaction is of value only when the serum comes from a patient who has been treated for syphilis. In the absence of definite signs of lues in the history or in the physical examination, or in the presence of puzzling and undefinable phenomena, a weakly positive result is of no value whatsoever. Not only are there positive reactions in nonluetic diseases, but also weakly positive reactions in people who complain of nothing and never had lues in any of its forms.

In using two antigens one finds that the cholesterinized extract is usually the one that gives a more complete inhibition than the crude alcoholic nonreinforced product. It is by no means a rare occurrence to have complete hemolysis with the latter and equally strong inhibition with the former.

A four plus result on a serum showing complete inhibition with both extracts becomes gradually less positive in the tubes containing the noncholesterinized antigen as a result of proper therapy. Only after more thorough and continuous treatment does the cholesterinized tube begin to show evidences of negatization and gradually become less intensely plus. Schematically one may picture the progress as follows:

CHOLESTERINIZED ANTIGENS.	NONCHOLESTERINIZED ANTIGENS.
Four plus	Four plus
Four plus	Three plus
Three plus	Two plus
Three plus	One plus
Two plus	One plus
One plus	Minus
One plus	Minus
Plus-minus	Minus
Minus	Minus

The above scheme is somewhat arbitrary and tends to show that long before the reinforced extract gives a negative result, the noncholesterinized antigen has been negative on more than one titration. In reviewing my serologic material at the Neurological Institute for the past three years, I found that certain patients presented a serologic behavior just the reverse of the one pictured above, i. e., their inhibition from the start was strongest, in fact repeatedly four plus in the noncholesterinized tubes and either weakly plus or entirely minus in the reinforced test.

I recall with regret the time when I reported four plus on certain serums six or seven years ago when cholesterinized antigens were not yet in use. An instance of this kind on account of its importance I cannot forget. It concerned the son of a minister

who was a patient of Dr. Charles L. Dana. There was not the slightest suggestion of lues, the patient suffering from epilepsy. I was not at that time in a position to account for the four plus result and only hoped to be able to explain it at some future date. Since then such results have been obtained on numerous occasions, all being patients in whom lues could be definitely excluded. However, when the cholesterinized antigens became an addition to the serologist's method, these serums behaved in the peculiar manner mentioned above.

Upon a closer analysis from the clinical point of view a very interesting situation disclosed itself. This paradox Wassermann invariably came from patients who displayed one or more manifestations of motor unrest, such as spasms, tics, tetanoid movements, fainting spells, and convulsions. Many presented that type of epilepsy that still parades under the designation of "idiopathic." All of them showed no signs of lues in their physical analysis or in their history. A few cases were given the benefit of the doubt, but neither mercury nor salvarsan nor the combined treatment showed any improvement in these cases. The spinal fluids when analyzed never showed an abnormal condition.

The connection between this motor unrest or spasmophile tendency and the positive results with noncholesterinized and negative with reinforced antigen is unexplainable, at least for the present. It must be borne in mind that not all cases showed this peculiarity and that many apparently similar cases resulted in a negative with both extracts.

The Wassermann paradoxus should always be guarded against, as it may cause trouble when only nonreinforced extracts are used. The situation has nothing to do with lues, but rather with a neural state that permits a deviation of the complement in the absence of cholesterin.

28 BEEKMAN PLACE.

### MENTAL FACTORS IN THE ETIOLOGY OF THE PSYCHOSES.

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It has been an interesting study to trace the history of the care of the insane during the last sixty years and to see how views arose, flourished, and were replaced by others, which in turn gave place to still other theories. From 1840 to 1860 was the period of the foundation of the public care of the insane, and the writers of that period in the United States made especial reference to the advantage of early treatment and hospital care in producing recovery. The recovery rate in that period was very high; in one Ohio institution 100 per cent. of all the patients discharged. Later, in an attempt to prove that insanity was a disease of the brain and due to some disease of that organ, John P. Gray published, in April, 1871, an article in which he stated that insanity was dependent upon some physical disease. He published a table showing that in 1843 the moral causes were given as the etiological factor in 46.38 per cent. of the cases and physical causes as affect-

ing 33.7 per cent.; in 1867 none of the patients admitted were supposed to have become insane from moral causes, but 80.05 per cent. were insane from physical causes, while in 19.95 per cent. the cause was unascertained. All of these efforts had a definite *raison d'être*, but the effect produced by them has persisted much longer than it was needed. At the present time it is practically universally agreed that it is the duty of the state to care for the insane and that insanity is an illness which should be treated by physicians especially trained to that service.

We have gradually come to look upon insanity as a perversion of the mental function and to regard treatment directed toward the physical side as only of accessory value. Mental treatment by occupation, the training of the individual, is regarded as of much greater value, especially in the treatment of the more chronic mental disorders. The prevention of insanity by teaching a proper mental hygiene and the education of physicians and parents in the modern methods of training of children to proper habits of thought is now being advocated. Meyer has shown that certain cases of dementia præcox are due to the patient's lack of ability to adjust himself to certain mental conflicts, and often one may, in studying the history of the patient, find a number of instances in the past life which demonstrate the fact that there has long been a difficulty of adjusting the mental mechanism to the facts of life.

It has been accepted for years that various neuroses may follow some emotional upset. Hysteria is commonly accepted as having mental factors as the exciting cause. But in considering the psychoses, so called, the influence of the earlier pathological teaching still holds and we seek some physical basis. Many hospital superintendents still think that a pathologist is the only one who can settle questions of diagnosis regardless of the fact that the pathologist may have had little or no clinical experience or that the mental disorder may have no definite pathological anatomy.

In the last five years, however, there has been a constantly growing tendency to take a more reasonable attitude toward mental disorders and to emphasize the influence of the mental factor in the causation of certain psychoses. The work of Freud in giving us an individual psychology instead of the mass psychology of the past and the writings of Dubois, which show how the various mental disorders may be influenced by mental treatment, have been of great value in changing the viewpoint.

There is still, however, a hesitancy in giving mental factors the importance which many feel is due them, and for this also there is a reason which, while often not conscious, prevents one from saying that the mental factors have an etiological value. Worry, financial, and domestic troubles still are stated by many to be causes. One often obtains in an anamnesis the story of some domestic difficulty which the relatives assert is the only cause, and they often refuse to give facts which will refute this. In many cases the physician says it is a family quarrel and pays no attention to the story, which may frequently be the wedge, which, if properly driven home, will show that the domestic troubles in themselves are not the exciting cause, but that the quarrels and the

consequent psychosis are both excited by mental factors which have been operating for a period of years.

In obtaining an anamnesis of a patient suffering from a so called functional psychosis it is important not only to obtain a story of the beginning of the disorder and its development, but also to obtain a picture of his past life, his makeup, ability in various directions, his social activities, changes in his interests and beliefs, and reasons for them. The majority of anamneses as taken in our hospitals are practically valueless because we have no picture of the patient before he became insane, and frequently none afterward. But it is gradually becoming generally recognized that a study of the patient consists not only of a description of his condition as it exists at a given time, but rather of a life picture which will show us how and why he reacted to various events in his life.

An objection to the acceptance of mental factors as exciting causes of mental disorders is due in part to the habit of comparing ourselves with the patient, or comparing him to others whom we know have had the same experience and who have not developed a psychosis. At the same time we are willing to admit that in a railroad wreck only one of a number of passengers will develop a traumatic neurosis, and we know that this disorder is now generally accepted to be psychogenic in origin. Another objection is that a mental development can not explain a lasting disorder. For centuries men believed in witchcraft and even now in certain parts of the world people think that certain individuals have the power to bewitch others. This belief was one which controlled whole bodies of people for generations and exerted an enormous influence on their behavior and actions. Religious and political meetings will in certain individuals have the effect of changing these people's views and often their mode of living. Yet they are mental factors.

Since Freud has enunciated his views we have begun to study the effect of various occurrences and beliefs and can see how important they are. We have begun to regard mind not as divided into three different widely separated spheres of activity, intellect, emotion and volition, but rather as a closely connected whole by which the individual is ruled and which controls his actions. The conscious, which formerly was the only part considered, is now shown not always to be of as much importance as the subconscious, which really directs many of our movements and causes us to give expression to many emotions. This subconscious activity is one that frequently is found to be at the bottom of many psychoses.

In order to uncover these subconscious conflicts we may resort to the methods of analysis of dreams, association tests, analysis of the patient's delusions, and finally to a definite study of the patient's spontaneous utterances.

The subconscious according to Stoddard embraces: 1. Percepts and other mental states which for the moment are outside the field of attention, e. g., percepts and sensations of which we are unaware and absentminded actions. 2. Ideas and memories absent from consciousness for the time being,

but capable of recall when necessary. 3. Neural processes which resemble mental processes, such as occur in automatic writing, and between an effort to remember a name and the remembrance of it some hours later when we are thinking of something else. 4. Submerged memories of the past which are absent from consciousness and which cannot be recalled without the aid of some such artifice as hypnosis, crystal gazing, or psychoanalysis.

The various impressions and emotions which an individual experiences in his lifetime tend to arrange themselves in certain groups, each of which is apt to generate a definite line of thought or course of action usually emotional or instinctive. These groups constitute the complexes. Each complex has an outlet in activity of some sort and whatever form this activity may assume is known as the "*abreagierung*" of the complex. This activity may be out of harmony with the content of consciousness and may cause a conflict. In normal individuals the activity is directed into nonconflicting channels. In abnormal individuals the complex is repressed, is banished from consciousness, but the tendency toward activity remains and constitutes a continually present source of irritation.

It is with this latter group that we have to deal in whom the abnormal trends are most prominent. In many patients the original complexes are completely buried, so that they can be discovered only by a patient search and an analysis of the patient's output. The emotions accompanying them remain and frequently are transferred to other complexes or they may give rise to symptoms which are symbolic of the original complex. The symbolism is often difficult to analyze and frequently is impossible unless one has the cooperation of the patient.

That mental factors may cause a depression has always been accepted as a rather self-evident fact. Everyone has experienced some sorrow at the non-fulfillment of a desire or the failure of some enterprise upon which they had built widely and extensively. That this depression may become intensified in certain individuals and produce a more or less lengthy psychosis follows easily. A depression of this type is well illustrated in the following case.

CASE I.—A female, aged thirty-five years, at the age of fourteen had to stop school on account of the development of a disease of the nasal bones which necrosed and caused considerable facial deformity. She was treated by a physician and lived for fourteen years in a general hospital in Chicago where she underwent numerous plastic operations which, however, still left her much disfigured.

According to her brother, a physician in one of the homes where she worked wished to marry her but she refused him. A short time later, in 1906, she became depressed, cut off her hair and wanted to become a nun. She was religious and prayed a great deal. At one time she seized some clothing belonging to a guest and trampled on them. This attack lasted about three months and she was apparently recovered. After that she was accustomed to have short periods in which she would throw herself on the floor and cry loudly.

On April 24, 1913, she again became depressed, tried to beat her head on the floor and later tried to commit suicide by asphyxiation with gas, but soon called her sister who called a neighbor who rescued her. The following day she visited her brother and when she returned home called him up and asked if he had been arrested. Later she went to her sister-in-law and said she would never forgive her brother for sending her past a police station. The brother had put her on a car which passed a police

station. The next day she was very much disturbed and when asked what the trouble was said, "Look, there is enough the matter. Look at the blood on my hands!" When told there was no blood she said, "Wouldn't there be blood if I had killed her," pointing to her sister, who is married, "by turning on the gas?" Later she began to weep and pray and said she wanted to become a nun. She was kept at home a week and was treated by means of hot baths and exercise. When taken out for a walk she would hesitate a long time before starting, would take off her hat and put on her sister's and change them several times before she would start.

She was brought to the Kankakee State Hospital on May 10, 1913, where she was very depressed but cooperated in every way possible. She answered in a low tone but always coherently and relevantly. She explained her depression by a reference to her facial deformity and said this led her to think she was a nuisance at home and that she would be better off dead. She had become discouraged because things had not gone at all well with her and she could see no way to change them.

Memory, retention, and orientation were very good.

Later she asked for work and when busy was much less depressed, but her face always bore an expression of resignation. After some question, a few weeks after admission, she made a reference to a visit of a cousin, who visited her several times and with whom she fell in love. She then went to visit one of her old nurses who had attended her in the general hospital, and when she returned she stated that everyone on the street seemed to be looking at her and to be thinking she was not in her right mind. After this she went home and when she realized she was cut off by her facial deformity from the life she would like to lead, to be married and have a home, her depression began.

This woman is badly tainted by heredity. Her father died in this institution of general paralysis; one sister committed suicide while insane, and one sister has been mentally defective since birth.

Here we have an hereditarily tainted woman who early in life suffers from an infection of the face, possibly congenital lues—although the Wassermann was negative—when young which leaves her much disfigured. When twenty-eight years of age she had an offer of marriage which she did not accept. Later she became depressed and entertained ideas of becoming a nun. This depression lasted three months, when she recovered. On the occasion of a second love affair and following a visit to a nurse who had attended her when she was undergoing cosmetic operations, she acquired a second depression and attempted suicide because of her discouragement.

In this case a detailed analysis was not necessary to bring out the etiological factors. Care in watching the general trend of her spontaneous accounts, with a little guiding at times, discloses many facts which when put together give one a fair story. It is a case, however, in which analysis would bring out many details and explain many actions which are only mentioned superficially at the present time.

The cases of excitement may have as exciting causes some mental factor just as a case of depression. Many cases of excitement begin with a short period of depression, then later develop into very definitely marked excitement. The second example shows such a case.

CASE II.—A woman, aged thirty-four, married about ten years ago. Her family history is negative. She was always of a very happy disposition until some little mishap occurred over which she worried considerably. About a month before admission in March, 1913, her little girl, eight years of age, was taken to a woodshed while coming home from school by two little boys. She was not assaulted, but was caused to expose herself. She came home and



told her parents about this. Both parents were very much upset. Shortly afterward this same thing occurred again. The parents tried to get the school trustees to discipline the boys. Both of them worried very much and the mother worried so much that she could not sleep. They were seen by a consultant in Springfield who stated that at this time the husband seemed to be in a more nervous condition than the woman. They were both very nervous and both had lost weight; they could hardly talk and were very much depressed. Later the woman began to be somewhat talkative and it was necessary to send her here.

She was very much elated on admission here, very talkative and said she was always happy. There were no evidences of any definite trends or hallucinations. Since being in the hospital she has remained talkative, happy, somewhat distractible and shows considerable flight of ideas. She is quite noisy at night and occasionally is quite untidy. Since her admission here on March 3, 1915, she has continued in this state.

This is a case in which there is no hereditary taint, but one in which the patient always had a tendency to fret over little things and to take them to heart. When she thought her child was mishandled she worried excessively over it, became depressed, and later underwent a period of active excitement. We know very little of her early life, but we know that she did live in the country, that her outlook was quite narrow, and that in her part of the country any sexual excesses or lapses were regarded as a great crime. Consequently when her young daughter was subjected to what she considered such a lapse she became very much depressed and worried over it.

Bléuler has shown many cases of paranoia or dementia præcox to have psychogenic factors as exciting causes. He states that the majority of persons wish to get ahead in life, but often the most fortunate find many hindrances. Obstacles due to circumstances and not to persons must lead either to resignation or to selfdestruction when they are insurmountable. Furthermore, difficulties which are not caused by our fellowmen do not arouse our feelings as those which can be ascribed to a particular person. When bad weather interferes with an excursion we planned we are annoyed, but we seek some other pleasure. But if the meanness of a rival is the cause of the disappointment, then we are apt to become seriously angry. Thus the complex of being ill used can refer almost exclusively to persons and must lead to delusions of persecution. This mode of origin which we have assumed also explains why delusions of persecution are the most frequent type seen in paranoia. Everyone who wishes to advance has opportunities of feeling himself wronged.

The exact nature of paranoia is as yet unknown. Whether it is a definite disease entity or not, whether it is due to some general disposition or degeneracy, or what the underlying factors are one cannot say, but in practically every case of paranoia or paranoid dementia præcox one can arrive at certain definite exciting factors which are usually quite definite. These are shown very well in the following case.

CASE III.—A young woman, twenty-nine years old, employed as a bookkeeper. We have very little information regarding the patient except that which she gives herself. She attended school from the age of six to fourteen, finishing grammar school and had one year in high school. When she was seventeen years of age her family moved about the country a great deal. Her father, a railroad conductor,

was injured in 1893 and died in 1896. Her mother had always been weak and more or less an invalid and they had to move about the country in order to see whether change of climate would not affect her for the better. For the last nine years the patient has been working as cashier and bookkeeper in Chicago. She did not want to remain a cashier because there was very little chance for advancement. Recently she has been working as a bookkeeper and doing all the detail work and has been receiving only fifteen dollars a week. The position had been formerly occupied by a woman who had received twenty-five to thirty dollars a week.

She states that her trouble began about the first of September, 1911, while she was living in Chicago. Her mother had recently moved into a new neighborhood and the patient did not like it. The people in the flat back of her would remain on the porch until as late as twelve o'clock at night. The patient did not like the neighbors and she said they did not like her. There was a little store in the building which was the centre of the gossip in the neighborhood. One time when she went to this store the woman in charge asked her personal questions. Shortly after this she began to hear the people on the back porches talking about her. They did not talk directly to her but were talking to each other and she could catch an occasional word.

Her home had formerly been in Defiance, Ohio, and she caught the word "Defiance" occasionally. She could not hear most of their conversation but she thought everything they said was directed to her. During the summer she wore a white dress and the people in the neighborhood called her "sport." There was a little dog in the house which the owner called "Sport." The patient was known to her friends by the name of Paul and as she passed down the street she could hear the people call the dog "Sport and then "Paul."

The mail in the flat was delivered to the janitor and was distributed by him to the people who lived in the flat. If she received a postcard she would hear the children on the street calling out things which had been written on that postcard. One card was from a man who said he could not come now but soon. Another card had a picture of a kitten wrapped up in a tangle of yarn and was inscribed, "Please don't scold." After she had received these cards she would hear the children on the street repeating these sentences. There were many five cent theatres in the neighborhood and at night she would hear the crowds coming from there. As the boys passed the house they sang and whistled, "Has Anyone Here Seen Kelly?" She always referred this to herself and thought they were referring to her when they used the name "Kelly."

She went to Ohio in January where she remained about three weeks. When she came back she told the woman who lived in the house across from her that she liked Defiance very much, but that the people there were narrow; city people were much broader. After this she heard the children on the back porches crying, "Gee, she ought to go back to Defiance now!" This she interpreted as meaning that the people who lived in Chicago, but had formerly lived in Defiance, Ohio, were angry with her for saying that they were narrow. She finally became afraid to talk or to go to the street.

On one occasion she had wanted to rent a pew in a church but the price was too high. She told the sexton what she had paid on the West Side for a pew and she later heard the people saying, "She will have to go back to the West Side." The sexton gave up his position a little after this and the patient thinks it was done on her account.

A few days before admission she went to church and wore a new suit and petticoat. The patient says when she moved into the neighborhood she had more clothes than she could have afforded to buy with her own money. Her aunts had been very kind to her and had given her several new suits and new underwear. The people in the neighborhood thought that she had money because she had new clothes but when they found out she had no money they wanted to publish it to everyone else.

During the summer of 1911 she had worked very hard, was weak and worn out and during this period she had moved into the new flat. Her trouble began about three

months later. The patient gave a very good account of her story quite spontaneously, but nothing very definite was learned as to the cause. She was paroled from the hospital in August, 1912, and seemed to have improved considerably during her stay, had improved physically, was not at all bothered by people and was not subject to hallucinations.

Later she got along very well in Chicago. She had given her story of the onset in which she said her trouble began with the loss of her position while she was ill. She had worked very hard to gain certain desires and ambitions and the manager of the place had told her that he would continue to advance her, but when she became ill he said that she had made so many mistakes that she had better quit. She has many ideas which are greater than she can ever fulfill. She has always wanted to go to the best theatres, associate with girls who dress much better than she could and who live in fine houses, and she thinks that if she could have remained with the firm for which she worked she could have had all these desires fulfilled. Her plans for the winter were to take a night course in auditing at the university night school and she thought this would help her very much in obtaining better positions and a higher salary. She gave a superficial account of a love affair but at this time nothing very definite could be gotten from her.

She was seen in October, 1912, and in June, 1913, in Chicago where her ideas were still very marked.

On June 6, 1913, the patient returned voluntarily, stating that at first after leaving the hospital she had gotten along very well but she took a difficult position. The work was in arrears and it was necessary for her to go back over the books a great deal. She worried over the work and never seemed to be able to balance her books. She was always exhausted when five o'clock came. She took another position as bookkeeper and stock girl but this also was trying on her. Then her mother became ill and for several weeks the patient was very much disturbed about this. She has had altogether seven or eight positions in the last year and has not been able to keep any of them.

In April the noise made by the neighbors began to annoy the patient considerably and she worried a great deal about this. She was still living in the flat which she disliked when her brother returned. She gradually became depressed and would have left the house but she thought that she could not afford to rent a room and pay for her board. She thinks that all the noise in the house was made to annoy her and that the knocking on the floor caused by the children at play was done on purpose.

Hallucinations were not at all prominent at this time. She thinks people talked about her but this is not so marked as it was at the occasion of the first admission, nor does she feel that people are watching her on the street as they did at that time.

Later when questioned further she says that several years ago she had been going with a young man who made rather violent love to her. She liked him but he was queer in many ways. He would meet her on the street and call at her house, always violently in love with her. Then he would not call again for several weeks and she would see or hear nothing from him. When he left town he seldom wrote to her. On one occasion he did not write for nearly six months, then returned and began to make love to her as before. He promised her great things, told her what he was going to do, of the amount of money and automobiles and houses which he was going to have. His father was a fairly rich merchant in Michigan, and, although the young man had nothing, the patient thought that his father would set him up in business. He became engaged to her but finally the patient began to worry so much that she could not do her work well and broke the engagement on several occasions.

She had counted rather largely on the promises which this young man had made to her. He talked of giving her the things which she had always wanted but he was not at all constant and she was kept very undecided for nearly three years. Finally, during a period of stress, strain and physical worry she began to show a marked letdown in her work, to be quite depressed; then, upon the occasion of going to a neighborhood which she did not like because it was a rather poor locality, she began to have ideas of persecution and definite ideas of reference.

We have here a very ambitious girl who is not well endowed physically. She was ambitious socially as well as in a business way and had a love affair which was somewhat peculiar, but which promised to supply her with what she wanted. However, this was broken off, and following this she became run down in physical health. She then moved into a poor neighborhood which did not accord with her desires or ambitions and her psychosis began. The ideas at first were mostly the expression of her former ambitions regarding her clothes, her own mental attitude toward people, and following this she had many ideas of reference. From her own account her mother accentuated her trouble a great deal because she did not sympathize with her and did not help her as she should.

In treating the insane we have much the same problems to meet as in general medicine or surgery. We would hardly consider a man competent who treated symptoms without looking for the cause, nor is it proper in mental cases to talk of treatment without considering what one is treating. At present, with our knowledge of the underlying causes for most of the mental disorders, it is easy to attach a name to the greater number of cases we handle. To treat them intelligently, however, and to give satisfactory advice to a patient when he leaves our care requires a knowledge of his past, his abilities, and his limitations, the factors favoring the development of his psychosis, and the best means to be taken to avoid them. To give this requires the careful study and proper emphasis of each of the possible exciting agents underlying the disorder.

In Case III the girl should be given a new view of life, an attempt made to have her take a more philosophical view of the trials, ambitions, and above all of her own limitations. She has ambition and desires, but both of these must be curbed and the ambition turned into some more productive channel. Her home conditions should be investigated and made as favorable as possible by explaining her condition to her relatives and gaining their cooperation as far as possible. She should be taught to take a broader view of life, to become interested in some fraternity where broad interests are considered, and thus be led away from herself.

The problem is much the same in our first case. There the patient has a permanent facial deformity which will cause her to lose many pleasures to which she is entitled by her abilities, but if she can be gotten to recognize her limitations and to sublimate her desires for marriage she will be able to do fairly well.

It is practically impossible to prevent mental disorders entirely, but if the parents, teachers, and especially the family physician will learn to look for bad mental habits in children and inform the children or their parents how to correct them, much good may be done.

**Radium in Gynecology.**—Henry Schmitz (*Interstate Medical Journal*, December, 1916) states that radium rays will give both immediate and remote cures in one hundred per cent. of myomata uteri, hemorrhage, metropathies, and cervicitis.



## TYPHLITIS OR CHRONIC APPENDICITIS?\*

BY LOUIS HENRY LEVY, M. S., M. D.,  
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When a single attack or repeated attacks of dull or sharp pain occur in the lower right quadrant of the abdomen, the diagnosis of chronic appendicitis is the first one that strikes the mind. As a rule, it is the diagnosis that persists even after a physical examination and the usual clinical examinations. With a tentative diagnosis of chronic appendicitis surgical interference is suggested, and without much further attempt to establish more definitely the diagnosis or even without temporary medical treatment, operation is often resorted to. Cases of recurrence of pain after operation are legion and they are attributed to postoperative adhesions. Further operative procedures take place, and when the symptoms persist the case is considered a hopeless one.

It is during these operative procedures that there is occasionally found evidence strongly against the diagnosis of chronic appendicitis, and, as a result, normal appendices have been removed. The mobile cecum, unless markedly displaced in the abdomen, or the ptosed or dilated cecum is frequently overlooked, and when this occurs the opportunity of further relieving symptoms is considerably lessened.

It is not the writer's purpose to take up all the possible conditions that simulate chronic appendicitis, for they are innumerable and would require longer discussion than one paper could properly cover. Nor will those conditions be considered in which lesions are often found, such as Lane's kink, or Jackson's membrane, which, when found at operation, are usually separated. The object of this paper is to show that it is possible to have a condition simulating chronic appendicitis that should rationally be treated medically before surgical means are used, and also to show that such a condition, unless relieved medically, may ultimately lead to a condition so closely resembling a true chronic appendicitis that any other means of differentiating them would be difficult.

By chronic appendicitis is meant a chronic inflammation of the appendix, associated with the usual chronic inflammatory changes such as thickening of the walls of the appendix, often with complete obliteration of the lumen and more often accompanied by adhesions which bind the appendix to the neighboring structures, intestines, or the peritoneum. Such a condition, as a rule, follows an acute attack of sharp pain over McBurney's point of varying duration during which there has been present a certain degree of fever not always perceptible to the patient. Vomiting may or may not occur. During this attack there is also marked tenderness over the appendix region. As a rule, when such an attack passes away, there may occur at irregular intervals sensations of dull or sharp pain in the region of the first attack.

There are, however, other conditions with symp-

toms that so closely parallel those found in chronic appendicitis that diagnosis is often difficult, and yet, unless there is a real indication for immediate operation, such as very severe pain, high fever, polymorphonuclear leucocytosis, or a mass suggestive of an abscess, surgical treatment should be held in abeyance until medical measures have been tried, or until diagnostic methods point absolutely to the presence of a chronic inflamed appendix.

About forty or fifty years ago, before the expression "appendicitis" came into common usage, words such as "typhlitis" or "perityphlitis" were frequently used to express pains in the lower right quadrant of the abdomen. These terms fell into disuse, but now, with a better knowledge of the changes occurring around the cecal region, and with means of more definite diagnosis, there is good reason for their reappearance into medical nomenclature. Typhlitis means inflammation of the cecum and bears the same relation to the cecum as does colitis to the colon. There is still some confusion as to its proper application, even a mobile cecum being referred to at times as typhlitis. Perityphlitis refers to any inflammation of the peritoneum that is in direct contact with the cecum and in which there are adhesions to the cecum. In either of these conditions there may not be any true inflammation of the appendix. It is true that adhesions involving the cecum may also involve the appendix without causing the changes found in a typical chronic appendicitis.

What is the etiology of typhlitis and perityphlitis? As is common even in some cases of appendicitis, constipation over a long period of years is an important symptom. Hence it must be assumed that constipation produces changes in the cecum which allow the bacteria there to set up an inflammatory process. The anatomical position and structure of the cecum strongly suggest a place where pathological changes would be apt to occur. Situated just distal to the ileocecal valve it furnishes a natural reservoir for the reception and storage of intestinal contents discharged from the ileum. As has been shown in infections such as intestinal tuberculosis and actinomycosis, the cecum is often the site for the stagnation and growth of bacteria. In the smaller intestine the number and variety of bacteria increases as the ileum is approached. In the large intestine the number and variety of bacteria diminish in the direction of the rectum. On this account the cecum and also the first part of the colon probably furnish places for the most active growth and increase of the bacteria.

When the tone of the large gut is normal and peristalsis is active, resulting in frequent evacuations of the fecal contents, there is less opportunity for bacteria to grow and cause injury to the intestinal walls. When, however, there is marked constipation with a several days' accumulation of feces in the large gut, definite injury may be done to the walls of the intestine and make them susceptible to the attacks of the bacteria present. When this occurs not only is there opportunity for local inflammatory changes within the cecum but also changes may occur just outside the walls by the passage of bacteria through the less resistant walls, and this

\*Read before the New Haven Medical Association, November 1, 1916.



may result in the formation of adhesions. It has been definitely shown that in the normal intestine there is little possibility of the bacteria obtaining entry into the lymphatics and the bloodstream or through the walls. On the other hand, when lesions have occurred or have been produced artificially, not only do the bacteria themselves pass into the circulation or out through the walls of the intestine, but even the toxins of some of the more virulent organisms may set up a local peritonitis by their action through the walls of the intestine.

When such changes occur constantly over a period of time, it is very possible to conceive of a syndrome suggestive of chronic appendicitis. The changes, however, do not stop here. As a result of the inflammatory processes within and without the cecum it may become dilated or ptosed. This will occur after loss of tone in the walls of the cecum, due to changes in their structure, which allow the intestinal contents, particularly when marked constipation is present, to balloon out the cecum still further. Adhesions which bind down the cecum to the abdominal wall may cause a downward drag on the cecum which will also aid in producing a dilated cecum.

Aside from the customary symptoms which characterize either the cecal conditions or appendicitis, other symptoms stand forth. In typhlitis, either alone or with a perityphlitis, although constipation is almost always the rule, there may be an occasional attack of diarrhea, which is usually due to an associated colitis of bacterial origin. Symptoms of intestinal toxemia may also be present, such as headache, dizziness, weakness, cold hands and feet, etc. The physical examination will reveal tenderness not only over McBurney's point but also along the lower portion of the ascending colon. At times the ascending colon will feel firm and hard, due either to intestinal contents or to a secondary spasm. Percussion often shows an accumulation of gas in the cecum and ascending colon. Mapping out this area by percussion a large dilated ascending colon will be revealed.

Another very useful aid in the differential diagnosis is the x ray. Dilatation or ptosis of the cecum can be readily shown and many roentgenologists are able to differentiate the pathological from the normal appendix by means of the bismuth retention in the appendix after a stated interval following a bismuth test meal. Thus George and Gerber (1) base their diagnosis on ileal stasis that is produced, shown by the retention of bismuth in the terminal loops of the ileum as long as twenty-four hours after ingestion, and also by actual demonstration of a kinked or adherent appendix, in which case the bismuth is definitely seen within the lumen of the appendix. The question of the x ray demonstration of an appendix with an obliterated lumen is still a debated one. Quimby (2) holds that it is very rare for an appendix to become obliterated to such an extent that material will be prevented from entering its lumen.

In cases where, in spite of all effort to establish a diagnosis between chronic appendicitis and typhlitis or perityphlitis, the question of medical or sur-

gical treatment becomes a difficult one, the condition is placed in the category with the question of medical or surgical treatment of ulcer of the stomach. There are certain reasons why medical treatment should be given a thorough trial. Even when in doubt the chronicity of either condition should contraindicate immediate surgical interference, unless some untoward symptom suddenly develops which would demand immediate exploration. The possibility of recurrences even after surgical treatment has already been mentioned. Graham and Guthrie (3), at the Mayo Clinic in cases operated in for chronic appendicitis, were able to show that only 77.4 per cent were cured by appendicectomy, while 22.6 per cent had persistence of symptoms after operation. Wilms (4) estimated that fully thirty per cent. of cases of so called chronic appendicitis were due to chronic constipation in which there was present either a dilated, ptosed, or movable cecum.

As long as no positive proof of the presence of chronic appendicitis exists or of adhesions that in themselves might be obstructive or the cause of attacks of pain, the treatment for a reasonable period should be directed along medical lines. Such treatment should have for its aim relief of the constipation, either by the use of mineral oil, enemata, or suitable cathartics. The milder the cathartic the better will be the effect on the cecum. Very often massage or exercises for the abdominal muscles will be found useful. As a rule great relief is experienced as soon as the bowels have been freely evacuated. Daily evacuations for three or four days will often cure the cecal condition.

The diet for the first week of treatment should be a soft diet, consisting of milk or other fluids, cereals, and eggs. The only meats allowed are chicken and lamb. If tympanites or flatulence is present, the starchy foods should be reduced or eliminated for three or four days. Bread made from bran or rye flour is to be preferred to wheat bread. Rest in bed is helpful. The pains, until relieved by the evacuation of the bowels, may be controlled by the opiates or coal tar derivatives.

If, after such treatment over a period of from two to three weeks, there seems to be no relief from the attacks of pain, exploration can be resorted to. The point will probably be raised that even though the pains and other symptoms disappear this does not exclude chronic appendicitis and that after an interval of unknown duration the symptoms may return. This is true, but as long as medical treatment affords relief for any length of time, even though there may be recurrences, it should be preferred to surgical interference. However, should the attacks occur at too frequent intervals it would be advisable to operate.

I have seen several cases where patients have complained of pain in the right iliac region. In some of these there was associated gastric disturbances such as eructation, nausea, and even vomiting. In some there was tenderness over McBurney's point and along part of the ascending colon. In some tympanites was marked over the cecum. In none was there fever, nor in those on whom a blood count was made was there any polymorphonuclear

leucocytosis. The cases responded very favorably to medical treatment. Some of these cases follow:

CASE I.—J. D. Aged thirty-eight. Male. For several years there has been a dull pressure sensation in the lower right abdomen. At times there has also been dull pain. The pain is worse on lifting heavy objects. At no time has there been any sharp attacks of pain, nor any fever, nausea, or vomiting. The sensations of pain disappear on wearing a belt. The patient has been constipated for years. No other symptoms have been present.

Physical examination above the abdomen was negative. The abdomen showed a slight degree of ptosis. Splash sounds could be heard below the umbilicus. There was no tenderness over McBurney's point. Percussion revealed an area of tympanites about four inches wide, corresponding to the cecum and lower portion of the ascending colon. Rectal examination was negative. The inguinal rings were closed.

Treatment consisted of a cathartic each night. Starchy foods were reduced; the wearing of a belt was advised. The patient had no recurrence of pains at the end of three months.

CASE II.—P. H. Aged thirty-three. Female. For the past six weeks the patient has been having attacks of pain in the right region. There is no regularity in the time of appearance of these pains. She belches considerable gas and at times feels nauseated independent of eating. She has never vomited. At times there are spells of weakness, occurring as often as every other day. Her arms and legs often feel very tired. For several days she has had a severe frontal headache. No dizziness. She has been constipated for years. No other symptoms. Past history negative. Menstrual history negative.

Physical examination showed marked tenderness over McBurney's point and over the cecum. The cecum felt like a sausage shaped mass. Urine was negative. Hemoglobin, 60. White blood count: 7,800; polymorphonuclears, sixty-eight per cent.; small mononuclears, twenty-three per cent.; large mononuclears, nine per cent.

The patient was placed on soft diet, enemata were advised. She was given magnesium oxide and sodium citrate  $\text{aa. gr. x}$  in powder form three times a day. Her symptoms have disappeared and have not recurred in two months.

The next two cases are more acute in type.

CASE III.—Mrs. L. G. Age fifty-six. She complains of dull pain in the lower right abdomen. Duration one week. Pain is constant and has not radiated. She has had headaches during this period and pain in both shoulders. This was preceded by a sore throat that lasted one day. Following the sore throat she perspired freely for two nights, and felt warm. No belching, nausea, or vomiting. No chills. Bowels habitually constipated.

Past history negative. Marital history: Married, thirty-five years; five children alive and well; no miscarriages.

Physical examination showed the throat to be negative. The abdomen showed a mass about the size of a peach at the cecum. This was very tender and above this for a short distance the colon was also tender. Temperature, 98.6°. Pulse, 80. Urine negative. White blood count: 9,500; polymorphonuclears, sixty per cent.; lymphocytes, forty per cent.

Rest in bed and catharsis were advised. Aspirin was given for the pain. Following active catharsis the mass and the cecal tenderness disappeared and there has been no recurrence.

CASE IV.—A. J., male, aged sixty, colored. For ten days the patient has had very severe pain in the lower right abdomen, which at times radiated across the lower part of the abdomen. The pain is constantly present. The patient has vomited twice. No headaches, dizziness, chills, nor fever. Bowels have always been constipated. Past history: The patient has had a hernia for several years. Physical examination showed a very tender mass, sausage shaped, in the right iliac region, extending below McBurney's point. There was also tenderness above this over the lower part of the ascending colon. The inguinal ring on the right side was closed. The left side showed a small hernia. Temperature, 98.4°. Urine showed slight trace of albumin and a few white cells. White blood

count 8,600; polymorphonuclears, 70; small lymphocytes, 27; large lymphocytes, 3.

The treatment consisted of catharsis, rest in bed and aspirin. Two days afterwards the mass had disappeared and the patient was free from pain.

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1172 CHAPEL STREET.

## A SANE AND RATIONAL METHOD IN THE TREATMENT OF ACUTE GONORRHEA.

BY HENRY J. MILLSTONE, M. D.,  
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It must be said that thus far the treatment of acute gonorrhea has been entirely unsatisfactory. Our desks are piled full of literature and samples of hundreds of newer preparations for the treatment of this condition. We all become overenthusiastic, but after the crucial test we are forced to stick to the old standbys.

Having access to a vast amount of material, I have had the opportunity to try practically every preparation, both new and old, and I candidly admit that my results have been unsatisfactory, and none of these preparations approaches anything like a specific. Much has been said and written recently regarding the colloidal preparations of silver and iodine, but after a thorough trial of practically all of them I am convinced that they have no material advantage over our older preparations, the disadvantages being their most exorbitant price; furthermore they are dirty to handle and stain everything.

The question is why do all these preparations fail to do the work? What is the great missing link that is responsible for so many of our failures in the treatment of this disease? Are the gonococci so virulent and do they grow so luxuriantly *in vivo* that it is impossible to get control of them? Those of us with bacteriological experience know that there is no organism in our laboratories that is more difficult to grow than the gonococcus, and it can be said that it is one of the least virulent organisms, for, if it were not so, gonorrheal ophthalmia in the adult would be far more prevalent than it is.

It seems that we adhere religiously to our great forefathers' ideas, and for centuries we have been combating acute gonorrhea with a piston syringe, a weapon which in my opinion is responsible for our failure to cure these cases.

Most of us being confronted with a case of acute gonorrhea arm ourselves with a piston syringe and a solution of some sort and fire away, and right here is where I believe our great failure has been in the treatment of acute gonorrhea, for invariably we force the active pus which is laden with the organism beyond the cut off muscle and convert a simple anterior urethritis into a posterior urethritis, the poor patient often falling a victim to many of the complications such as acute prostatitis, acute seminal vesiculitis, and acute epididymitis.

Not being satisfied with this treatment we arm our patients with the same weapons and instruct them in the art of self medication. Regardless of

how we caution him against using force and the folly of using strong solutions, the patient thinks the rapidity of his recovery is in direct proportion to the amount of force and strength of the injection he uses. This is the evil that is responsible for most of our strictures.

One of my professors has often said that we have no reasoning power, and I feel that he is justified in making such a statement. Every solution that I can think of in the use of acute gonorrhea is an aqueous solution, and, as one of the symptoms of acute gonorrhea is frequent micturition, it can readily be seen that none of these preparations are in contact with the mucous membrane long enough to be of any material value, the solution being washed out with the next urination, thereby exposing the inflamed mucous membrane of the urethra to the insults of the irritating urine.

Hence it can be seen that the urethral canal is bathed the greater part of the twenty-four hours with urine which is acid in reaction and laden with all sorts of bacteria and irritating salts.

I think practically all of the medical profession are convinced that all internal medication is valueless. Acute gonorrhea the first ten days is practically always a local disease confining itself to the anterior urethra, although it may rarely in this stage produce a generalized toxemia, or the organisms or their toxins may localize in a joint. I refer to those older preparations such as Lafayette's mixture, the cubeb preparations, and other nauseating oils. I think these preparations should absolutely be discarded from our therapeutics of this condition.

If the acid urine is a factor that is still further traumatizing this acute inflamed tissue, why not alkalize the urine? There is no preparation that will accomplish this better than simple sodium bicarbonate; the amount can be controlled by simply testing the urine with litmus paper. I find that one teaspoonful *t. i. d.* is usually sufficient.

The next question arises, what preparation can we use which will fulfill the following requirements, that is: 1. A preparation that can be introduced slowly and not be forced beyond the cut off muscle. 2. A preparation that will form a coat over the mucous membrane and protect it from the irritating urine. 3. One that is germicidal and still not irritating or caustic. 4. One that can penetrate and medicate the crypts and lacunæ of the urethra. 5. A clean preparation that can be handled without staining everything.

Our great slogan in treatment of acute gonorrhea should be: Treat the urethra with as much precaution and respect as we do the mucous membrane of the conjunctiva. In this way we will fulfill every requirement necessary to control this infection. For years we have been using yellow oxide of mercury ointment in the treatment of all forms of conjunctivitis with brilliant results. Of all the preparations that I could possibly think of this preparation seems to fulfill all of the above requirements.

Another great inhibiting factor in our treatment is the question of erections and nocturnal emissions. While our textbooks do not place very great stress upon it, I know of nothing that is so detrimental and annoying to the patient and nothing that does

more damage. It is a known fact that during an erection intraurethral pressure is much greater than paraurethral pressure, therefore the pus in the urethra is pushed out into the surrounding tissue. The pain sometimes in an erection is excruciating, due to the tension of the inflamed tissue. This is the cause of the much dreaded chordee, which is simply a paraurethritis.

For years textbooks have been recommending camphor monobromate to combat these conditions, but in my experience I find that this drug has a stimulating instead of a sedative action. When chordee already exists some men even go so far as to give morphine to prevent erections. Realizing the importance of keeping the penis absolutely flaccid for at least two weeks after the onset of the infection, I have had a special mechanical device made, which fits over the penis. As long as the penis is flaccid this device cannot be felt, but when an erection occurs it produces marked pain, hence the erection subsides. When erection occurs at night, it wakes the patient and prevents a nocturnal emission. This little instrument is the most practical way of handling this condition, and, since I have been making my patients wear them day and night for at least ten days after the onset, I have not had a single case of chordee and the comfort to the patient is gratifying.

At the present time I have a series of twenty-two cases that I have treated with this idea in mind, and I may say with all sincerity that the results in practically every case are most astounding.

To illustrate my point more clearly I shall give the history of a case with the method used.

CASE I.—Mr. M., a bank clerk, came to me September 2, 1916, with a history of being exposed three days previous. There was no history of a previous infection. Upon examination the glans was found to be slightly edematous. The labia of the meatus were everted and markedly reddened. The entire shaft of the penis was tender to the slightest manipulation and the patient complained of frequent and painful micturition. There exuded from the meatus a rather profuse greenish yellow pus, which upon microscopic examination revealed myriads of Gram negative intracellular diplococci and pus cells. Diagnosis: Acute anterior gonorrheal urethritis. Treatment: The patient was given all the instructions pertaining to cleanliness, diet, etc. He was instructed to report the next morning with his bladder full. The next morning at the office he was asked to void his urine, retaining some of it. Next two drams of a fifty per cent. solution of peroxide of hydrogen were gently introduced into the anterior urethra with a soft rubber ear and ulcer dropper. This was retained five minutes. The patient was again asked to void the balance of the urine. The peroxide is not used for its germicidal properties. When peroxide is introduced into the urethra, ebullition takes place and this mechanically balloons out the urethra and opens up the crypts and lacunæ. In this manner the pus and the organisms are dislodged into the lumen of the urethra and the rest of the urine washes it out. Two drams of a very warm saturated solution of boric acid were next introduced with the same precaution and also retained five minutes and expelled. The shaft of the penis was now milked to expel as much of the boric acid solution as possible and the meatus dried with a piece of gauze.

Two drams of a one per cent. yellow oxide of mercury ointment were now introduced slowly. The penis was massaged so as to get the ointment well into all the crypts and lacunæ, and allowed to hang dependent in a clean gonorrheal bag. Do not place gauze and cotton over the meatus, as is so frequently done, as this interferes with the proper drainage of pus. Internally all that was given



was one teaspoonful of sodium bicarbonate, t. i. d. The patient was given one of the rings which I have described and told to wear it for ten days. This treatment was given once daily for ten days. At the end of the third day all the ear marks of an acute gonorrhea had disappeared, nothing remaining except a serous discharge which was only noticed in the morning. By the end of the fifth day all signs of a discharge has ceased.

All the other cases responded just as favorably as this case, and in no case did I have to treat the patient longer than fifteen days, most of them responding from three to ten days. At the end of two weeks I obtained an ejaculated specimen from each patient and in no case was I able to find the gonococcus.

The advantages of this treatment are: 1. It prevents pushing the pus into the posterior urethra. 2. It prevents the patient from doing any damage to himself by self medication. 3. It is an inexpensive method. 4. The treatment is simple and clean. 5. It prevents your prescription from going around the neighborhood. 6. It will settle the question of strictures. 7. You are using a remedy that you are familiar with and know its therapeutic value and not proprietary and patent remedies. 8. The ointment is very soothing and nonirritating.

This in my estimation, and I am sure that a fair trial will bear me out, is the most scientific and logical method in the treatment of acute gonorrhea, and more nearly approaches a specific than any other preparation I have tried. It fulfills all the conditions theoretically and is proving its value practically.

9119 COMMERCIAL AVENUE.

## THE USE OF ELECTROCHEMICAL IODINE IN URETHRAL INFECTIONS.

### *A Preliminary Report.*

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It is not the writer's intention to go fully into the treatment of gonorrhea, but merely to call attention to his experience with an electrochemical preparation of iodine used for a period of six months in the treatment of gonorrhea. The direct application of iodine in varying strengths to the lesions in the urethra through the urethroscope has been suggested by many authorities, but owing to its severely irritating properties cannot be used as a routine measure. Then again the iodide of silver has been highly recommended from time to time, but on account of its insolubility neither the silver nor the iodine can exert any marked bactericidal influence over the microorganisms.

The fact that we have no absolute specific for gonorrhea warrants our researches and experiments with therapeutic agents that will not traumatize the tissues nor superimpose difficulties to the existing pathological condition. It is true that since the introduction of the latest silver salts we have made rapid strides in genitourinary therapeutics, and that if we get the patient at the very beginning of the disease and carry out an intensive treatment

with the various silver salts, there may arise no occasion in the majority of cases to resort to any other form of treatment. In the average case, however, we either do not see the patient early enough, or if we do we may not be able to impress upon him the importance of intensive treatment until the disease becomes chronic and the gonococci, which would ordinarily succumb to any mild antiseptic on the free surface of the urethra, invade the deeper layers of the tissues, and defy nature and man indefinitely. Eventually they are partly starved out like a besieged army in a citadel being surrounded by fibroblasts which organize and cut off their nutritive supply, and partly killed by their own poison. To get such happy results takes a long time, and it is for these cases that we ought to have a potent remedy, in order to forestall an invasion and entrenchment of organisms, and to hasten a cure if such a state of affairs already exists.

Again, while bacteriologically a large number of strains of gonococci have been isolated, some of which are more virulent and refractory to treatment than others, it is also true clinically that such differences exist and that the several strains are differently affected by treatment. The manner in which they are acted upon by the various solutions is not quite clear, but suffice it to say that the course of the disease depends upon the strains of organisms harbored in the urethra, and that the organisms which cause a mild inflammation in the urethra affect principally the superficial structures where they are easily exposed to the action of drugs, and, furthermore, are readily conveyed to the surface by the tissue fluids and the phagocytes. The more virulent types, however, are not so readily conquered, but find lodgment in the deeper tissues and extend more rapidly to the various annexa.

I am fully convinced from clinical experience that there is a special strain of gonococci which enters the bloodstream and causes metastatic infections in the synovial membranes of the joints and viscera comparatively early in the disease. Time and again I have had occasion to treat both partners of sexual congress for gonorrheal arthritis at practically the inception of the disease a few days after exposure. While the morphological and staining characteristics may apparently be the same, nevertheless, on careful scrutiny, minor differences as to size, shape, space between the pairs, and depth of staining may at times be made out. Again there are diplococci which resemble Neisser's cocci in all their characteristics, being especially found in strictured urethra which have been free from an active infection for many years and the patients do not complain of any symptoms nor do they propagate the disease to their conjugal members. It is, therefore, not surprising that all cases of gonorrhea do not respond with the same celerity to treatment. Fortunately most, if not all, forms of gonococci can be easily destroyed by silver salts if accessible. Trouble first begins when they invade the deeper tissues of the host.

In choosing treatment we can never predict with certainty how the disease will progress; in other words, we cannot tell what changes will take place in a given urethra from a given drug. We must ever be guided by the course of the disease as trans-

lated by the subjective and objective symptoms. In the acute cases we must use mild bactericides which will destroy the organisms without destroying the tissues, while in the chronic case we must assist Nature and try to irritate her. Hence in the acute stage the treatment must be both sedative and bactericidal, while in the chronic stage it must be irritating. It is perhaps for this reason that some urologists, fortunately a minority, do not give local treatment in the acute condition. In order to understand more comprehensively the action of the various injections used for the treatment of gonorrhea, let us delve into the pathology of the disease.

As soon as gonococci gain entrance into the urethra they set up a hyperemia lasting from twelve to thirty-six hours. This is followed by an exudation of polymorphonuclear leucocytes, lymphocytes, endothelial leucocytes, serum, and in severe cases red blood cells. The polymorphonuclear leucocytes come directly from the bloodvessels, and they never reproduce themselves in the tissues. Their function, which is phagocytic, especially in the acute stage, is aided largely by ferments generated by the lymphocytes helping to neutralize the toxins and to destroy the organisms. The gonococci are incorporated in the cytoplasm of the cell and thus carried away from the tissues. In this process some of the leucocytes are attacked by the gonococci and undergo degeneration. The endothelial leucocyte, which in all probability comes from the endothelial lining of the vessels, is phagocytic to both microorganisms and other phagocytic cells. These endothelial leucocytes are apparently more active in the later stages of the disease when the inflammation subsides and some of the products of inflammation and indigestible substances are incorporated by them and carried away to the blood and lymph stream. The lymphocyte probably plays a more important part than the leucocyte later in the disease. When the infection is severe, red cells migrate into the tissue spaces with large amounts of serum which coagulates in the course of time with the formation of fibrin. This fibrin may be partly or completely dissolved by the endothelial leucocytes, while the rest acts as an irritant in the tissues, thus inviting a proliferation of the young connective tissue cells or fibroblasts. This later organizes into cicatricial tissue. The reaction in the tissues depends on the severity of the infection. In a severe inflammation there is a multiplication of all the tissue cells, the lymphvessels being greatly thickened and even obliterated. While the inflammation is diffuse throughout the urethra, it is as a rule more pronounced around the urethral glands. In a large number of cases when the gonococci have been destroyed and their toxins neutralized, there is a regression of the process, namely, absorption of the ion. For yducts by the lymphatics and complete of mercury normal.

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sion, while the pus cells outlive their usefulness, and  
in fact are harmful to the tissues, for they tend to

dissolve and destroy the surrounding healthy tissues. Eventually repair of the tissues takes place. This process, however, is very tedious and slow. In another group of cases repair and destruction of tissue go hand in hand. The lesions become localized, particularly around Littre's glands. This process continues as long as the irritation in the tissues lasts, whether by natural or artificial means. In short, the round cells begin to organize and encroach on the lumen of the ducts of the glands until some of them are occluded. The inflammatory process, however, continues within the glands and results in cystic distention. When the pressure from the retained secretions reaches a certain height, the cysts rupture into the urethra. This process may repeat itself indefinitely and cause a reinoculation of the healthy tissues. Then in some places where there was an abundant discharge of pus with destruction of tissue, granulations begin to spring up and increase in proportion to the amount of suppuration. The granulations vary in size. Coincident with granulation tissue formation there is a multiplication of all other cellular elements, notably the fibroblasts and the epithelial cells. The fibroglia and collagen fibrils extend between the loops of bloodvessels and finally obliterate their lumen. The nutrition being cut off, any organisms caught between their meshes must die. This represents the final healing stage, and Nature uses this as a last resort when she cannot effect a cure in a simpler way. The epithelial covering of this scar tissue is of the cornified variety, and there is a constant degeneration and regeneration of the cells, as in the epithelium of the superficial layers of the skin. In some places the granulations do not unite with the fibrous tissue, but rather show an affinity for epithelial cells. We may thus find side by side with a stricture a fully developed polyp, while in other localities in the process of evolution are manifested fine pinpoint, bleeding areas in the urethra.

From clinical experience we may put down as a corollary that certain drugs when applied to the urethra will invoke an inflammation in direct proportion to the concentration of the chemical used and its continuance. Whether they set up the reaction singlehanded, or aided by the organisms inhabiting the urethra under normal conditions but rendered active when the tissues are injured by chemicals is problematical. Suffice it to say that when a drug is injected into the urethra one should bear in mind the physiological action of it as carefully as if he were prescribing a poisonous alkaloid for internal administration.

What are the indications of treatment in acute gonococcal urethritis? In this condition Nature is doing her best in setting up a localized phagocytosis, thereby ridding the urethra of the organisms, and also causing a lymphocytic infiltration. The leucocytes come from the dilated bloodvessels; the lymphocytes from the proximal and distal lymphatic glands. In addition to this the lymphocytes proliferate in the tissues. Therefore the treatment must, theoretically, be directed not towards the suppression of the discharge, but towards its promotion. This can best be accomplished by omitting the local treatment at the beginning of the disease. But are

we willing to relinquish complacently the cure to Nature, and trust to her whims and fancies in prolonging the disease and effecting a cure in the most circuitous way? Decidedly no. On the contrary, we must help destroy the organisms as they reach the surface of the urethra. This we accomplish by the injection of silver salts into the urethra. And let me say here that nothing equals the efficiency of the silver salts in the acute stage, whether nucleinate or proteinate. They all act as sedatives and bactericides in this stage. While all these salts effect a cure in almost all acute cases, they seem to differ in their mode of action. Where the silver nitrate itself at first causes a phagocytosis, its salts stop the discharge immediately in a large number of cases. They may possibly stimulate the ferments of the various cells which help to destroy the gonococci. When a complete cure has not resulted as evidenced by frequent relapses showing a deep invasion of the organisms, then we must resort to stimulating treatment. For this we use silver nitrate solutions in varying strengths. Its action seems to be that of a besieging army receiving reinforcements and challenging the troops of the beleaguered fortress to sallies. The result is that enforcements are sent forth from the bloodvessels and lymphocytes from the neighboring tissues. The fight that ensues results in disaster to both armies, and again there is much discharge laden with organisms. When a prolonged and severe reaction sets in we must discontinue the treatment for a while, since the continuous bathing of the tissues in pus results in greater destruction of tissue. When the disease continues in spite of vigorous chemical and mechanical treatment, then it shows that the enemy is more deeply entrenched and in addition to dilatation, etc., we must resort to stronger irritants. This I found in the use of the American electrochemically prepared iodine suspension of the same strength as the tincture of iodine U. S. P. It acts as an irritant and antiseptic, and though I must admit that in acute cases I did not get the desired results for the reason that an inflammation had already set in, it served me in good stead in many chronic cases. I will add that in a few instances of acute exacerbations of chronic gonorrhea I got results even beyond expectation. I do not hail this as an absolute cure, for as yet this is unknown in medicine; nevertheless, I think it is a great adjunct to our silver therapy. In the majority of cases where I employed this form of iodine I got better results by alternating it with silver nitrate irrigations and instillations, and I used it in cases that resisted the silver therapy for a long time. Were I to set down a rule for the use of iodine, I should say that in all cases of chronic prostatitis, seminal vesiculitis, chronic anterior urethritis profunda that do not respond to the usual methods of treatment, the electrochemically prepared iodine should be tried either alone or alternated with silver. Another important point to bear in mind is the manner of application of not only this drug but of any other. It must be applied directly to the diseased surface. This is especially true of instillations. One often wonders at failure to obtain results; the answer is that no matter what drug he uses, as long as he does not instill it directly over the pathological area, he is bound to meet disappointment. Another

factor is the length of time a given drug is allowed to act. In some cases it is allowed to remain in contact with the tissues for an undue length of time, the result being overaction, while in others the reverse is done. When using the electrochemical iodine in the urethra, I allow it to remain for one hour by putting a cotton plug into the meatus and suspending the penis with a suitable dressing. When instilling the posterior urethra I use a Bumstead instilling tube with a number of perforations at the end, and attaching it to an antitoxin syringe of five c. c. capacity in order to expel every drop of the solution into the urethra.

120 EAST THIRTY-FOURTH STREET.

## Abstracts and Reviews

### THE METABOLISM OF MOTHER AND OFF-SPRING BEFORE AND AFTER PARTURITION.\*

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Professor Murlin began by reviewing the two theories of the relation between the adult and the offspring, or, rather, the germ cell. The older theory held that the germ cell was a specialized type of cell of the parent and that the child was the result of the union of two such cells and depended upon both parents for its own peculiar characteristics, which were capable of modification by alterations in either parent. The newer view was based upon Weismann's conception that the germ plasma was continuous from generation to generation and the parent was a secondary organism subserving the ends of the germ plasma. In the case of the lower organisms, the individual was certainly purely subsidiary to the race and there was evidence for the belief that the same was very largely true of the highest organisms, including man. Certainly the work of others all tended to confirm Weismann's view of the continuity of the germ plasma. It was pointed out that from the very beginning the ovum was always a more or less independent cell, and there was strong evidence that the events which took place in the maternal organism after impregnation of the ovum were to a large extent under the control of the new organism.

When the ovum is thrown off from the Graafian follicle it carries with it the capacity for independent life in the form of proteolytic ferments capable of attacking and destroying the cells with which it comes into contact. After fertilization the outer layer of cells formed are very active in the production of these ferments. These cells are called the trophoderms and have the power of attacking the maternal cells through their liberated proteolytic ferments and of thus securing their own nutritive supplies. The development of the placenta is a reaction to the proteolytic actions of this trophodermal layer of cells. Following along these lines the lecturer showed by slides the process by which the trophodermal cells formed the villous spaces for the bathing of the villi by the maternal blood, and how

\*Summary of a lecture delivered before the Harvey Society at the Academy of Medicine, New York, February 24, 1917.



this process was completed by the third month after impregnation, when all of the villi were covered by a double layer of cells.

It was from this point on that the nutritive relations of mother and offspring became of greatest interest. The fetal circulation was then separated from the maternal blood by these two layers of cells, and it became a problem of prime importance to determine the factors leading to the interchange of the nutritive and excretory substances between these two bloods. There were two possibilities; the one that the walls of the villi permitted the interchange by the simple process of diffusion: the other that there was some vitalistic action exerted by the cells of the villi. It had been possible to show by means of blood gas analysis that the carbon dioxide and oxygen contents of the two bloods were the same, indicating that the interchange is analogous to that occurring in the lungs, namely, one of simple diffusion. There was here no necessity for the postulation of any vital action.

Further examinations made upon the two bloods taken at the same time showed that the concentration of both glucose and of urea were the same in both bloods, again indicating that the process was one of simple diffusion and not due to vital actions. Evidence was soon forthcoming, however, which pointed to the existence of some regulatory mechanism which determined the amount of carbohydrate which was allowed to enter the fetal circulation. Thus it was found that glycogen was present in far greater amount on the maternal side of the villi than on the fetal. In the case of the fats we have a substance which is known not to diffuse readily and the existence of some vitalistic action was again apparently necessary to explain its occurrence on the fetal side of the villi. While it was believed that fat could not pass the villous wall it was soon shown that cholesterol did diffuse through and was present in the same concentration on both sides. Recent studies also showed that there was apparently a close relation between the concentration of the blood fat of the mother and that found in the umbilical blood. This would seem to point to a close interdependence between the two and it might subsequently be shown that there was some direct method of interchange. Where proteins were concerned the evidence at hand was conflicting. Aminoacids were not found in the placenta, but it was known that they could diffuse through the villous wall. It was also proved, however, in the case of the monaminoacids, that these were present in the fetal blood in higher concentration than in the maternal blood. This fact might be explained by the supposition that they were being excreted by the fetus, that they were being specifically stored by the fetus, or that they were actually formed in the placenta. Which of these explanations was the correct one was not yet known. In the case of iron the evidence was direct that this substance had to be derived from the mother since it was known to be absent from the human ovum. It was believed that the trophoblasts of the villi attacked the maternal blood cells with the liberation of iron in some soluble form. This was then passed through the villi and made up into the blood pigment in the fetal body.

In the present state of our knowledge, therefore, it was evident that much was to be said in favor of the participation of some vitalistic mechanism in the transference of substances from the maternal blood to that of the fetus, although some of the purely nutritive materials and the gases of the blood might pass by the simple process of diffusion. Analogy might be drawn from observations on other tissues; thus it had been shown that each organ in the animal body contained specific enzymes which alone were capable of synthesizing and harmonizing the nutritive materials supplied and forming from them their specific substances. In the case of the fetus one might well postulate the existence of a series of specific enzymes which were similarly capable of appropriating and synthesizing for themselves the various building stones of their structures which were supplied by the maternal circulation. The nutritive relations between the mother and offspring lay in the specificity of the enzymes of the one and the appropriate nature of the materials supplied by the other.

Thus from the qualitative point of view the relation of the two was a close one, although the fetal structure was largely independent of the maternal. What was the relation from the quantitative aspect? Nitrogen balance sheets had been kept on animals during pregnancy and they showed that during the early period the mother was in negative balance, that is, she lost more nitrogen than she took in. This was due to an increased catabolism in her tissues through the destructive actions of the trophodermal cells. Confirmation of this explanation was found in the fact that following the time when it was known that the trophodermal cells ceased their solution of the maternal tissues the maternal nitrogen balance promptly became positive and she stored nitrogen in large amounts. From this point of view the net result of pregnancy to the mother was not a loss, but a storage of nitrogen considerably in excess of her own needs. This nitrogen storage was a purposive phenomenon to prepare her for the loss through parturition and lactation. The balance sheets for phosphorus showed the same phenomena and those for calcium were also the same, but in that case the gain was usually very slight. In the case of the mammalian mother reproduction was, therefore, no sacrifice of the individual for the good of the race, as it had been shown to be with many lower forms of life.

Passing to the question of the energy metabolism of the mother and offspring, we find that the respiratory quotient of the newborn is high immediately after birth, due to the consumption of carbohydrate. This falls by the end of the first twenty-four hours and the infant begins then to burn fat. Studies have also shown that the total metabolism of the mother and her offspring is the same just before parturition as it is after, and that the embryonic tissues function in this respect as a part of the maternal organism. Immediately after parturition the metabolism of the newborn rises, while that of the mother falls through removal of the fetal structures. The rise in the child's metabolism just exactly equals the fall that takes place in the mother's, so that the demands made upon the mother remain the same.

# Dietetics, Alimentation, and Metabolism

## Food and Food Preparation, in Health and Disease

### CHEMISTRY AND CLINICAL DIAGNOSIS.\*

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In presenting this outline of some of the data of clinical interest now available through the chemical laboratory, I judge that at this late day it is no longer necessary to offer any brief in defense of laboratory examinations in general. The greater the number of angles from which an object is viewed, the smaller the danger of false perspective. This, I believe, is the keynote to that modern policy in diagnosis which would make use of any and every possible source of information. In appraising the diagnostic value of any datum the question is not, Does it come from the laboratory or from the clinic? but rather, Can it add anything material to the understanding of the patient's actual condition and prospects, or to the power to improve either?

Judged by this standard, there is a surprisingly large amount of information of strictly chemical origin which qualifies as useful for diagnostic purposes. The great bulk of this has arisen within the years since 1916 graduates commenced their medical courses; the current activity is great and the output steadily increasing. Time forbids even the briefest summary of the advances in pure chemistry and in chemical physiology and pathology which serve as the foundations upon which accurate and rapid analytical methods have been arranged for the detection and estimation of disordered function. But a comprehensive idea of the present day relation of chemistry to diagnosis is conveyed by the statement that it stands now where bacteriology and serology stood some twenty years ago. The inference will be clear to those who stop to recall the changes in diagnostic procedure which have taken place since that not so distant time when the microscope was a novelty and the names of Wassermann and Widal unknown. What seems to demand emphasis today is that these methods are not limited in their usefulness to research problems, but are capable of furnishing information of very practical value to any practitioner who is honestly desirous of giving his patients the best treatment which modern science can afford.

As the condition now most completely dependent upon chemical control, it will be worth while to consider in some detail the facts in regard to diabetes. Long before the time of great polyuria with high specific gravity and its accompanying clinical signs there should be the demonstration of a glycosuria by the more sensitive chemical means of copper reduction and osazone formation. Alimentary glycosuria may then be excluded by a few examinations with dietary control; or, if found, its relation to a probable diabetic development estimated by the su-

gar tolerance. Renal diabetes is likewise excluded by the conditions laid down in Allen's definition (1), "glycosuria with normal glycemia, relatively independent of diet."

These preliminaries having conclusively indicated diabetes mellitus, problems of prognosis and management at once arise. If I correctly interpret current views, there is general assent to the demand that the proper management of diabetes must include three things: 1, acidosis must be controlled, and coma avoided at all hazards; 2, blood sugar must be reduced to as nearly normal as possible; 3, the urine must be made sugar free, or as nearly so as possible upon a diet which, after the customary initial fast, does not too greatly reduce the weight of the patient and his consequent resistance to specific infections. The means of determining the degree of approximation to each of these conditions are almost exclusively chemical in character.

Consider acidosis, and the matter is worthy of more especial attention inasmuch as, regardless of its association with diabetes, nephritis, pernicious vomiting, or what not, the etiological factors are very much the same and the methods of investigation identical. We have learned that this condition must always be expected when for any reason whatsoever—actual absence of sugar in starvation or otherwise—the combustion of glucose is interfered with to such an extent that the body is compelled to rely for its energy requirements mainly upon the catabolism of fats and proteins. When the mixture undergoing oxidation contains a proportion of fatty acids to glucose greater than three molecules to one (2), the acidosis bodies—acetone, diacetic acid, and oxybutyric acid—are produced instead of the normal end products of oxidation, carbon dioxide and water. Hence the acidosis of advanced diabetes where glucose, though present in abundance, can no longer be burned in sufficient amount; and hence, likewise, the expectancy of acidosis in the preliminary period of the Allen treatment, a danger of sufficient gravity to warrant a question as to the advisability of using the treatment at all except under careful laboratory control (3).

We have methods for the direct estimation of these acidosis bodies in the urine and in the blood, but their use is infrequent, because they are more time consuming and the results perhaps less significant than those obtained by indirect methods which depend upon changes produced by the accumulating acid. One of the most remarkable phenomena of physiology is the tenacity with which the circulating medium holds to that reaction of impractical neutrality essential to the continuity of the vital processes in the tissues which it serves. One of the agencies contributing to this power is the ammonia arising from the deaminizing reactions of protein metabolism. Normally, this is for the most part converted into urea and appears in the urine as such; in acidosis, however, a very considerable part of it may be used for the neutralization of the dia-

\*Address delivered before the Memphis and Shelby County Medical Society, February 6, 1917.

cetic and oxybutyric acids, appearing in the urine as their ammonium salts. The consequent increase in the ammonia coefficient, or relation of the ammonia nitrogen to the total nitrogen of the urine, has long been recognized as a valuable index of acidosis.

A second line of defense against acidosis lies in the sodium salts of carbonic and phosphoric acids, considerable quantities of which exist in the plasma, as it were, for the very purpose of limiting the changes which would otherwise follow the sudden introduction of acid or alkali. These are the substances of most importance in giving to the blood its so called "buffer value." Stronger acids, reacting with these carbonates and phosphates, are converted into their neutral sodium salts and the weak carbonic and phosphoric acids rapidly eliminated by lungs and kidney. But if the introduction of acid be continued, the buffer reserves are depleted; the serum no longer possesses its full power to carry carbonic acid rapidly away from the tissues in which it is formed. The resulting very slight increase in acidity affects all tissues, but the respiratory centre is especially stimulated to hyperactivity with consequent hyperpnea and increased pulmonary ventilation. The resulting decrease in carbon dioxide tension in the alveolar air may be determined, and this constitutes a second chemical method for judging acidosis. The technic has recently been simplified to a five minute bedside procedure (4).

Of course the real determining factor in acidosis is the actual hydrogen ion concentration of the blood; both this and the probable change in it due to depletion of the buffer reserves may be conveniently estimated by a simple dialysis against neutral salt solution and a subsequent colorimetric comparison of the effect upon a suitable indicator (5). The method is rapid and accurate, but has the disadvantage that the actual changes in hydrogen ion concentration are disproportionately small as compared with the clinical symptoms. Much more satisfactory in this respect is the determination in a special gas pipette (6) of the volume of carbon dioxide which the acidified blood will give off to a vacuum. This procedure has been highly commended (7) on account of the large volume differences which correspond to minute deviations in the hydrogen ion concentration.

Results by the several methods have been found to show a general parallelism (7) which would indicate that any one of them is capable of yielding information of clinical value; but it is in order to mention a caution of general applicability, that concordant determinations by two independent methods are much more free from the possibility of having been influenced by some idiosyncrasy such as hypersensitiveness of the respiratory centre.

Returning to the control of the other conditions in diabetic management. Hyperglycemia appears to be not merely a symptom, but a cause of pathological function, and the necessity for its reduction is obvious. Not less so is that of a suitable method for determining it. For this purpose Epstein (8) has modified for clinical purposes a method (9) in which the sugar of the blood is converted into a yellow compound by heating with picric acid and the resulting colored solution compared colorimetri-

cally in the Sahli hemoglobinometer box with standard tubes representing definite sugar concentrations. The method requires only a few drops of blood from finger or ear and is rapid and sufficiently accurate. For the control of the sugar output, so essential in determining the original degree of glycosuria and the response to treatment and diet, the medical polariscope is most convenient. Equally accurate and very much less tedious than the older methods of titration is that employing Benedict's quantitative reagent (10) in which are combined the advantage of employing a single solution, which does not deteriorate with that of a sharp end point for the titration.

Finally, for prognosis it is most desirable to know the degree of impairment of the body's sugar burning power. This information is now furnished by the ratio of the number of grams of dextrose in the urine to each gram of nitrogen—the so called "D:N" ratio. Normally, of course, the value of this ratio will be 0:1 and in uncontrolled diabetes it may have any value, depending upon both the carbohydrate intake and the amount of oxidation. But during complete fasting or the absence of carbohydrate food, a condition now readily obtainable in practise during the first period of the Allen treatment, the value never rises higher than 3.65:1. The significance is this. In the catabolism of the amount of protein containing one gram of nitrogen there are produced certain carbon residues capable of forming sugar to the amount of 3.65 grams. Consequently, if during a fast each gram of nitrogen in the urine is accompanied by 3.65 grams of dextrose we have conclusive proof that the power of combustion is nil. Very appropriately, this is known as the "fatal ratio" (D:N::3.65:1) since there can be little doubt about the prognosis. Lower ratios gain their significance by reference to this maximum. Though only recently established with a sufficient degree of definiteness (11), I anticipate for the D:N ratio a very useful future in the field of prognosis.

As we review these various points in regard to the control of diabetes, this seems obvious: The attempted management of a case without such laboratory control is strikingly suggestive of that of fever without the use of the microscope or of a surgical operation in a totally dark room; the laws of probability and the natural vitality of the patient would appear to be the chief determining factors in the result in either event. There may be a difference in responsibility in the conditions cited for comparison, but it does not powerfully impress the casual observer.

Diabetes is, of course, a disease in which the etiological factor is some error in metabolism and it will be profitable to review now some of the clinical applications of chemistry to conditions more closely associated with anatomical changes. Of this class, the diseases of the kidney constitute the best example.

We can no longer afford to be content with the simple demonstration of either a mild or a severe grade of albuminuria, nor even with the estimation of its extent. Too familiar to require more than mention is the necessity for a differentiation of true



nephritic albuminuria from albumin of nonrenal origin, or "accidental albuminuria," from that of the so called functional types, orthostatic, etc., and from that associated with febrile conditions, toxemias, and chronic passive congestion of the kidney (12). The functional tests to be mentioned can be of great assistance to the clinical picture in making such a differentiation. But far and above all this comes the question of the actual extent and rate of progress of kidney deterioration when a true nephritis exists; and herein lies the main field of usefulness for the functional tests.

It is obvious that the rate at which a substance will appear in the urine is dependent not only upon the blood pressure (kidney ventilation) and the secretory power of the organ, but also very largely upon the amount of that substance available for excretion. Except, therefore, when the diet is very carefully controlled, not a great deal of information is to be expected from the estimation of any or all of the normal urinary constituents. Any exception should perhaps be noted in the case of the total volume and specific gravity of the twenty-four hour specimen or those of the separate total day and night voidings. Even here the volumes of fluid intake, and especially of egress, through lungs and skin, must be taken into consideration, but it would appear that a good deal of valuable information is missed, especially in the earlier stages of nephritis, by the failure to require this simple test more generally when others may not be practicable.

To avoid the difficulties incident to control of the diet, the rate of elimination of several foreign substances may be employed. Potassium iodide, lactose, indigo carmine, methylene blue and others have all had their advocates, but all of them have now been practically replaced by phenolsulphonphthalein. The simple technic of intramuscular injection, collection of the urine for the next two hours and rapid colorimetric estimation of the percentage of the dyestuff excreted is almost universally known. Of the results of this test Barker writes (13): "This method has been used for a large number of my patients (with and without nephropathies), and when the output is low I consider it a valuable indicator of renal insufficiency. When the output is high we can feel fairly sure that, even though an extensive renal lesion is present (as in contraction of the kidneys), there is temporarily renal compensation. The mistake should not be made, however, of assuming, because the phthalein output is normal in amount, that there is no anatomical change in the kidneys. For very extensive renal lesions may exist with a normal, or nearly normal, phthalein output. The test is of renal function, not of the gross renal structure."

With the one additional caution that the excretion of all substances does not necessarily parallel that of the dyestuff, Barker's summary of his own experience is in close agreement with the published results of many other observers (14) who have been using the method in ever increasing numbers since its introduction by Rowntree and Geraghty in 1910 (15). It would seem to be indicated in every case in which the clinical picture suggests nephritis of any degree and as a general precautionary measure

preliminary to major operations upon patients of this class.<sup>1</sup>

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(To be concluded.)

**Dermatological Dietetics.**—Ernest Dwight Chipman (*Journal A. M. A.*, December 2, 1916) groups skin diseases into three classes according to their relation to diet. The first comprises those which are directly dependent upon diet; the second those which may not be directly dependent upon diet, but in which diet is of great importance; and those in which diet may be regarded as only an indirect element. Pellagra belongs to the first group, being due to a deficiency in certain vitamins, and its treatment by diet is obvious. Urticaria also belongs to the first group, as it results from hypersensitiveness to some protein, which should be eliminated from the diet. Toxic erythemas are similar to urticaria in this respect. As illustrations of the second group, eczema, psoriasis, and rosacea are well known. In this group the action of the foods may occur: 1. Reflexly from gastrointestinal irritation; 2, indirectly from indigestion and toxemia; 3, directly from the elimination by the skin of certain substances; 4, through the lack of certain of the accessory foodstuffs; 5, through excess in certain foods, such as carbohydrates which may cause hyperglycemia, and proteins which may cause a positive nitrogen balance; 6, as a result of hypersensitiveness. In infantile eczemas restriction of starches or fats will cure or greatly improve a large proportion of cases, while in the adult forms the protein usually has to be restricted. In psoriasis

<sup>1</sup>Since writing this my attention has been called to Kendall's interesting article in the *Journal A. M. A.* for February, 1917 (The Fate of Phenolsulphonphthalein when Injected into the Animal Organism: Factors Other Than the Kidney Influencing Its Retention: Preliminary Report, lxxiii, 1917, p. 343) in which the destruction of the dyestuff by a reducing enzyme is suggested. From the general agreement between the phthalein excretion and other tests both in normal persons and in nephritis it seems unlikely that such a destruction often occurs in amount sufficient to influence the results. Should the contrary prove true, the significance of a "normal" excretion would remain unaltered while decreased elimination would have to be checked up by other methods—viz, indeed, it usually is the case now. Its value as an exploratory test is probably, therefore, not impaired by this observation.

the general indication is for a reduction in the protein intake by placing the patient on a modified lacto-vegetarian diet for a considerable time and then gradually restoring the proteins, to a point however below that usual for normal persons. The same plan gives good results in eczema. Rosacea cannot be definitely associated with any one dietetic error and the best results seem to be secured by a general reduction in the amount of food taken, which in these cases is usually considerably in excess of the bodily needs. Acne is a typical example of a disease belonging to the third class, and reduction of the intake of carbohydrates is usually followed by marked relief. In the matter of the dietetic care of patients with one or another of the dermatoses it must be regarded as essential that the physician have, not only a clear idea of the relation of the diet to the disease, but also a good understanding of the fundamental principles of nutrition and dietetics. He must be sure to fulfill each of the following conditions: Maintenance of nitrogenous balance; the provision of sufficient energy bearing foods to meet the caloric requirements; provision of certain fresh or uncooked foods; provision of a certain proportion of vegetable fibre; a proper supply of inorganic salts; stimulation of the gastric secretion by a certain proportion of extractives; and, lastly, he must meet certain demands of the patient's taste and desire for bulk in the food.

**Recent Investigations in Dietetics.**—Anthony Bassler (*American Journal of Electrotherapeutics and Radiology*, January, 1917) considers first the relation of certain foods to malignant growths. Opinions conflict as to the effect of meats, vegetables, salt, and other foodstuffs as regards predisposition to cancer. In experimental sarcoma in animals, however, prolonged extra salt feeding has been shown by Negre to lessen distinctly the susceptibility of the animals to the tumor. Broadly speaking, the substances that increase resistance—and hence presumably the resisting powers of the tissues immediately surrounding malignant growths—are sodium chloride, the salts of calcium, natural foods in unprepared states, thyroid, testicular, ovarian, and thymus extracts, lutein, autolysin, and spleen extract. Substances which lower resistance, on the other hand, are the salts of potassium, and polished rice.

Regarding adequacy of the diet, recent investigations have shown that a given diet may be insufficient not only in a gross way, e. g., through absence of proteins, but in a specialized, chemical way, related to the constitution in aminoacids of the proteins ingested. Certain aminoacids are essential if growth of the body is to occur, while with proteins lacking certain other aminoacids, equilibrium of the tissues cannot even be maintained. Thus, the protein of corn (zein), while a perfectly digestible substance, cannot alone maintain nutrition because it lacks the aminoacids tryptophan and lysin. If the former be added in the diet, equilibrium will be maintained; if both, growth can take place. The protein of wheat (gliadin) maintains equilibrium, but will not permit of growth unless lysin be added. Gelatin is not an efficient protein because it lacks tryptophan. Lysin being necessary for the construction of tissue, casein, lactalbumin, and egg vitellin,

which are rich in lysin, are indicated where this special object is sought. Beef, mutton, and halibut are also excellent foods for this purpose, while corn, rice, barley, and rye, relatively poor in lysin, should be avoided as an exclusive diet. Excess of protein, to be sure, simply comes away in the stool if the body is healthy, or is stored up in toxic forms which the kidneys are required to eliminate. Safe regulation of the protein diet is based on the fact that not more than fifty grams of protein per diem is utilized in the body. Meat, fish, or poultry contain about fifty per cent. of protein; four ounces of this type of food a day should be the limit. For the legumes, such as peas and beans, rich in proteins, cereals and the other green vegetables may be substituted.

That the type of fat in a diet is important from the standpoint of growth has been ascertained by Osborn and Mendel, who found that young rats failed to complete their growth on a diet of isolated proteins, starch, protein free milk, and commercial lard or olive oil, though if butter fat or codliver oil were substituted for the lard, growth continued. While butter fat, codliver oil, and egg yolk promote growth, their nutritive value seems to be due, not to the fat, but to some accessory diet factor. Though serving as a source of energy, fats are not as efficient as carbohydrates in sparing protein. Carbohydrates have as chief function the furnishing of heat to the body, but are not indispensable in growth and seem to be more or less alike, any of the common carbohydrates being efficient as fuel.

An animal fed on proper amounts of protein, fats, carbohydrates, and water, but with no salts, succumbs more quickly than if completely starved. The salts, while furnishing practically no energy, are important apparently through their effects on the physical condition of the proteins of the body. Seemingly they change the affinity of the protoplasm for water. When a relative lack of salts exists, the protoplasm loses water. At other times water is absorbed and with it food materials. One may suspect that the salts in food are agents largely controlling secretion and absorption. Certain salts regulate the reaction of the body fluids. Iron is best administered, in the majority of cases of anemia, in its organic forms in food, e. g., in spinach, cabbage, green chicory, asparagus, lentils, carrots, and French peas.

**Pasteurization and the Fat Content of Bottom Milk.**—H. C. Berger (*Journal of the Kansas Medical Society*, November, 1916) asserts that properly skimmed raw milk yields one per cent. or less of fat. It is often desirable to employ milk of such low fat content in the preparation of feeding formulas, but with the general introduction of pasteurized milk the problem of securing such low fat content is changed. A series of determinations showed that milk skimmed after pasteurization contained fat in amounts varying from 1.8 to 2.6 per cent. Experiments were conducted to discover whether the temperature or the duration of pasteurization would alter this retention of fat. Neither was found to have much effect, within the limits of variation employed in pasteurization. It was also found that the content of fat in skimmed pasteurized milk was quite variable, although always relatively high. These facts must, therefore, be borne in mind in the prescription of fat poor formulas.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
Philadelphia Medical Journal  
and The Medical News  
*A Weekly Review of Medicine*

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Address all communications to  
A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

Subscription Price:  
Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MARCH 10, 1917

### THE ORGANIZATION OF THE ARMY MEDICAL RESERVE.

In existing circumstances, the officers of the Army Medical Reserve Corps may be called upon suddenly and at any time to give their services, and therefore it seems timely to consider their position. That the War Department also has the interests of this body of men at heart is shown by a communication received recently from the office of the Surgeon General, pointing out that it is the desire of the War Department to cause as little hardship and sacrifice to the Army Reserve Medical officers as may be consistent with the needs of the country. It is suggested by the Medical Department of the Army that the medical journals of the country bring to the attention of the profession at large, the necessity for the city, county, and state medical societies to organize for the purpose of taking care of the practices of the officers of the Reserve who respond to a call for active service, and it is further intimated that the methods pursued in Great Britain to safeguard the interests of medical volunteers may serve as a model to some extent, and in accordance with the differences of the situation, for this country.

The situation in Great Britain and in the United

States as far as the army medical service is concerned presents several points of resemblance. Great Britain, at the commencement of the war, possessed an adequate and wholly competent army medical corps for its army of 250,000 men or thereabouts. However, with the vast increase of the army, the supply of medical officers had to be increased. In this country, the army medical corps suffices for the needs of its small army, but, as in the case of Great Britain, is insufficient for an augmented army, and in this country, as in Great Britain, civil practitioners must be called on to fill the gaps.

At first and for some time after the war had been in progress, a certain amount of confusion prevailed in Great Britain with regard to the selection of medical volunteers for army service, but gradually a sounder scheme is being evolved, and it is hoped by the British authorities that before long matters in this respect may be placed on an entirely satisfactory basis. There are now about 10,000 British doctors, or about one half of the supply, on war service either at the front or in war hospitals at home. The doctors in civil practice are the older and less vigorous men. It has resulted that in the middle and working class districts two or three men are working themselves to death trying to do the work of a dozen or more, and in other districts, usually the wealthier ones, the doctor finds little to do. Another unsatisfactory phase of the situation in Great Britain is that many doctors on war service will return to find their practices usurped by the stay at homes and their patients alienated, thus rendering the original investment in the practice a bad one. Two schemes are being considered: one is conscription of all doctors and their enrollment in the Royal Medical Corps, which would take over the care of the civilian and military population. The other is the establishment of a ministry of health and the enrollment under it of all doctors. A system of rank and pay and assignment of districts would be involved. One of the features of this arrangement will probably be that in order to conserve practices, signed agreements will pass between the man who joins the army and the colleague who takes temporary charge of his practice. A national medical service is strongly approved of by a large majority of doctors, as it is believed it would provide an opportunity for real scientific work with less humoring of valetudinarians. There is no doubt that such a plan would work to the advantage alike of the ethical practitioner and the patient.

The manner in which the interests of doctors who have left their practices to serve in the army are con-



served is the subject with which we are especially concerned. Owing to the steadily and insistently increasing demands for army surgeons, it has been decided to mobilize the entire medical profession either on a voluntary or a compulsory basis.

If war broke out, there would be in this country, as far as one can judge, no such great call for doctors to serve as army medical officers as there has been in Great Britain, and thus the scheme proposed by the Army Medical Department, that the local medical society through its members should take care of his practice should answer his purpose. It must be borne in mind that active service in war is essentially for young men, and wherever possible the young man in civil practice should be replaced by the man who is over military age or is physically unfit to serve and thus released from military duty. Too strong an emphasis cannot be laid upon the need for immediate organization looking toward the protection of the interests of those who serve their country. Patriotism alone without intelligent organization will accomplish little, and our medical societies should at once make adequate preparations.

#### CASE FATALITY IN TYPHOID FEVER.

In a recent number of *Public Health Reports* Doctor Freeman has published a note on the case fatality in typhoid fever which is of importance. On a basis of such data as are available, some 35,000 cases with about 5,000 deaths, he has examined the case fatality at various age periods with results which are highly significant.

In estimating morbidity from typhoid fever it has been the fairly general rule among epidemiologists and statisticians to multiply the total deaths by the constant factor ten, on the assumption of a general case fatality rate of ten per cent. Freeman shows, however, that such a method is uncertain and may constitute an important source of error.

The case fatality rate in typhoid fever, according to him, shows wide variations at different age periods. "In general the fatality rate is least for the group five to nine years of age, rises through the years of adolescence, and rises very slightly through the years of maturity to the age of forty-five, when the rate takes a sharp turn upward." The case fatality percentage is shown to vary from 5.8 in the age group five to nine to as high as 46.4 in the age group sixty and over.

He shows these facts graphically in a curve. The use of this curve in the computation of morbidity would give far more accurate results than the old rule of multiplying the total deaths by ten. It is quite evident, if these deductions prove true, that the computation, for example, of the morbidity in

an orphan asylum from total deaths by using the factor ten would result in a very large error.

Freeman regrets that material is not available for the construction of a curve based upon much larger figures. In a disease so important and so common as typhoid fever is in this country it seems strange that data of this kind should be lacking. It is to be hoped that the increasing volume of morbidity statistics now being accumulated will be published in such form as to make possible further studies of similar character. The variations of morbidity and mortality at different age periods is an interesting and significant phenomenon in more than one disease.

#### MOVEMENTS OF FOREIGN BODIES IN THE BRAIN.

Who of us as a youngster has not heard marvelous tales of the boy who stepped on a needle one day because he persisted in going barefoot long after the nice boys in the neighborhood had donned shoes and stockings for the winter? For years afterwards he would notice peculiar, sharp pains from time to time and one day he felt an awful pain in his heart as if someone stabbed him, and then, when the doctor came, they cut him open and there was the needle in his heart—it had worked its way up like an Alger hero. Stories of this kind are accepted at their face value by a large proportion of the laity and as a matter of fact there is more possibility inherent in them than is usually the case in such stories.

Before the days of the x ray one could guess by observation of the entrance and exit of a foreign body what had been its probable course through the tissues, but nowadays we are able, so to speak, to watch it travel. In the *Archives of Radiology and Electrotherapy*, June, 1916, Doctors Vilvandré and Morgan describe a number of cases where foreign bodies, usually bullets, had moved about in the brain tissue from no other impulse apparently than their own weight. The usual objective of these bullets was the occipital region, due of course to the fact that the patient lay in bed with that part of his head lowest. It is doubtful whether or not such movements occur at all through normal brain tissue; in all the cases reported the brain had been injured. In one case quoted by Vilvandré and Morgan a sharpnosed bullet had lodged in the parietal lobe, where it was observed when the first skiagram was taken. Ten days later a picture of it showed that it had changed its position very much, having sunk backward and downward and also rotated on itself.

The obvious lesson to be drawn from these demonstrations is that in operating for a foreign

body in the brain we cannot depend upon an x ray picture unless it is a very recent one. Such a foreign body presupposes an injury to the brain, with damaged brain substance and lessened resistance to the passage of the intruding body. This may account for cases where it has been taken for granted that a bullet was in a certain definite part of the brain because an x ray several weeks before had shown it there, and then operation failed to reveal it, or it was only found after considerable search.

#### A VETERAN AND VERSATILE AUTHOR.

In the July number of the *Indian Medical Gazette*, just received, is a review of a book called *Instinct and Intelligence*, written by N. C. Macnamara, F. R. C. S., with a sketch of the author, who was the editor of the *Gazette* in 1871-73. From this sketch we learn that Mr. Macnamara was born October 14, 1832, and was therefore eighty-three years old when he completed this, his latest work. When a young man he entered the Indian Medical Service, from which he was retired over forty years ago. The versatility of the officers of this Service is well known. Even though an occasional one achieves preeminence in some particular line, such as is enjoyed at the present time by Colonel Smith, and Colonel Elliott in ophthalmology, his daily work is by no means confined to any specialty, he must continually practise medicine and surgery in the general acceptance of these terms. But it is unusual for anyone to attain eminence in so many different branches as did Major Macnamara. Tucked away on the shelves of medical libraries are to be found works by him on such diverse subjects as Diseases of the Eye, Asiatic Cholera, and Diseases of the Bones and Joints, all issued between 1866 and 1876, each accepted at the time as a standard authority.

Retirement did not mean inactivity to Mr. Macnamara. The most prominent positions he attained subsequently in his varied activities were Surgeon to the Westminster Hospital, London; Consulting Surgeon to the Westminster Ophthalmic Hospital, and Vice-President of the Royal College of Surgeons. The advent of the twentieth century found him with the versatility of his interests unabated, for since 1900 he has published, among other books, *Origin and Character of the British People*, *Human Speech*, and now *Instinct and Intelligence*. If he is not the oldest living active author he is certainly one of the oldest, and we think we make no mistake when we greet him as the dean of British medical writers. May his eighty-fifth birthday next October find him hale and hearty, still ready and willing to contribute from his great experience for our guidance.

#### HEALERS WITH DRUGS AND HEALERS WITHOUT.

Life paved with cross purposes finds the way futile and long. The wayside inns of good fellowship are hard to find and the goals of mutual accomplishment recede. The roads do not even run at right angles. They are hopelessly at odds, until we perhaps learn to find the common starting point and the similarity of aims.

The State Board of Health in Illinois has just made a new ruling in regard to the licensing of healers other than those strictly in the medical profession. The examination requirements are made more stringent in that a real test of knowledge of anatomy, chemistry, hygiene, physiology and neurology, pathology, diagnosis, and practice is made.

The striking feature is the emphasis of a supposed line of demarcation between drugless therapy and that which uses drugs. On what is medical practice based? Does the administration of internal remedies constitute the *summa summarum* of knowledge of the human organism and its needs? Is the ability to apply this one class of healing measures the supreme test of acquaintance with the complexities of the individual and his requirements to be set right with his environment? On the other hand, can the use of drugs be set aside from the qualifications necessary in a healer?

For no one would deny their efficacy and their well recognized usefulness, in spite of the superstitious credulity with which some of them continue to be used. Yet after all they form only one branch of medical service. A complete knowledge of drugs and their manifold action upon the body would be still a long way from complete appreciation of the individual's need for help in his adjustment with environment. He succeeds here, he fails there, and when he fails he is sick and turns to a healer, whoever he be, that can heal (*helen, hal*), make whole.

Were health a mere matter of meeting an invading bacterium with a direct, death dealing agent, or the simple pharmacological stimulation of a certain tissue, muscular, nervous, or what not, the handing out of treatment would be a simple matter. Instead of that is the "personal equation" in a far wider sense than the originator of that phrase ever conceived. Research along every line is revealing not only the existence of a host of personal factors, but their long unrecognized potency and their complicated and important reaction. The newer psychology discovers the slow genetic development of the individual in which emphasis of interest and effort was laid often upon the wrong places, from which misdirection the individual is only with great difficulty freed.

All these things make for his success or failure,

## News Items

his health or sickness. The entire nervous system, together with the diversity of bodily organs and tissues it controls, is at the service of these psychical efforts and emotional factors. Even the invading parasite, the adverse environmental agent, is met by a response which is largely psychically conditioned. Thus as the psyche in great part unconsciously wills, the organism rebounds from attack or succumbs, or the organ and tissue obediently function at the bidding of directed or misdirected psychical energy.

The following of any one line will never, then, suffice for this complex demand of the sick upon the healer. Nor will the maze of crossroads lead to the goal. A fresh start from the evolutionary standpoint where man can be viewed in his entirety of nature and unity of striving is being forced upon every physician who will be successful. Instead of any selected group of subjects, an examination acquaintance with which will constitute a healer, there is needed the most complete training and preparation which each physician is able to encompass. It goes without saying that he can stop at no examination status. This broader conception and knowledge, which society is coming increasingly to demand, necessitate continual study more than was ever before implied, and diligent pushing on into a wider horizon.

It is physicians who are needed, not because the name carries a power and sanctity conferred nowhere outside the bond, but because this word rightfully comprises that education, training, and breadth of vision which the work of healing needs. At the same time physicians must be awake to their responsibility and see to it that they are, with all their equipment, actual healers in mind or body, if they will retain this function within the circle of those really prepared for service.

### MEDICINE AND SURGERY.

A new monthly medical publication with the above title makes its debut this month under the direction and editorship of Dr. Philip Skrainka, who was formerly literary editor of the *Interstate Medical Journal*. The editor has associated with him in this new undertaking representative men in several of the largest cities, which bids fair to give this magazine a broad and comprehensive scope. The editorial department deserves special commendation for its distinctive originality and literary worth. It should appeal particularly to physicians with literary tastes and to those who desire to keep in touch with the best in current literature. We wish to extend a hearty welcome to this latest addition to the ranks of journalistic medicine, with the hope that it will have a long and prosperous life.

**State Hospital Development Commission Bill.**—This bill, contemplating an expenditure of \$22,000,000 over a period of ten years, has been passed by the New York Senate. It is said, however, that it is almost certain that Governor Whitman will veto the bill and that it can only become a law through the open combination of two leading political parties.

**Street Accidents in New York.**—During the month of February forty-four persons lost their lives in the streets of New York in accidents due to vehicular traffic. Automobiles caused the death of thirty persons, trolleys eleven, and wagons three. In the rest of the State twenty-three persons were killed.

**Spurious Neosalvarsan.**—Several arrests have been made of dealers for handling and selling as neosalvarsan preparations which consisted of mixtures of common salt and a little yellow coloring matter. The discovery of this traffic was made by inspectors of the Bureau of Food and Drugs, of the Department of Health of the City of New York. The department warns dealers and physicians against this vicious fraud.

**Examination for Laboratory Assistant.**—The Municipal Civil Service Commission announces that the time for receiving applications for this examination has been extended to March 19, 1917. From the list of eligible persons obtained from this examination appointments will be made in the pathological laboratories of the city hospitals. For full particulars regarding the examination apply to the Municipal Civil Service Commission, Room 1400, New York, N. Y.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, March 12th, Samaritan Hospital Medical Society, Clinical Association; Tuesday, March 13th, Pediatric Society; Wednesday, March 14th, County Medical Society, North Philadelphia Association of Dental Surgeons; Thursday, March 15th, Section in Ophthalmology, College of Physicians, Northeast and Southeast Branches of the County Medical Society; Friday, March 16th, Logan Medical Association.

**Army Medical Corps Examinations.**—The surgeon general of the United States Army announces that preliminary examinations for appointment of first lieutenants in the Army Medical Corps will be held at convenient points the first Monday in each month. Full information concerning these examinations can be procured upon application to the Surgeon General, United States Army, Washington, D. C. There are at present 230 vacancies in the Army Medical Corps. After July 1st, there will be 222 additional vacancies.

**Professor J. Dejerine, of Paris,** died February 27, 1917, at the age of sixty-nine years. Professor Dejerine held the Charcot Clinic chair in neurology, having succeeded Raymond. Professor Dejerine was widely known as a leading authority on cerebral anatomy, having with the collaboration of his gifted wife published two standard volumes on the anatomy of the nervous system. His recent work on the Psychoneuroses was translated by Jelliffe in this country and the second edition of his *Semeiology* has marked him as one of the leading neurologists of his times. His loss will be felt by his many American pupils and admirers. He leaves a wife and one daughter.

**Pneumonia in New York.**—Since the middle of January New York has been suffering from the invasion of a virulent form of pneumonia. Judging by figures compiled by the Department of Health there is little indication that the infection is abating.

The following table prepared by the department is of interest:

DEATHS FROM LOBAR PNEUMONIA, WEEK BY WEEK, SINCE JANUARY 1, 1917.										
March,	February,				January,				Dec.	
	24.	17.	10.	3.	27.	20.	13.	6.	30.	
1917—38	228	212	207	239	204	127	165	276	208	
1916—161	151	147	167	164	217	259	284	293	272	

The number of deaths reported from influenza was relatively lower, in fact, than during the corresponding period last year; the same is true of deaths from bronchitis.



**The Gorgas Medal.**—This medal is presented annually for the best paper submitted showing original research in preventive medicine. Competition is open to all medical officers and former medical officers of the army and organized militia, including the medical reserve corps and medical officers of the officers reserve. The first competition will close October 1, 1917. For full particulars regarding conditions, address the editor of the *Military Surgeon*, Washington, D. C.

**Mortality Statistics of New York.**—During the week ending March 30, 1733 deaths were reported in New York city, 100 less than during the previous week. This reduction in the number of deaths during the past week was not due to any lowering in the mortality of the acute respiratory diseases, but to small decreases in the mortality of a number of diseases, principally the acute infectious diseases, diarrheal disease, and tuberculosis. There was a large increase in the number of deaths reported as due to violence, 105 deaths being reported from this cause during the past week as compared with 73 during the corresponding week of last year.

**Personal.**—Dr. Yamei Kin, a Chinese woman physician, director of the Tien Tsin Hospital for Women, delivered an address before the Society for Ethical Culture, New York, Sunday, March 4th, on *The Present Dangers of China*.

Dr. L. Waller Deichler, of Philadelphia, has contributed \$3 to the fund which is being collected by the Committee of American Physicians for the Aid of the Belgian Profession. This is Dr. Deichler's second contribution to the fund.

Dr. S. Wendkos, formerly superintendent of Mount Sinai Hospital, Philadelphia, has been appointed medical director of Lebanon Hospital.

**Completion of Letchworth Village Urged.**—The State Charities Aid Association has asked the New York State Legislature to provide this year for the completion of Letchworth Village for the Feeble-minded and Epileptic, at Theills, Rockland County, and to adopt a definite policy regarding the deficiency in accommodations for the feeble-minded in the State. The association states that of an estimated number of 33,000 feeble-minded persons in New York State, only 5,400 are in institutions intended for them; approximately 4,500 are in institutions not intended for them, like jails, prisons, almshouses, etc., and, of the 23,000 who are uncared for, 6,000 are women of child bearing age.

**National Board of Medical Examiners.**—The second examination to be given by this board will be held in Washington, D. C., June 13, 1917. The examination will last about one week. The following States will recognize the certificate of the national board: Colorado, Idaho, Iowa, Kentucky, Maryland, North Carolina, New Hampshire, North Dakota, Pennsylvania, and Delaware. Favorable legislation is now pending in twelve of the remaining States. A successful applicant may enter the reserve corps of either the Army or Navy without further professional examination, if their examination papers are satisfactory to a board of examiners of these services. The certificate of the national board will be accepted as qualification for admittance to the Graduate School of the University of Minnesota, including the Mayo Foundation. Application blanks and further information may be obtained from the secretary, Dr. J. S. Rodman, 2106 Walnut Street, Philadelphia.

**Addresses on Hygiene under the Auspices of the American Posture League.**—The constructive work in public, personal, school, and industrial hygiene developed by the American Posture League will be presented in a series of illustrated addresses at the home of Mr. and Mrs. James Speyer, 108 Fifth Avenue, on March 10th, to a specially invited company including officials of local medical societies, city and State boards of health and education, and others specially interested in welfare and efficiency work. Miss Jessie Bancroft, president of the American Posture League, will preside, and among the speakers will be Dr. Henry Ling Taylor, Dr. L. E. LaFetra, Dr. James Porter Fiske, Dr. Eliza M. Mosher, and Stuart H. Rowe, Ph.D. The relation of posture to the arts will be presented by the sculptor, Dr. R. Tait McKenzie, of the University of Pennsylvania. Announcement will be made of some important cooperation of the American Posture League with city departments, subsequent to its designing of the new subway seats.

**To Protect the City's Water Supply.**—The Merchants' Association of New York is again distributing an urgent appeal to its members and to "citizens generally" to protest against the location upon the Croton watershed of the Mohansic State Hospital for the Insane and the Yorktown State Training School for Boys. The sewage from these institutions, it is testified by sanitary experts, would find its way into the water supply of New York. Existing laws authorize the building and maintenance of these institutions, but, owing to previous vigorous protest, the work was suspended and further outlays under existing contracts were prevented. The project may, however, be revived. The Merchants' Association has prepared and caused to be introduced into the Legislature bills to abandon the site and suspend construction of these institutions and to forbid the future location on the Croton watershed of such institutions. The danger from such pollution and the importance of prompting action in forwarding legislation against it is most strongly emphasized.

**Doctor Blake Takes Charge of Doyen Hospital.**—Announcement is made that Dr. Joseph A. Blake, formerly professor of surgery at Columbia University, has accepted an invitation of the French Government to become head of the hospital built and conducted by Dr. Eugene Doyen, the famous French surgeon, who died two months ago. This institution will reopen, with Doctor Blake in charge, in another month, and will be conducted as a war hospital, under the American Red Cross.

Incorporated as part of the new institution will be the Robert Walton Goeltz Research Laboratories, under the direction of Dr. Kenneth Taylor, the American bacteriologist, who has been associated with Doctor Blake since the beginning of the war. Doctor Blake is now finishing his work at the British hospital in Ris-Orangis, where he became chief surgeon after the severance of his relations with the Neuilly institution, over a year ago. Meanwhile the Doyen Hospital is being renovated and changed to meet war requirements.

A special feature of the work will be the installation of a jaw hospital, funds for which have already been subscribed, and which will probably be under the immediate direction of Dr. Dunning, of New York.

**American Red Cross Society on a War Basis.**—Mr. Albert W. Straub, director of the Atlantic Division of the American Red Cross Society, announces that the Red Cross has been put upon a war basis and is prepared to get into immediate field service. Additions to the army base hospitals will be added as rapidly as possible to provide accommodations for the sick and wounded in an army of a million men. There are five base hospital units in New York city, fully organized and equipped. These units are Bellevue Hospital, Dr. George David Stewart, chief surgeon; Presbyterian Hospital, Dr. George E. Brewer, chief surgeon; Mount Sinai Hospital, Dr. N. E. Brill, chief surgeon; Post Graduate Hospital, Dr. Samuel Lloyd, chief surgeon; German Hospital, Dr. Frederick Kammerer, chief surgeon. The New York Hospital unit, with Dr. C. L. Gibson as chief surgeon, is being equipped and organized rapidly.

Each of the base hospital units consists of a chief surgeon and twenty-five assistants, a chief nurse and fifty assistant nurses, two chaplains, orderlies, ambulance crews, stretcher bearers, and other helpers, including office men, bringing the numerical strength of the unit to about 200 persons.

The men interested in the welfare of each hospital have contributed \$25,000 for the permanent equipment of a unit which will care for 500 wounded men in the field. The women interested in each hospital have contributed \$8,000 for surgical dressings, hospital garments, and other additions to the surgical and medical equipment. Altogether there are now fully organized and nearly ready for service twenty-five base hospital units at Cleveland, Harvard University, Boston, Philadelphia, Chicago, Detroit, Baltimore, Rochester, St. Louis, Milwaukee, Buffalo, New Orleans, Cincinnati, Minneapolis, and Pittsburgh.

Base hospitals for the navy have been fully organized at Brooklyn, with Dr. W. B. Brinsmade as chief surgeon; Philadelphia, Dr. A. P. C. Ashurst, chief surgeon; Los Angeles, Dr. Rea Smith, chief surgeon. Other base hospitals for the navy are well under way at San Francisco, Seattle, and Providence, R. I. Each will accommodate 250 wounded or sick men.

# Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis, Original and Adapted

## THE TREATMENT OF LEAD POISONING.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 420.)

The immediate treatment of the acute attack in lead poisoning concerns itself in particular with arrest of further lead absorption from the mucous surfaces and skin and with alleviation of the symptoms. The former object is attained chiefly by purgation and in a minor degree by thorough cleansing of the oral and nasal mucous membranes and by general or local bathing and the use of clean clothing or bedding. As purgatives, the sulphates of magnesium or sodium are perhaps best among salines in view of the insolubility of lead sulphate; likewise of value is castor oil, oils having the property of dissolving or holding in suspension lead or its compounds, which, in the case of castor oil, are thus washed out from the bowel by virtue of the cathartic action. On the whole, purgation effected mainly by physical or salt action, viz., through the use of rather concentrated solutions of salines, is preferable in these cases to that secured with irritant cathartics, which will manifestly tend to increase the already existing intestinal spasm and colic. In any event, purgation is often obtainable only after repeated trials, and success in clearing residual lead from the alimentary tract is partly dependent on the measures simultaneously applied to relax intestinal spasm.

Colic, subjectively the most distressing manifestation as a rule, occurs in paroxysms lasting from a few minutes to several hours, and is usually accompanied by obstinate constipation and sometimes by vomiting. The patient's urgent attempts at defecation, except at the very beginning of the lead attack, are likely to yield only small amounts of mucus. In a few instances constipation exists in the absence of colic; on the other hand, occasionally pain is present in the absence of constipation. Both pain and constipation are due to spasm of the bowel, direct evidence of which is frequently obtainable by palpation of the colon during paroxysms of colic and even during the remissions. That the small intestine may also be involved is confirmed by the recent observations of F. Wassermann upon experimental lead colic in cats, in which contraction of portions of this viscus "to a thread" was noted.

The origin of the spasm has received various explanations. That it is due, as has been stated, to the constriction of the mesenteric vessels frequently seen accompanying it in experimental work is highly improbable, as this would doubtless involve a lessened blood supply to the intestinal wall—a condition unfavorable to increased motor activity. A direct action of the lead on the muscle itself or its nerve supply seems far more likely, and the experiments of Hirschfelder (1915) not only afford several items of evidence that the vascular theory of

lead spasm is untenable, but lead this observer to believe that the metal acts primarily by exciting the preganglionic endings of the autonomic nerves, in this case the vagus and sacral autonomic fibres, as motor nerves to the bowel, nicotine, known to act chiefly on these ganglia, arresting the intestinal spasm, which it could not do if the lead were acting on the postganglionic fibres, the enteric nervous mechanism, or the intestinal muscle itself. Hirschfelder in addition confirmed the previously known action of atropine in overcoming experimental lead spasm and ascertained that the nitrites—amyl nitrite, nitroglycerin, and sodium nitrite—are likewise capable of relaxing the obliterated intestine. Expanding this view of lead spasm as a nervous condition to structures affected by lead other than the bowel, one is prepared better to understand Debove's definition of lead colic as a "neuralgia of the solar plexus," to which he ascribes not only the intestinal manifestations, but impaired renal and hepatic activity and abdominal vasoconstriction, the latter raising the blood pressure throughout the body. Still more plausible, perhaps, because it directly accounts for certain other phenomena more or less frequently witnessed in lead poisoning, such as bradycardia, vomiting, dyspnea from bronchial spasm, and cramps in the extremities and retinal and possibly cerebral disturbances from vasoconstriction, is a further extension of the field of lead irritation to additional portions of the vegetative nervous system, thus dispensing with "reflex action" from the intestines as an explanation for these various collateral signs of lead intoxication.

That nitrites may prove of value in lead colic seems probable from Hirschfelder's experimental demonstration. Mattiolo in 1901 reported a case of lead colic with high arterial tension in which erythrol tetranitrate in half grain doses, repeated on three occasions, in each instance relieved the pain and enabled the patient to sleep. The nitrites doubtless act by directly depressing the smooth muscle of the intestine, as they are definitely known to depress the musculature of the vessel walls, bronchial tubes, and gallbladder. They may also prove useful in favoring diaphoresis in these cases, and in relieving headache, if such headache be due to high blood pressure. Prompt arrest of colic with the more rapidly acting nitrites—amyl nitrite or nitroglycerin—may, perhaps, be attempted, with subsequent use of erythrol tetranitrate or sodium nitrite to continue the effect. That success with nitrites in lead colic has not thus far been more noteworthy is doubtless due to the fact that these drugs, upon absorption, quickly expend their efforts on the vessel walls, leaving little or no nitrite action to be exerted on the muscular or other tissues. In view, moreover, of the fugaciousness in their action, they should not be exclusively relied on, but regarded as auxiliaries of the more commonly used agents, atropine and morphine.

(To be concluded.)



**Treatment of Ocular Eczema.**—Aaron Brav (*American Medicine*, January, 1917) divides the treatment into local and general, hygienic and medicinal. As most of these patients are of a scrofulous type they should live in dry rooms. A daily bath with cold sponging over the spine is valuable. Children should sleep twelve hours daily—adults ten. Children should take milk freely. Meat should be given very sparingly; during the acute stage of ulceration it should not be allowed. Sugars and pastries should also be eliminated from the diet. Locally, the blepharitis may be treated by one of the following:

R Zinci dioxidi .....gr. i;  
 Petrolati .....drams ii;  
 or  
 Hydrargyri ammoniati. ....gr. i;  
 Adrenalin 1-1000. ....m℥x;  
 Lanolin. ....drams iii.

Where the conjunctiva shows some congestion it is brushed with 0.5 per cent. solution of silver nitrate. Electricity in the form of a high frequency current may be administered twice weekly. If this does not help, a complete epilation should be done. Internally, the hypophosphites, iron iodide, and arsenic in the form of Fowler's solution are indicated. For the corneal ulceration, atropine solution one per cent. should be given three or four times daily with hot applications.

**Treatment of Injuries of the Auditory Apparatus Due to Explosions.**—Wicart (*Bulletin de l'Académie de médecine*, January 2, 1917) asserts that about ninety-five per cent. of cases of deafness arising through explosive detonations can be relieved if properly treated, and that, with sufficient time for thorough attention, only one to two per cent. of cases need be dismissed from military service for this cause. In deafness due to obstruction or deformation of the external meatus, treatment directed toward relief of such external conditions is, of course, alone required. Deafness due to pure concussion of the labyrinth soon disappears upon local and general rest, though if cephalic congestion or general asthenia coexist, these likewise demand remedial measures. In all cases, however, a careful search for even slight degrees of injury of the sound transmitting mechanism of the middle ear. If dry, traumatic perforation of the drumhead exists, rest of the organ is imposed, and disinfection accomplished by introduction of a gauze wick impregnated with glycerin and oil of lemon or lavender, filling the canal completely and renewed twice a day. In long standing dry perforations, the otic mucosa being less sensitive and the tympanum sclerosed, instillations of six drops of hot one in four iodine and iodide glycerin twice daily are ordered, the solution to be held in fifteen minutes each time. Between instillations the meatus is plugged with gauze. If suppurative exists, the instillations are made with one in four iodine glycerin, and are preceded by mild irrigation with dilute hydrogen peroxide solution. After a week or two, tincture of iodine or iodide solution, with or without glycerin, is carried by means of cotton on a fine hook through the perforation every three days, with the idea of checking suppurative completely in all recesses and obviating or dissolving fibrous scar formations. In at-

taining the latter object local cocaine adrenalin anesthesia is necessary. Wicart avoids the local use of alcohol, which, though favoring healing, promotes deafness. In obstinate suppurative, hot air or iodine vapor is used. In a few cases excellent results were obtained from local and internal use of fresh hemato-poietic horse serum. By these methods, repair of traumatic perforations, with mobile drumheads, was obtained in eighty per cent. of the cases. Subsequent treatment is similar to that of traumatism without perforation. Disinfection and complete decongestion of the nasal and pharyngeal mucous membranes are secured by inhalation of vegetable essential oils twice daily, by nasal spraying or post-nasal irrigation with a preparation of camphor, eucalyptol, and oils of sandalwood, lemon, and lavender in a fixed oil. Where necessary, hypertrophies or deformities in the nose are corrected. Permeability of the Eustachian tube having been, if the occasion presents, restored by progressive dilatation with fine bougies under local anesthesia, mobilization of the drumhead and ossicles and auditory re-education, with or without fibrolysin instillations, are instituted.

**Flavine and Brilliant Green as Antiseptics.**—C. H. Browning, R. Gulbransen, E. L. Kenway, and L. H. D. Thornton (*British Medical Journal*, January, 20, 1917) have investigated the properties of a series of antiseptic substances, including phenol, mercuric chloride, iodine, the hypochlorites, chlorine water, malachite green, brilliant green, crystal violet, ethyl violet, and flavine. They state that an ideal antiseptic should have great potency against all organisms in the presence of protein; that it should have no harmful influence in phagocytosis; that it should be free from irritant or destructive action on the cells of the host; that it should be relatively nontoxic when absorbed; that it should stimulate the growth of connective tissue and epithelium. With two exceptions all of the substances studied failed in one or more of these respects—all but these two were reduced in effectiveness in the presence of proteins. The two exceptions were flavine and brilliant green, the latter retaining its activity in the presence of proteins, the former having increased activity in their presence. Brilliant green was found to be deficient only in not being destructive to several bacilli, although very highly so to cocci. Flavine was potent against both bacterial forms. Both flavine and brilliant green produced marked acceleration of epithelial and connective tissue growth. Flavine was found to be 800 times as efficient as mercuric chloride against staphylococci in the presence of blood serum. It was found also that it could be dissolved in solutions of sodium chloride containing up to five per cent. of the latter and hence could be used in conjunction with the hypertonic treatment. Both flavine and brilliant green were tried in a large number of unselected cases of wounds, either to control existing infection or to prevent the occurrence of infection. The results were strikingly favorable, and the average healing time was reduced to half the usual required by other methods of treatment. A one to 1,000 solution was usually used, both to wash the wound and as a wet dressing.



**Nontoxic Vaccine in the Treatment of Chronic Gonorrhea and Secondary Anemia.**—Frank M. Wood and Jacob Solovay (*Urologic and Cutaneous Review*, February, 1917) report two cases, one of chronic gonorrhea and one of anemia, in which nontoxic vaccines were administered intravenously, and from the general results conclude: 1. This type of vaccine is more rapidly effective in the production of antibodies. 2. Sodium citrate when injected intravenously sensitizes the cells, thereby hastening antibody formation. 3. Streptococcus hemolyticus when grown for twelve days produces and liberates in culture a product which is antagonistic to its own hemolysin. 4. The Streptococcus hemolyticus is responsible for most cases of secondary anemia. 5. Koch's law should be applied in mixed infections. 6. The capsule contains the diffused toxins which inhibit antibody formation. 7. The toxin will prove of value in acute cases of infection. 8. This type of vaccine stimulates the whole leucocytic mechanism.

**Points in the Operative Treatment of Harelip and Cleft Palate.**—J. H. Nicoll (*Glasgow Medical Journal*, January, 1917), after experience with several hundred cases, maintains that in cases of simple harelip operation may be advantageously done within the first few days of life. In alveolar harelip the first operation, concerned with reposition of the tilted or projecting intermaxillary bone, should likewise be undertaken early, and the second operation, dealing with the soft tissues of the lip, whenever the union of the alveolus is complete. In cleft palate also, the earlier the operation, the better. Where harelip and cleft palate coexist, union of the harelip materially increases the blood supply of the palate, and should therefore precede treatment of the palate, in which lack of blood supply is often a source of failure. In unilateral alveolar harelip, the best ultimate results are obtained if the flattening of the nostril is corrected largely by so cutting and wiring the intermaxillary that the tip of the nose and nasal septum are distinctly distorted to the deformed side. Extensive undercutting to free the ala and cheek being thus avoided, subsequent scar distortion is greatly reduced. Where considerable undercutting of ala, lip, and cheek is necessary, the subsequent flattening and boardlike immobility of the nostril can be avoided by the insertion of tin foil between the soft parts and periosteum. Mucous epithelium lines the raw tissues in contact with the tin plate so that these do not adhere on its withdrawal, but form part of the buccal cavity. To avoid an unsightly line of union of the prolabium, only those methods of paring the flaps for a median juncture should be employed. A tube worn in the nostril for several months is very effective in moulding it and preventing secondary flattening. The tube may be specially made of any rigid material, or a vulcanite, celluloid, or metal nasal splint for deflected septum—such as Asch's, Meyer's, or Kyle's—cut across at the point of suitable circumference, may be used. At the operation for harelip the nostril aperture is purposely made smaller than that of the normal side. The tube is introduced after some weeks or months, and is chosen to suit the shape of the normal nostril. If oval, the long diameter corresponds with that on the opposite side.

**Treatment of Contractures and Allied Conditions.**—George Cooper (*British Medical Journal*, January 27, 1917) states that there may be one of three possible conditions in the muscles leading to contracture: 1. A state of pure muscular contracture; 2, muscular contracture with myofibrosis; 3, fibrosis without previous contraction. In addition the soft parts about the joints may be the seat of shortening. The treatment should be preventive where such is possible, consisting of rest in a favorable position; efforts to hasten repair; and the early practice of massage and passive and active movements. If contracture already exists curative measures must be employed. These consist of steady, slow, and prolonged passive movements designed to stretch the contracted tissues, aided by relaxation of the tissues and promotion of circulation through them by means of heat; continuous elastic mechanical traction; and finally surgical measures when necessary. No sudden efforts to stretch the parts should be employed since the injury to the tissues which they produce defeats their purpose. There are several methods for the application of heat, among which may be mentioned hot baths in still water of the whirlpool type or of sand or wax and the use of diathermia. The latter is by far the most effective means at our command. In many cases the Zander apparatus is an ideal means for applying active and passive movements.

**Antagonistic Therapy in Conjunctivitis.**—Th. Paradies (*Medizinische Klinik*, December 10, 1916) points out that when pneumococci or diplobacilli are found in the secretion from a case of conjunctivitis specific treatment with optochin or zinc salts should be instituted, but in the vast majority of cases these organisms will not be found and no specific treatment will be available. In these one must endeavor to destroy the infecting organisms as soon as possible without damaging the delicate ocular structures. Silver nitrate is known to be quite destructive to most organisms, but it does not penetrate far owing to its prompt coagulation of albuminous fluids. Dionin, on the other hand, increases the secretion of fluid into the subconjunctival tissues and opens up the tissue spaces, as it were, thus permitting the deeper penetration of otherwise relatively nonpenetrating drugs. The proper combination of dionin with silver nitrate or some other silver salt was therefore tried and yielded strikingly favorable results. It was found that the concentration of the silver salt could be reduced very materially without losing its antiseptic effect. The treatment adopted consisted in the instillation of a few drops of a five or ten per cent. dionin solution into the eye or even of the dry powdered drug in refractory cases; to be followed when chemosis had developed by the instillation of a few drops of a 0.25 to 0.5 per cent. solution of silver nitrate or a 0.5 to one per cent. solution of an organic silver preparation called argaldin. On the following day a small fragment of a 0.3 per cent. corrosive sublimate vaseline was applied to the conjunctiva. These applications were then continued on alternate days until the condition was relieved. In very chronic cases it is sometimes necessary to touch up portions of the conjunctiva with a one or two per cent. silver nitrate solution.

**Action of "Female Remedies" on Strips of Excised Human Uterus.**—J. D. Pilcher (*Archives of Internal Medicine*, January, 1917) reports experiments made on strips from four nonpregnant uteri and one Fallopian tube. Four specimens were from patients past the menopause and one from a patient twenty-eight years of age. *Aletris farinosa* (unicorn root), *Pulsatilla pratensis* (*pulsatilla*), and oil of valerian were found to depress the activity of the strips. In one instance a one to 100,000 concentration of the oil of valerian sufficed to cause considerable depression. *Cauliphyllym thalictroides* (*blue cohosh*) threw the strips into tonic contraction, while *Cnicus benedictus* (*blessed thistle*) and *Viburnum prunifolium* (*black haw*) proved inactive, the latter, however, having been tried in but a single experiment. Pilcher deems it improbable that these drugs could exhibit similar actions on the intact uterus in doses that could be tolerated by patients.

**A Study of von Jaksch's Anemia.**—Ralph G. Stillman (*American Journal of the Medical Sciences*, February, 1917) gives the clinical history of three cases of this disease, with remarks on the etiology, pathology, course, and prognosis. The treatment has been unsatisfactory in the majority of cases. Frequently they tend to recover, when almost any treatment may be followed by improvement, while others progress to a fatal issue in spite of any treatment. In a few cases in which the etiology could be determined treatment directed to the etiological factor has resulted in a cure. The most prominent feature of the symptom complex is an enlarged spleen, and in six cases treated by splenectomy the operation was followed by immediate clinical improvement. But it is evident that the condition is not localized in the spleen, and that the other hematopoietic organs must be involved more or less extensively, and, therefore, this form of treatment should not be adopted too hastily, although it has an important place in the therapeutics of von Jaksch's anemia.

**Blood Clot Method of Treating Mastoiditis.**—W. R. Thompson (*Texas State Journal of Medicine*, February, 1917) brings together the edges of the skin over a clot of blood with draw string or interrupted sutures. A small opening at the lower end of the incision is left in which a catgut drain is inserted. A loose gauze dressing, which is changed daily, is applied over this. If the infection is not great the wound unites, the clot becomes organized, and the patient is well in two weeks. If the infection is too great a breaking down takes place and the pus is drained off below. Under these circumstances the patient does not get well as quickly. From experience he concludes that at least seventy-five per cent. of all patients get well with blood clot in ten to fourteen days, the remaining twenty-five per cent. get well in less than half the time required by the cases treated by the old method. The after-treatment is painless to the patient and very little trouble to the surgeon. This is especially attractive to children. There is a small percentage of deformity and if present it is very slight. It saves the surgeon's dressing and time—also time and suffering on the part of the patient.

**Therapeutic Value of Tincture of Iodine in Tuberculosis and Other Infectious Diseases.**—John Ritter (*Illinois Medical Journal*, February, 1917) advises the administration of the tincture of iodine in sweet milk in progressively increasing doses, by which method from sixty to one hundred drops may be given three times a day for many months. The writer contends that iodine is both microbicidal, antitoxic, nontoxic, nonirritant, and noncaustic; that it is rapidly eliminated and so noncumulative; that it does not coagulate albumen; that it produces active phagocytosis. When given in milk it never produces iodism or gastric disturbance, and that from its superiority as an inhibitor or destroyer of bacterial growth it is the most logical remedy for the treatment of tuberculosis in all its forms.

**Arsenic in Blood Diseases.**—N. v. Jagié (*Medizinische Klinik*, December 17, 1916) points out that the use of arsenic does not bring about a change in the blood picture with any degree of constancy in the various blood diseases, but that it quite uniformly influences favorably both the nutrition and the general wellbeing of the patient. In true chlorosis arsenic alone has no effect upon the blood picture, but produces great improvement in the patient's symptoms, and when it is given with iron seems to increase the beneficial effect of the latter on the red cells. In cases of chlorosis in obese persons arsenic should not be used. Arsenic also has little effect in the anemias of the hypochromic type in cases of infantilism and hypoplastic constitution. Much the same can be said regarding its effect in severe cases of secondary anemia following prolonged loss of blood. On the other hand, arsenic seems to be of considerable value in those anemias which might be termed exhaustion, and more especially in cases of primary pernicious anemia. In the latter the beneficial action of the drug is mainly in general nutrition, but it may also have some influence in delaying relapses. In myelogenous leucemia arsenic, combined with x ray treatment, accomplishes more than any other remedy in leading to temporary improvement and a prolongation of life. Although the effects are variable the drug is also often of value in cases of lymphatic granulomas and lymphosarcomas. It is, however, of little or no value in cases of lymphatic leucemia. Fowler's solution is one of the most useful of the preparations of arsenic for oral administration, while for subcutaneous use the most satisfactory is a solution of arsenic trioxide prepared according to von Ziemssen's formula:

R Arsenic trioxide (glacial)..... 1.0;  
Sodium hydroxide (normal)..... 5.0;  
Dissolve by boiling and dilute to 100 mls; filter and neutralize with HCl.

With this solution the initial dose should be 1.0 mgm., and this increased to 3.0, 5.0, 7.0, 9.0, and 12.0 mgm. Each dose should be repeated three times before the next larger one is given and the doses should be given thrice weekly. After the maximal dose is reached and repeated the course should be started over again. In cases where a milder arsenical therapy is desired the maximal dose should be reduced to 7.0 mgm.

**Treatment of Strabismus.**—Edward A. Stapleton (*Albany Medical Annals*, February, 1917) refracts younger children under atropine and prescribes the proper correction. He states that this can be done in children of one year. The atropine is usually continued in the fixing eye for several weeks. Worth's amblyoscope and the stereoscope should be used. As to the best time for performing an operation, there seems to be a difference of opinion. Some operate as early as five; others wait until after fourteen. As regards the nature of the operation performed, the author prefers the advancement with a partial tenotomy if necessary.

**Spasmodic Asthma.**—Robert Hall Babcock (*Journal A. M. A.*, February 10, 1917) says that no pains should be spared in searching out and removing every disease process which may serve as a focus for protein absorption in cases of spasmodic asthma. Since sensitization to proteins from one source seems to predispose to sensitization to those from other sources all sources should be eliminated if good results are to be expected. The commonest site of foci is in the nasopharyngeal region and its accessory sinuses, though the tonsils may be the chief site. The successful elimination of all source of protein absorption is often enough to relieve the patient of his asthmatic symptoms, but much aid can also be obtained from the administration of autogenous vaccines made from the sputum. These, however, must be used with the greatest care to avoid doing harm. An anaerobic fusiform bacillus has seemed to be the most important single bacterial element in the production of asthma and it is only when this organism can be obtained from the sputum and included in the vaccine that good results from this form of therapy are secured. In cases of asthma in which there is a secondary bronchitis treatment is very prone to fail, such cases being among the most refractory.

**Treatment of Hematemesis.**—Frank Bethel Cross (*Long Island Medical Journal*, January, 1917) emphasizes the great importance of physical and physiological rest of the patient in bed. Morphine should be given freely and all food should be avoided by mouth. When food is resumed it must be given with the utmost care during the first few days. Where the hemorrhage is small or the stomach is probably fairly empty as the result of vomiting, the oral administration of from ten to twenty drops of a one to 1,000 solution of epinephrin may aid in controlling the bleeding. Gastric lavage with ice water may be tried or large doses of bismuth may be administered. Capsules of 0.6 gram of gallic acid should be considered and calcium salts may be tried, but they are seldom applicable because they are not well borne by the stomach or rectum and are likely to be expelled before they are absorbed. The injection of twenty mil doses of normal horse serum, one or two doses of coagulose, or the administration of fresh, whole human blood, fresh human blood serum, or the infusion of normal salt solution subcutaneously are all methods which merit trial. In very severe cases with exsanguination the use of the Murphy drip is of great value, and the direct transfusion of blood should be tried if possible.

**Sodium Salicylate in Trench Foot.**—W. Gordon (*British Medical Journal*, January 27, 1917) reports the results of his observations on the effects of the administration of sodium salicylate for the relief of the pain caused by trench foot. He has employed this drug in a large number of cases and also has made comparative observations with and without its use in a large group. He finds that its administration is of great value in giving almost immediate relief to the pain in some cases and in others in greatly shortening the painful stage of the affection. It does not, however, seem to have any influence upon the total duration of the time required for recovery from trench foot.

**Treatment of Influenza.**—W. A. Onderdonk (*American Medicine*, January, 1917) gives hot malted milk or hot lemonade to counteract the initial chill. In addition, the patient should be kept warm with blankets and hot water bottles. If prostration is not too marked, a hot bath is indicated. If coughing and chest oppression are present, ammonium carbonate grains 5 to 10 in milk should be given. If this is not well borne, strychnine may be substituted. If there is marked depression, strychnine or musk is indicated. In the gastrointestinal type calomel should be given in small and repeated doses. In the neuromuscular cases gelsemium has been given. If the pain is limited to the lumbar muscles external applications may add to the patient's comfort.

**Antitoxin Treatment of Tetanus.**—William B. Leishman and A. B. Smallman (*Lancet*, January 27, 1917) have made a very careful analysis of the results of the use of antitoxin in 160 cases. They conclude that the intravenous mode of administering antitoxin should not be used because of its greater danger of producing anaphylactic shock and because it has not proved of any material value in the control of the disease. The effects of antiseptics used as preservatives have also to be taken into consideration. In addition, the evidence of the present series of cases points strongly against its employment. Much the same can be said regarding the intrathecal route of administration, which certainly did not seem to give any desirable results. The subcutaneous and intramuscular routes of administration were found to be essentially similar in their effects, providing a comparatively slow and continuous supply of antitoxin. Since it is generally believed that tetanus toxin travels mainly along the nerve sheathes, probably the best results are to be obtained by injection of the dose in several portions in and about the region through which the nerves and lymphatics of the part pass, proximal of course to the infected wound. The method, however, was found to be applicable only to cases of limited wounds of the extremities. While the doses which proved effective in different cases varied widely, the general impression was that not less than 10,000 units should be injected daily for the first few days. The results also showed the necessity for beginning the specific treatment at the earliest possible moment, and for continuing it well into convalescence. The authors add that the phenol treatment and the use of magnesium sulphate have both been virtually abandoned on account of their failure to give satisfactory results.



# Miscellany from Home and Foreign Journals

**The Predisposing Causes of Pyorrhea.**—M. L. Rhein (*Journal A. M. A.*, February 10, 1917) emphasizes the fact that infection does not occur in an individual otherwise in physical health. Pyorrhea is the result of some constitutional disturbance leading to local malnutrition in the mouth plus infection. Since the dental structures are endorgans they are the first to show the results of malnutrition. The local appearance of the dental and peridental tissues varies widely with the underlying cause and often the appearance is quite characteristic of a given constitutional disease. Often the pyorrheal changes will appear long before the signs of the underlying disease are sufficiently developed to permit a diagnosis. There are cases, however, in which a decrease in the functional power of the teeth themselves is the chief cause. This decrease in function and resistance is usually due to such conditions as loss of one or more teeth, irritation from unpolished fillings, etc. Often when the underlying constitutional cause is found it will not be recognized as such, but will be regarded as secondary to the pyorrhea. In the treatment of a case of pyorrhea good results cannot generally be expected unless the constitutional factor is capable of modification and is adequately treated.

## **Ambard's Constant and Its Clinical Importance.**

—Koshiro Nakagawa (*British Journal of Surgery*, January, 1917) with regard to Ambard's constant concludes as follows: 1. It would be presumptuous, perhaps, to attempt to draw any conclusions from the results obtained in the few cases he has been able to investigate; but considering them in association with those obtained by other observers, he thinks it may be justly stated that we have in Ambard's coefficient, especially in its extreme limits, a very reliable method of gauging the state of renal function. 2. A constant of normal value does not necessarily imply freedom from disease; it is frequently found in association with recognizable surgical affections of the kidneys. In such cases a normal constant indicates that the renal defect is compensated—that the kidneys have sufficient reserve capacity to meet any increase in the work thrown upon them. 3. A constant of increased value signifies some impairment of renal function, compensation being either incomplete or totally wanting. In such a case it may be either that the functioning renal parenchyma is incapable of coping with the extra work thrown upon it, or that the spread of the disease in the functioning tissue is too rapid to allow of compensation. 4. In some cases the constant is of diagnostic significance. Thus, a normal constant in association with renal tuberculosis suggests that one kidney only is affected; a constant of increased value indicates either that the tuberculous condition is bilateral, or that it is associated with a toxic nephritis of the opposite kidney. 5. Much importance also must be attached to the variation of the constant; for it has been pointed out that in diseases of the lower urinary tract, as prostatic hypertrophy, carcinoma of the bladder, or urethral stricture, the renal function,

as indicated by the increased value of the constant, is frequently impaired. This functional defect may be due to coexistent renal disease, or may be associated with some obstructive or infective process in the lower urinary passages. In such cases, before adopting more radical measures, the surgeon resorts to bladder drainage for a few days. If during this period the constant is investigated and found to approach the normal it may be inferred that the renal embarrassment is of a temporary nature only, and secondary to the change in the urinary passages. A stationary or increasing constant points to the existence of some gross lesion of the kidney, and indicates the danger that may attend future operative measures. 6. The determination of Ambard's coefficient does not entail any discomfort to the patient. The injection or ingestion of foreign substances is not required, nor is it necessary to control the diet. The method is applicable in cases where urethral catheterization or examination of the lower passages is impossible. 7. The information as to the future of renal function gained by estimating the urea in the blood is amplified and completed by the determination of Ambard's constant.

## **Rectal Versus Vaginal Examination in Labor.**

—S. E. Moore (*American Journal of Obstetrics*, February, 1917) compares the two methods of examination in labor. He speaks of the great value of abdominal palpation in pregnancy and labor. Through an extensive outline of the things to note in a vaginal examination in parturition, it is attempted to demonstrate that by using the trinity of methods, abdominal examination in pregnancy and labor, a vaginal exploration in pregnancy, and a rectal examination in parturition, the use of the vaginal route can be discarded in the majority of normal labors for diagnostic purposes. Possible errors are spoken of and appreciated as occurring in employing either the vaginal or rectal route, such as mistakes in diagnosis of conditions simulating a prolapsed limb or cord, unruptured membranes, and possible mistakes in recognizing slight degrees of malpresentation and malposition. The advantages of the rectal route are: It is practically painless; there is no danger of sepsis; no preparation of physician or patient is necessary; multiple examinations are permissible; rectal conditions, as tumor or scybalous masses, are noted; peace of mind of operator in fever of puerperium is secured; and certain uterine abnormalities and in some cases fetal parts are better demonstrated.

The writer has found the rectal route useful in the following conditions: In conjunction with abdominal palpation in pregnancy and labor and a vaginal examination in pregnancy for diagnostic purposes in parturition; as an adjunct to avoid numerous vaginal explorations in labor; recognition of a sponge, by rectal bulging, left in vagina, after a perineorrhaphy; diagnosis of retrodisplacement in puerperium; rectal conditions as tumors noted; advancement of head in labor noted during a pain; discovery of a prolapsed limb or cord after rupture

of the membranes; note prominence of spines in delayed labor and fracture of coccyx after forceps operations; note progress of labor in "twilight sleep"; by rectal examination the time for making a primary vaginal examination can be noted; slight errors of flexion of the head may be corrected; nurses can watch progress of labor better; in relatively contracted pelvis undergoing the test of labor, but anticipating a possible Cesarean section, progress can be noted and also the bulging of placenta in lower uterine segment and vagina after detachment. He concludes as follows: The rectal route without both abdominal palpation in pregnancy and labor and the vaginal examination in pregnancy is no competitor with the vaginal examination in labor. But with the two foregoing methods, and subject to the rule, when in doubt resort at once to the vaginal route, the majority of labors can be conducted successfully and intelligently without employing the vaginal route in labor. The latter method should be primarily used in delayed labor and in all cases first seen in labor where operative interference is indicated. In some cases, with a fair amount of forewaters, the routine vaginal examination in normal labor, might be made before the rupture of the membranes, as diagnosed per rectum, to get advantage of the autogenetic douche of liquor amnii.

**The Epidemiology of Anterior Poliomyelitis Epidemica, 1916.**—D. M. Lewis (*Boston Medical and Surgical Journal*, February 15, 1917) maintains that this disease was an integral part of a streptococcal grippé, prevalent in 1915, and epidemic in 1916, which has been most protean in its manifestations. This conclusion is based on the following statements: 1. Typical abortive cases of poliomyelitis were the streptococcal grippé type of the spring; these were present in frequently the same family as then affected, but in individuals who were not affected at that time. Other individuals of the family gave the more recent history of malaria, sore throats, or bronchitis, and showed an eye strabismus, or a recent throat or muscle weakness. In some instances carriers in the family were demonstrable. 2. Typical cases of the disease as to onset, symptoms, and signs were classical pictures of influenza. Atypical and suspected cases were like the spring grippés save the more frequent irritative pressure signs of fluid on the brain, pons, or cord, especially during a short period during and following the extreme humidity. 3. The convalescence of all abortive, mild, or suspected cases has been typically that of influenza or grippé. 4. Although he obtained but one spinal fluid in an abortive case that showed a fine diplostreptococcus, the blood picture of leucocytosis, and high polymorphonuclear differential count are in accord with such an etiology. 5. The quick reparative response not only in noncrippling apparent paralyses, but in those apparently crippled as well, is not in accordance with similar lesions in the sporadic cases of this year or previous years. 6. He found a carrier in only one family out of several thousand children from New York City and vicinity, and that was in a family who brought a case of poliomyelitis with them. 7. Since the middle of September only one case of poliomyelitis has been reported, while there

have been three typhoids, four scarlet fevers, and six diphtherias—all in children of ten or under, where the onset, signs, symptoms, and course were in no wise different from the poliomyelitis of the summer, except that there were no paralytic manifestations. The family history, the family or house carriers, when found, indicated streptococcal grippé.

**An Analysis of Sciatica.**—Mark H. Rogers (*Journal A. M. A.*, February 10, 1917) brings forward fifty consecutive cases to show that sciatica is not a disease entity, but is merely a symptom of some bone or joint affection which irritates the sciatic nerve. The condition is not in any sense an essential neuritis or perineuritis. Forty-nine of the fifty cases showed definite evidence of a lesion of one of the joints of the lower spine—namely, the lumbar articulations, the lumbosacral joint, or the sacroiliac joints. In the remaining case the patient had carcinoma of the prostate. Careful examination of these joints, including the use of movements which involve them, will almost invariably reveal some pain on motion, local tenderness, or some restriction of mobility, all of which are significant of joint lesion. Of the fifty cases, seventeen were due to acute strain of the lower spine, usually of one of the sacroiliac joints; twenty-one cases were due to chronic strain of the same region; in eight cases there was hypertrophic arthritis; and finally four of the cases were proved to have been due to tuberculosis of the lower spine. Naturally the general plan of treatment for sciatica could be expected to accomplish little in such cases as these, and the proper measures to use would be those directed to the rest of the affected joint and the cure of the local condition there present.

**Weil's Disease.**—A. Stokes, J. A. Ryle, and W. H. Tytler (*Lancet*, January 27, 1917) state that they have studied a large number of cases of this disease derived from France and have been able to confirm every important finding made in Japan by Inada and his associates, except the isolation of the causative organism from the urine of human cases. They have been able to isolate a spirochete which agrees in every way with that found by the Japanese workers and have been able to infect guinea pigs with the blood of human cases in 100 per cent. of instances during the third to sixth days of the disease. Studies seemed to exclude the role of insects as carriers of the disease and pointed to the transmission of the disease through the medium of field rats, in the kidneys of which the spirochetes were frequently discovered. The disease was found to be most prevalent in trenches which were wet, and it is believed that the infection may possibly occur through the skin, although the alimentary canal seems the most probable channel. Efforts were made to devise a serum reaction for the diagnosis of the disease, but these were unavailing. A considerable number of cases were observed in which there was no jaundice, although the spirochetes could be isolated from the blood and the latter were capable of infecting guinea pigs. Since Weil was not the first to observe and describe this disease and since its cause is now known, it would seem better to speak of it by the scientific name of spirochetosis icterohemorrhagica.

**The Posture of Scoliosis and Its Relation to the Physiological Positions of the Spine.**—E. G. Abbott (*American Journal of Orthopedic Surgery*, February, 1917) in this, his second paper, continues to discuss the physiological postures of the spine and their relation to scoliosis and the posture of scoliosis and its relation to the physiological positions of the spine. He thinks both the side bending and the plumb line tests are incorrect and misleading. He believes the accurate method of examining a patient to determine the presence of scoliosis, is to have the patient stand at ease and if there is a curve to one side, ask the patient voluntarily to reverse the curve. If this can be readily done he considers that there is no deformity present; and if it cannot be easily accomplished then actual deformity is present. If the exact position of the vertebrae in reference to their vertical axes and the amount of rotation is desired he advises that x ray examination of the whole spine be made with the patient standing at ease. He casts aside all the present classifications and states that the only difference between the so called functional or physiological and the structural or pathological type is the development of a structural change in the bones, muscles, ligaments, etc., in the latter type. He considers that the condition is a progressive deformity and that the pathological type develops out of the long assumed physiological type, the whole being a long process with many stages between. The fifty-five photographs, diagrams, and radiograms add considerably to the interest and value of the paper.

**Adenitis of the Iliac Fossa Simulating Coxalgia.**—Savariaud (*Journal de médecine de Paris*, January, 1917) points out that any inflammation capable of exciting the iliopsoas muscle to contracture may lead to the impression of coxalgia. The reflex contractures accompanying appendicitis and Pott's disease are well known, and contracture secondary to acute inguinal adenitis has also been recognized. The necessity of differentiating chronic tuberculous adenitis of the iliac fossa from coxalgia seems, however, not to have been duly considered, and is particularly important in that iliac adenitis forms part, as it were, of the symptomatology of true coxalgia. A patient may exhibit a limb in the typical coxalgia position, together with enlargement of the iliac glands and even an apparent elongation of the extremity without actually suffering from coxalgia. The latter is excluded if abduction is free, if pressure exerted posteriorly at the level of the femoral head causes no pain, if there are no nocturnal pains, and if, as in one of the author's patients, claudication is lessened the more the patient walks. Sometimes, however, the diagnosis is difficult. In one instance the decision in favor of iliac adenitis was based on the absence of bony lesions upon x ray examination a long period after the beginning of the trouble and the appearance of a large cold abscess. In another case, an acute iliac adenopathy with distinct signs of arthritis of the hip led to a diagnosis of the second period of coxalgia, approved by Lejars, only to be followed in a month by defervescence and disappearance of the adenitis and all difficulty of motion at the hip.

**Bone and Joint Lesions: A Differential Study of Six Cases.**—Charles F. Eikenbary (*American Journal of Orthopedic Surgery*, February, 1917) reports a differential study of these bone and joint cases: two of sarcoma, two of Perthe's disease, one of carcinoma, and one of suppurative retroperitoneal glands, and lays particular stress upon a careful and complete history and good radiography as distinct aids in diagnosis.

**Experimental Tuberculosis of Muscles.**—Leonard W. Ely (*American Journal of Orthopedic Surgery*, February, 1917) states that by experimental studies upon rabbits, in which a pure culture of bovine tubercle bacilli was placed in a thigh muscle, he found, upon killing the rabbits several months later, that the muscle had become tuberculous; that in some cases the infection had spread to the surface, the latter becoming secondarily infected; and that other muscles were not involved otherwise than in this fashion.

**Significance of Eosinophilia in So Called Scholastic Anemia.**—Ferruccio Scaroni (*Gazzetta degli Ospedali e delle Cliniche*, January 7, 1917) from a review of forty-two cases finds that there is in this slight anemia found in schoolchildren almost constantly an eosinophilia, and that there can be demonstrated in such cases the presence of various parasites in the feces. These cases therefore owe their eosinophilia to worms. The degree of eosinophilia is not only equal in the presence of the various varieties of parasites, but it is also uninfluenced by the existence of one or of many different species thereof. In accordance with these findings Scaroni advises that in all cases of anemia in schoolchildren the blood be carefully examined for eosinophilia and at the same time that the stools be searched for the ova of intestinal worms; further that in all such cases anthelmintics be administered and when the feces become free apparently from such ova that the blood be again examined for a disappearance of the eosinophilia.

**Modified Tetanus.**—H. Burrows (*Lancet*, January, 27, 1917) calls attention to the fact that a large proportion of the cases of tetanus which have been encountered of late from the war front have been of modified and atypical form due to the general use of immediate prophylactic inoculation. This modified form of the disease may be divided into three types: 1, Splanchnic tetanus; 2, cephalic tetanus, and, 3, local tetanus of the extremities. The splanchnic type follows wounds of the abdomen or thorax, is almost always rapidly fatal, general convulsions and opisthotonus are absent, the spasms are limited to the muscles of deglutition and respiration, and death occurs from respiratory paralysis. Cephalic tetanus may be present with or without paralysis, the paralysis may involve the facial nerve, together with muscular spasms, the oculomotor nerve, or the hypoglossal nerve. In most of the cases of this class the picture is that of combined muscular spasms and paralysis. Finally the local tetanus of the extremities may occur with or without tetanic spasticity of the muscles, although the latter is commonly present. It may take the form of restricted stiffness and rigidity of certain limited groups of muscles.



# Proceedings of National and Local Societies

## THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Stated Meeting, Held November 20, 1916.*

The President, DR. THOMAS S. SOUTHWORTH, in the Chair.

**Tonsillectomy in Poliomyelitis.**—DR. JOSEPH C. ROPER, of New York, stated as follows: During the recent epidemic the New York Hospital maintained a special branch for poliomyelitis, to which 115 patients with true poliomyelitis were admitted. The bacteriology of the disease was studied in these cases by Dr. E. C. Rosenow, of the Mayo Clinic. In some sporadic cases encountered in Minnesota, Doctor Rosenow had obtained results which had led him to think that the tonsils might be a definite source of infection in this disease, and he had come to the New York Hospital to continue the study of the disease along these lines. Doctor Rosenow was able to isolate an organism from pus expressed from the tonsils of the first cases, which, when injected intravenously in pure culture, produced paralysis in small animals. It was shown at autopsy in fifteen instances that the tonsils contained foci of purulent material from which the same organism could be isolated. These foci varied in number from two to eight or ten, and were situated in the base of the tonsil just outside of the capsule. The organism isolated from these lesions belonged to the streptococcus group. Doctor Rosenow was able to show that it varied greatly in size, depending on the culture media, and that when grown in the medium used by Noguchi it produced globoid bodies apparently identical with those described by Flexner and Noguchi. Doctor Rosenow regarded the organism as identical with that recovered from the spinal cord by Flexner and Noguchi. A preliminary report of his work has been published.

On the basis of these findings, it seemed desirable to investigate the conditions obtaining in the tonsils during the course of the disease. Tonsillectomy was performed in twelve cases. The results were striking in those cases which after the passage of the acute stage still showed irritability, slight fever, and a tendency of the paralysis to extend. The tonsils in these cases showed one or more foci, the largest number being three. The improvement consisted in the disappearance or lessening of the irritability and a more rapid convalescence. From observation of similar cases, it seems probable that these cases would have taken two weeks to reach the stage of convalescence attained in two or three days after tonsillectomy.

Of the fifteen deaths occurring in our 115 cases, seven occurred after two weeks, some as late as six weeks. The usual cause of death in these late cases was respiratory paralysis, or bronchopneumonia induced by respiratory paralysis. If Doctor Rosenow's work on the streptococcus isolated from the tonsil is confirmed, tonsillectomy would seem justified in patients who have passed the acute stage but do not show a tendency to improvement or who show new sites of a paralysis. In this way some of these

late deaths may be avoided. Of five patients with chest paralysis in our series, the only one now living is one in whom tonsillectomy was performed.

**Aftertreatment of Anterior Poliomyelitis.**—DR. HENRY W. FRAUENTHAL read a paper with the above title, which appeared in the February 10th issue of the JOURNAL.

Dr. ABRAHAM ZINGER read a paper on the Diagnosis and Serum Treatment of Anterior Poliomyelitis. He said that he had used the serum obtained from convalescents and from donors who had had the disease from one to several years previously. The serum was either used fresh or it was prepared by the addition of 0.2 per cent. trikresol and subsequently passed through a Berkefeld filter. Special emphasis was laid upon the selection of the cases for the serum treatment. Preparalytic cases were treated in preference, as it was felt that the results of treatment could best be judged in these patients. Advancing paralytic cases with temperature, though frequently hopeless, were also treated often as a last resort. The early or preparalytic cases can be recognized by symptoms and findings in the spinal fluid. The symptoms are fever, headache, slight rigidity of neck, muscular tremors of fingers, hands, and entire extremities, and general muscular weakness. The spinal fluid shows macroscopically a typical ground glass appearance, due to the increased number of lymphocytes, which are uniformly suspended throughout the fluid. Microscopically, the increased number of white cells is made out, and the chemical examination shows a definitely increased amount of albumin and globulin.

The serum was injected intraspinally in doses of fifteen c. c. and repeated two or three times at intervals of twenty to twenty-four hours. Clinically, the injection of serum was followed within twenty-four hours by an intensification of the meningeal symptoms, and an increased temperature, which in the more severe reactions reached 104° or 105° F. Locally, a marked cellular response of the cerebrospinal meninges followed the injection of serum. This cellular reaction consisted of a very decided increase of the polymorphonuclear cells. The total cell count was frequently several thousand per c. c. Normal human serum, which was also used in some of the cases, produced a similar cellular response. It is probable that in immune serum the additional activity of the antibodies present was a helping factor. With the immune serum were treated at the Willard Parker Hospital 160 patients, at the Minturn Hospital thirty-three patients, and in the private practice of various physicians 227 patients. The results in the paralytic cases could be interpreted only with difficulty, since similar results were also noted in those not treated with serum. In the preparalytic cases the results were distinctly beneficial and compared favorably with a group of control cases observed in the same stage of the disease. At the Minturn Hospital, for instance, from a group of fifteen preparalytic patients, only two manifested a persistent paralysis of the extremities. Similar results were noted at

the Willard Parker Hospital and in the private practice of several physicians.

Dr. WILLIAM B. NOYES said that anyone who attempted to discuss the technical studies of the recent epidemic of anterior poliomyelitis which had been presented at this meeting should do so with full appreciation of their value as original contributions to scientific medicine. In handling the three different stages, the acute, including the prodromal; the convalescent, and the stationary, or chronic, stage, three absolutely different problems were presented. While Doctor Zingher's discussion in reference to the acute stage was interesting, it could not be absolutely convincing until all the statistics of the epidemic are available for comparison of the cases which have been treated by such methods as Doctor Zingher and Doctor Roper with those cases which have received no medical treatment at all and yet made a good recovery.

Doctor Noyes stated that he had been profoundly impressed with a patient he had seen in consultation in the epidemic of 1912, the worst case he had ever seen that lived. The child had manifested a monoplegia in the first days of the illness, rapidly changing to a hemiplegia and later to a quadriplegia with involvement of the eye muscles. He had received no medical treatment from the family physician, yet a few weeks later every vestige of paralysis had disappeared except a slight affection of the deltoid, and that eventually cleared up. Complete recoveries in apparently hopeless cases were not uncommon in this epidemic without any treatment and should be regarded as a control in recording remarkable results by new therapeutic methods. With due appreciation of results from Doctor Zingher's method only a complete report of all methods can give a final knowledge of their value.

It would be interesting to hear when Doctor Frauenthal, whose lines of active treatment were especially directed to the second, or convalescent, stage, and to the stationary, or chronic, stage, believed it time to begin his various lines of treatment. This was the puzzling feature of treatment in the later stages of infantile paralysis. Each case had to be settled upon its own evidence. All agreed that much harm was done by overenergetic treatment causing needless fatigue.

For many years the treatment of chronic cases of poliomyelitis had been carried on more or less carefully in every neurological clinic and dispensary with disappointing and unsatisfactory results. The reason was that treatment was attempted in cases when this was possible only with a large force of assistants and plenty of time and ample appliances for individual work. Only recently had money been available to provide electrical apparatus and trained experts to direct thorough work in muscle training and massage. Faradism had for many years been recognized as useful only for diagnosis; it is useless for purposes of treatment because paralyzed muscles do not react to a faradic current. Many physicians and more parents had attempted to use it because a faradic battery was cheap. No cheap battery should be used because the coils of coarse wire of cheap batteries caused much pain. A coil of 1,000 yards of fine wire

was, of course, quite satisfactory. It was with the galvanic or the sinusoidal current that one may hope to gain results. Many failed in treatment of paralysis of back and shoulder muscles where they got fair results in the muscles of the extremities because it was easier to make applications to the proper points. Doctor Noyes told of improvement in a case of deltoid paralysis by use of a well known type of child's velocipede worked by the arms. The value of massage and muscular exercise in all weak or powerless muscles was very great. A visit to Central Park on any afternoon will bring to the attention of one who watches children a large number of velocipedes, tricycles, or "scooters" worked by the arms, legs, one leg, or the back, that offer an opportunity for exercise of various groups of muscles under the guise of play. Such toy vehicles strengthened weak or crippled children because they coordinate many muscles in different parts of the body and bring about substitution of one group of muscles for another. Strength was gained unconsciously and, what was more important, there was a stimulation of voluntary impulses. Play was the keynote to the muscular development of the infant, and the same thing was true in reeducation of muscles that had been damaged by disease.

The study of crippled children should be carried out on a far broader plane than hitherto. Special opportunities to examine the mentality of crippled children in the public schools of the city had demonstrated many important facts. How did a crippled child differ from a normal child? A child suffering from Pott's disease or hip joint disease represented a rather fixed type. Three characteristics were shown: the deformity with a special sensitiveness due to the deformity; the temperament modified by long continued suffering, and an element that is perhaps common to any tuberculous condition. Cerebral paralyses are of a very different type. Rarely was any child mentally normal who was paralyzed from a lesion of the brain. Most of them showed marked retardation if not actual deficiency. Often they manifested epilepsy. The child crippled from poliomyelitis might resemble in his makeup either of these two groups. If it was a spinal case he might show characteristics of the first, but we had learned in the recent epidemic as never before that the brain was more frequently affected than was realized. The affection was general in many cases. What we formerly considered the rather rare cases of polioencephalitis were now known to be fairly common. These were the children who were likely to become not only crippled but mentally defective. Unless special care was taken they would be retarded in school even if only partially paralyzed. Much care must be taken that the cripples from the recent epidemic have proper care in the public schools. This means not only their right to study but their right to play, for a child's education is gained in many ways on the playground.

Dr. W. M. LESZYNSKY said that with due allowance for the prevailing excitement and the fear that the city institutions would be swamped by the large number of patients requiring active aftertreatment, when we learned that seventy per cent. of these children were under three years of age, it was not a prob-

lem of such magnitude as was at first anticipated. These children were not amenable to the same plan of treatment as that for the older ones. Doctor Leszynsky said he had been interested in visiting a large institution recently where the greatest stress was laid on social service. The mothers were taught that the disease would last a long time, and that the children would require prolonged observation and treatment. Too much controversy had arisen in regard to the use of electricity. In a book recently written by one of the best known orthopedists, the statement is made that the faradic current is to be preferred to the galvanic current in treatment. He did not take into consideration, however, the fact that paralyzed muscles fail to react to the application of the faradic current. It should always be borne in mind, that while any muscle tissue is present, a contraction can be produced by an interrupted galvanic current.

Doctor FISHER said that he had not noted anything especially new about the paralysis excepting that there had been more cases of the upper than of the lower type. The most interesting point was the laboratory investigation to learn if the disease can be checked in the incipient stage. The aftertreatment is important; knowledge on that point is becoming complete.

Dr. B. M. BRIGGS said that while making a post-mortem examination of a painter who died suddenly of gripe in the height of the epidemic, he had found the pathology of gripe to be universal exudation. Since then he had taken that as a working hypothesis. Gripe had varied forms. This summer poliomyelitis was simply a varied form of gripe. Owing to the damp warm weather, the exudate became larger. The exudate of gripe comes usually through the fauces first and then through the bowels, but when it becomes copious it exudes in any canal. Sometimes it exudes in the spinal canal, especially in young children fed on boiled milk, which is the most binding thing on earth and prevents the usual exudation. If Nature is interfered with in one way, she will rebel in another. The exudate comes in many ways. This summer almost everybody had gripe in one or another form—some, the form of poliomyelitis.

Doctor Briggs said that he had had very satisfactory results in poliogrippe from giving castor oil, not as a cathartic but for its medicinal effect; then quinine in large doses. For the second effects, give iodine, Donovan's solution, and guiac, in generous doses. This will almost always abort paralysis. Try the gripe diagnosis of universal exudation as a working hypothesis.

Doctor DE KRAFT said that he had been very much interested in Doctor Zingher's remarks, particularly in the description of the embolic nature of the lesion in the nerve cells. Doctor Zingher attributed some of the results obtained from the use of his serum to the bringing about of an active phagocytosis. Active phagocytosis can also be brought about by means of concentrated electric light. If the concentrated light from a carbon filament lamp which has a reflector is applied to the skin of the back for twenty minutes, a definite degree of redness can be produced. This redness means an increase in the activity of the

circulation; and if an active hyperemia in the circulation in the neighboring vascular territory is induced the circulation in the deeper structures is necessarily influenced. With this idea in mind, he had applied the concentrated electric light to the full length of the spine with the object of producing a profound hyperemia. In addition to this, he had applied the light in acute cases to the abdomen, chest, and throat. A nurse applied the light in the manner described every four hours to the spine for twenty minutes and then to the abdomen for twenty minutes. In consequence the temperature went down and the respiration and pulse became normal. In one case with bulbar symptoms, they disappeared and the child recovered without a trace of paralysis.

A child who had been in the hospital seven weeks and could not sit, stand, or walk, was sent to Doctor de Kraft about three weeks ago. The light was applied from a 500 candle power incandescent lamp to the back for twenty minutes, and then to the abdomen for the same period. When he was taken home in an automobile after the first treatment, he slept all the way home, and remained asleep from noon until seven in the evening, when he was roused to be fed. He then went to sleep again and remained asleep until seven the next morning. The next day, Wednesday, the child walked about the room. The treatment was given six times. Then, in addition, the wave current was applied with a spinal electrode one inch wide and eight inches long. This double treatment was given six times every other day. There is no indication of paralysis apparent at the present time except that when he is sleepy he drags one foot a little.

The wave current, applied with a narrow spinal electrode and a fairly long spark, fulfills a definite purpose in restoring the circulation of the nervous structure and in reducing inflammatory products. But no worse dictum was ever promulgated than that when muscles do not respond to the faradic current, the interrupted galvanic should be used. Degenenerating muscles cannot be exercised in this manner without definite harm. The nervous continuity between the muscles and the central nervous system cannot be restored by applying electric stimulation to the paralyzed muscles. If powerful muscular contraction is induced in de-generating muscles in poliomyelitis or any other disease, the muscles are fatigued and are sure to be injured. After the more acute processes have subsided and the central lesion has cleared up, a mild sinusoidal current to the muscle may then be employed with benefit. If electricity is to be used at all in the treatment of poliomyelitis, it should be applied with a definite idea of the lesion and with a proper understanding of the physiological effects of the agent.

Doctor ROPER, replying to an inquiry as to whether any of his patients had had the tonsils removed prior to the onset of the disease, said that only two had had a previous tonsillectomy, and these recovered without paralysis. Most of the children were too young to have had tonsillectomies.

In answer to a question regarding the conditions in the gastrointestinal tract, he said the usual swelling of the Peyer's patches and the involvement of the



mesenteric lymphatic glands was present. A streptococcus corresponding with that found in tonsils was isolated from the latter, but no purulent foci were found.

Doctor Rosenow's impression is that the disease is fairly universal and the cause commonly present and not confined to epidemics. It is his impression that isolated cases of Bell's palsy and other nerve lesions are probably infections by the same organism. He believes that they are all manifestations of the activity of a streptococcus which has a special affinity for nerve tissue. As to preventive measures, nothing has been accomplished. A vaccine was made and tried on some of the children, but enough of this work was not done to reach conclusions.

Dr. HENRY W. FRAUENTHAL, referring to the training of the muscles, thought that quicker and better results were obtained by performances before a mirror, concentrating the mind on the muscle movements, than by passively going through the movements. With regard to the exercises performed in a bath, in a book published by him in 1914 on Infantile Paralysis, he laid considerable stress on entertaining children while in the bath with floating toys, and having the child make an effort with the paralyzed arm and thus obtain voluntary movements. With regard to the place of muscle education in the treatment of the cases in the present epidemic, he laid much stress on the fact that seventy-five per cent. of the children were under three years of age; hence they cannot do the exercises. Still, the twenty-five per cent., or 1,000 cases, affords abundant material for this type of work.

As to the time to begin treatment of these cases, in previous epidemics before the eight weeks' quarantine he had personally begun treatment as soon as the temperature was normal, or from eight to ten days after the attack. This method was followed out in one of the Board of Health hospitals in this city by one of the orthopedic surgeons. In the effort to protect patients from contracting deformity, in most of the institutions, only the foot drop was considered and the foot placed in plaster of Paris cast at a right angle to the leg. In many cases the contraction of other muscles and groups of muscles was overlooked. He had seen cases in consultation in which a sandbag was placed under the knees to make the child comfortable and permit contraction of the hamstring group of muscles. In other cases, the knee was allowed to rest on the bed externally rotating the thigh and producing contraction of the external rotators and paralysis of the psoas and iliacs and internal rotators. He feels assured that if the patient in bed manipulates the limbs through a normal range of motion, no contraction would take place. The pain and neuritis could be relieved by hot baths of about ten minutes' duration, and also by electric light baths. Morphine should never be given for these pains.

Dr. ZINGHER, in closing the discussion, said that diagnostic punctures in suspected cases of poliomyelitis were important. Preventive vaccines had not yet established a definite relationship between attenuated streptococcus and the disease itself. Much remained to be cleared up.

## THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Stated Meeting, Held December 18, 1916.*

The President, Dr. THOMAS S. SOUTHWORTH, in the Chair.

### Faulty Food Habits of Delicate Children.—

This paper, by Dr. W. R. P. Emerson, was published in the February 24th issue of the JOURNAL. Doctor Lusk said that it was interesting to see that there is now a demand for the caloric tables of food-stuffs published by Atwater. Food values are not difficult for intelligent persons to understand, but it is difficult for the uneducated to do so. At the same time, the importance of the food problem is greater today than any other economic problem in the world, for frequently more than half the wages of the poor goes for food. If each inhabitant of the United States spent five dollars a month for food, it would amount to \$6,000,000,000 per annum, which is about twice the sum of the gross earnings of all the railroads of the United States. Though we constantly hear of laws for the regulation of the railroads, we hear practically nothing concerning the regulation of the food problem. The cost of the transportation of food by the railroads enters into the cost of food to an extent of only four per cent., so that this factor is a relatively insignificant matter. If the nation were fed on beans alone, it would cost more than \$2,500,000,000 per annum. We are dealing in tremendously significant figures, and we are also dealing with a degree of popular ignorance which is unfathomable.

Dr. H. R. M. LANDIS, director of Phipps Institute, Philadelphia, said that in his own work in Philadelphia, he has for many years been concerned chiefly with various phases of tuberculosis, and he has become convinced that one of the surest methods of preventing this disease and many others depending on chronic infections is the improvement of nutrition. A number of observations had been made at Phipps Institute, pointing strongly to the fact that if this one fault could be corrected, which is not always due to poverty, but often to a lack of knowledge of food values, much tuberculosis could be prevented. The proper dietary should be available from the onset, and it is of more importance during the period of childhood than any other.

Doctor Landis said that he had the privilege of conducting the first open air school in Philadelphia, in which the children were placed on the roof of the house and given a lunch of soup, one meat, vegetables, and milk. There was not the slightest doubt, in his opinion, that these delicate or pretuberculous children, even the tuberculous ones from the clinical standpoint, can be transformed from subnormal to normal by proper feeding. Later on, when conducting a tuberculosis class for adults, it became very evident that where the people were not improving it was often found that the food problem was at the bottom of the matter. It was due most often not to poverty, but to lack of knowledge as to how to obtain the proper food within their means. In an intensive study of garment workers, in which a study of the living conditions as well as the working environment was made, it was found that there was a distinct relation between the occurrence of

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

tuberculosis and dietary errors. Among the men who were definitely tuberculous or who showed evidences of being in ill health, the percentage of those who were getting insufficient food or food at irregular intervals was twice that of those properly nourished. Among the women the percentage of those below par who were getting an insufficient amount of food was three times as high.

The last study was an intensive study of the dietetic habits of dispensary patients. Families of four nationalities were selected. They were divided in groups of three families each—three Italian, three negro, three Russian Jewish, and three Polish. The nurse went into the homes and took a complete inventory of all the family possessed in the way of food. This was continued for two weeks, and at the end of fourteen days the amount on hand was subtracted. The families were reduced to men per family, according to the method pursued by Atwater, using 3,400 calories as the standard for a man at hard work.

The Italian families averaged nineteen cents per man per day; the negro families, twenty-two cents per man per day; the Russian Jewish, twenty-four cents; the Polish, thirty-four cents. Of the three components that make up the dietary, the Italians showed a high percentage of carbohydrate; the negro families showed a high excess of fat; the Russian Jews had nearly the proper balance; the Polish families came the nearest to obtaining a properly balanced diet but in order to get it, they were using many articles of food that had little or no value and were serving no good purpose.

The result of these studies showed that these families were getting only eighty per cent. of what they should in the way of nourishment. Whether the cheap and high carbohydrate diet could be used in another race is problematical. The various races seem to have certain idiosyncracies which it is difficult to break through, especially in the case of the adults. Yet, taking it by and large, their diets are approximately the same.

The best solution of the dietary problem is probably an educational one. One of the most efficient methods of teaching food values and how best to expend money for food is to have some centre where people can be educated along these lines. In Michigan the public school is utilized nearly all day long for educational purposes. After the regular school hours classes are held for the mothers of the scholars and the various phases of household economics are taught. Following Doctor Emerson's plan it would be easy to teach the mothers and relatives of the children fairly accurate standards. Doctor Landis concluded by saying that he believed that in time such a plan would be generally followed.

Last summer, during a strike in New York, he was asked to furnish a dietary for the striking families who were getting \$3 a week. By taking the very cheapest diet it was found that by giving cereals, syrup, oleomargarine, bread, and milk, a family of five—two adults and three children—could be supported for forty-five and one half cents per diem, and that they could receive 10,000 calories.

(To be continued.)

*Universal Military Education and Service. The Swiss System for the United States.* By LUCIEN HOWE, Fellow of the Royal Society of Medicine; Member of the Royal College of Surgeons; Professor Emeritus of Ophthalmology. New York and London: G. P. Putnam's Sons, The Knickerbocker Press, 1916. Pp. xiii-138.

From its title one would hardly think that this book was of medical interest, but on examination it appears that there is an intimate connection between military education and the physical welfare of the people. Doctor Howe has made a careful study of the Swiss and Australian systems of military training and of the effects of this training on the health and intelligence of the citizens as well as the results from a strictly military point of view. A perusal of the volume will convince almost any physician of the desirability of adopting the Swiss system of training, or something similar to it, purely from the medical point of view without any consideration of the military advantages which will accrue from the adoption of the system.

*Chirurgie des maladies de l'oreille, du nez, du pharynx, du larynx. (Otosapharoscopie-bronchoscopie) Techniques et Indications.* Par R. CLAUDE, Chef du Service d'oto-laryngologie à la Clinique Pasteur de Bordeaux, et A. VANDENBOSSCHE, Médecin-major de 1<sup>re</sup> classe, Répétiteur de Chirurgie à l'Ecole de Lyon. 171 Figures. Préface du Doctor MIGNON, Médecin-Inspecteur général du Service de Santé de l'Armée. Paris: A. Maloine et Fils, 1916. Pp. 412.

This work has the defects so common in publications coming to this country from Europe, namely, cheap paper cover, uncut leaves, and a paucity of really good illustrations. It is difficult for a single volume such as this of 407 pages to cover comprehensively the surgery of the ear, the nose, the pharynx, and the larynx, especially when it undertakes to include in its scope the esophagus and stomach. It must be said, however, that the text is concise and clear so as to be of undoubted value to the medical student or to one seeking in a general way to compare American and French opinions, methods, and technic.

*Nature and Nurture in Mental Development.* By F. W. MOTT, M.D., F.R.S., F.R.C.P. Pathologist to the London County Asylums, Consulting Physician to Charing Cross Hospital and the Queen Alexandra Military Hospital, Formerly Fullerian Professor of Physiology Royal Institution. With Diagrams. New York: Paul B. Hoeber, 1915. Pp. xii-151. (Price, \$1.50.)

This is a small volume very readable in style and most abundantly charged with valuable facts. These are so arranged and presented that they form a practical aid for all those seeking information and guidance in child welfare, while their scientific character makes them valuable also in this accessible form, for the busy physician.

The structure and function of the nervous system are briefly described. Emphasis is laid upon the effect of environment and the possibility of intelligent control of that factor before birth, at birth, or later in the child's life. Inherited mental tendency for strength or weakness is stressed rather than inheritance of specific factors in health or disease. This tendency demands social attention in order to strengthen the weak points and remove environmental factors which would prove detrimental.

The brain is conceived as an organ of marvelous potentiality which is man's social heritage even more than those external racial products, such as language and other cultural acquisitions. Mott illustrates the range of this potentiality in the cases of Helen Keller, Laura Bridgman, and Marie Huertin, whose brains were reached and developed through indirect association paths when ordinary sense avenues had been cut off.

The author keeps clearly the distinction between physical activity and mental stimulus behind it though he has not

discussed the physical factors to any extent. His reference to the action of chemical hormones upon the nervous system is suggestive of the further elaboration of the interaction of mind and body, which awaits continued research.

## After Office Hours

Did Kipling ever write of the eel? If not, there is a text for him in, "The Story of the Eel," in the *March Century*.

\* \* \*

*Popular Science Monthly* is a mine of information for the layman. The March number is so full of good things that discrimination is impossible, but we will call especial attention to the wealth of illustrations.

\* \* \*

If our position in the great war is not quite clear to you, read the editorial page and, "Our Challenge to Germany," in *Collier's* for March 3rd. There are no ambiguities in that magazine; the editors think clearly, and speak forth what they think in no uncertain tones. The *outré Oriental* is with us again, too.

\* \* \*

"The Phototropic Sense in Plants" is an unattractive title, but the article of that name in the *Scientific American Supplement* for February 17th is the sort of thing that a physician can read with interest and then turn over to the younger generation. There are many pictures which illustrate the writer's meaning so clearly that it is as good as an illustrated lecture.

\* \* \*

*Munsey's* for March has too much of its space occupied by serials, those *bêtes noires* of the occasional magazine reader. As always, there are some delightful pictures of calcium charmers; the stage gossip is insipid, but at least the dramatic critic gives Lord Dunsany his due. There is one good story, "Thin Ice."

\* \* \*

We who as boys have many an evening crept breathlessly through the African bush with Allan Quartermain, lain fast bound in some savage kraal while the natives disputed who should kill us, or thrilled to the marrow at the *outré* rites of some *nyanga*, will be touched to hear that the mighty hunter is no more. The *Literary Digest* for February 10th gives his real name, mentions a few of his exploits, and narrates the manner of his passing into the Walhalla of brave men.

\* \* \*

In the *Smart Set* for March, Mr. H. L. Mencken calls attention to his hundredth month as literary critic for the magazine. A hater of hypocrisy, a prodler of the Puritan, an enemy of the uplift, and a promoter of the diaphragm stimulating chuckle, Mr. Mencken's word can always be taken in literature. In the past he has wasted much of his talent discussing best sellers. However amusing his diatribes at the school of Pollyana and Robert W., it is interesting to know that henceforth we are to have a monthly meal of real literary appreciations from him.

\* \* \*

"From the Life": Sir Watson Tyler, is the best story in the *Century* for March. It is reminiscent of Arnold Bennett in its meticulous inquiry into the half tones of human behavior, but the author lacks his prolixity and is therefore the more interesting. The story tells of the shy, overgrown son of a family of wealth, lacking in the subtler shadings of refinement; he falls in love with a girl of whom his family disapprove and there ensues one of those swift, passionate conflicts that can only be between relatives.

\* \* \*

The *Psychogram* is published once a month by the Medical Department of the New Jersey State Hospital, Greystone Park. The February number is much better than the last number we were fortunate enough to see, in that it contains more material addressed directly to the patients themselves, which should be the goal of such magazine. The original poems by patients also offer them a field for expression of which many seem to take advantage. Our idea of a magazine of this sort would be one composed of two parts, material written by patients and material written to patients.

*Harper's Bazar* for March has a good cover design. The pictures of "Southern California in Springtime" will make us poor Easterners want to leave the land of fogs and east winds for the country where they have climate instead of weather. The magazine has a picture of Maude Adams in her new play and underneath the editor informs the public, with delightful originality that she is "pathetically winsome."

\* \* \*

Jokes have been written about credit and many a retail dealer has felt that there might have been a tragedy built about it. This has remained for a writer in *Harper's* for March to do. Mary E. Wilkins Freeman, in "The Cloak Also," tells how the dream of a life time was realized, only to become a tragedy. It is the best thing in the magazine. "The Breach in the Wall," tells of the insidious way a lax environment nibbles at the edges of morality. "Bixby's Bridge," is a not very effective handling of the supernatural.

## Meetings of Local Medical Societies

MONDAY, March 12th.—New York Ophthalmological Society; Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society.

TUESDAY, March 13th.—New York Academy of Medicine (Section in Neurology and Psychiatry); Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); New York Obstetrical Society.

WEDNESDAY, March 14th.—New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Rochester Academy of Medicine; Brooklyn Medical Association.

THURSDAY, March 15.—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn; Esculapian Club of Buffalo; New York Celtic Medical Society.

Friday, March 16th.—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society; Alumni Association of Roosevelt Hospital; Saratoga Springs Medical Society.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending February 28, 1917:*

AKIN, C. V., Assistant Surgeon. Relieved from duty at the Hygienic Laboratory, Washington, D. C.; ordered to proceed to the Marine Hospital, Stapleton, N. Y., for duty.

AUSTIN, H. W., Senior Surgeon. Granted one month's leave of absence from March 3, 1917.

BAHRENBURG, L. P. H., Surgeon. Granted five days' leave of absence on account of sickness from February 13, 1917.

BOLTON, JOSEPH, Assistant Surgeon. Relieved from duty at Cincinnati, Ohio; ordered to proceed to Ellis Island, N. Y., for duty.

BROWN, B. W., Surgeon. Relieved from special duty at Augusta, Ga.; ordered to proceed to Ellis Island, N. Y., for temporary duty.

CARTER, H. R., Assistant Surgeon General. Ordered to report to the chairman of a board convened at the Bureau, Tuesday, March 6, 1917, for physical examination.



CHRISTIAN, S. L., Assistant Surgeon. Relieved from duty at the Marine Hospital, New Orleans, La.; ordered to proceed to Norfolk, Va., for duty.

DESAUSSURE, R. L., Assistant Surgeon. Relieved from duty at Hygienic Laboratory, Washington, D. C.; ordered to proceed to St. Louis, Mo., and to Hillsboro, Texas, for studies of rural sanitation.

DYER, R. E., Assistant Surgeon. Relieved from duty in plague eradication work at New Orleans, La.; ordered to proceed to Spartanburg, S. C., for duty in investigations of pellagra.

FRICKS, L. D., Surgeon. Relieved from duty at Hygienic Laboratory, Washington, D. C.; ordered to proceed to Victor, Mont., for investigation of Rocky Mountain spotted fever.

KNIGHT, C. P., Passed Assistant Surgeon. Relieved from duty at Hygienic Laboratory, Washington, D. C.; ordered to proceed to New Orleans, La., and take temporary charge of the Marine Hospital.

MARSHALL, E. R., Passed Assistant Surgeon. Relieved from duty at Providence, R. I.; ordered to proceed to Ellis Island, N. Y., for duty.

MATHEWSON, H. S., Surgeon. Granted seven days' leave of absence from February 18, 1917.

ROBERTSON, MCG. H., Surgeon. Relieved from duty at Hygienic Laboratory, Washington, D. C.; ordered to proceed to Fortress Monroe, Va., and assume charge of the Cape Charles quarantine station.

ROBINSON, D. E., Surgeon. Relieved from duty at Hygienic Laboratory, Washington, D. C.; ordered to proceed to Providence, R. I., and assume charge.

ROTH, G. N., Technical Assistant. Ordered to proceed to Philadelphia, Pa., for duty in work relating to the standardization of drugs.

SAFFORD, M. V., Assistant Surgeon. Directed to attend the meeting of the Committee on the Demonstration of Community Control of Tuberculosis, at New York, N. Y., March 9, 1917.

SAYERS, R. R., Assistant Surgeon. Relieved from duty at Hygienic Laboratory, Washington, D. C.; ordered to proceed via St. Louis, Mo., to Okmulgee, Okla., for studies of rural sanitation.

SLAUGHTER, W. H., Assistant Surgeon. Relieved from duty at Stapleton, N. Y.; ordered to proceed via Washington, D. C., and St. Louis, Mo., to Okmulgee, Okla., for studies of rural sanitation.

SMITH, F. C., Surgeon. Directed to attend the meeting of the Committee on the Demonstration of Community Control of Tuberculosis at New York, N. Y., March 9, 1917.

TOWNSEND, J. G., Assistant Surgeon. Relieved from duty at Hygienic Laboratory, Washington, D. C.; ordered to proceed via St. Louis, Mo., to Okmulgee, Okla., for studies of rural sanitation.

WAGENBACH, W. F., Assistant Surgeon. Relieved from duty at Spartanburg, S. C.; ordered to proceed to New Orleans, La., for duty in plague eradication measures.

WALLER, C. E., Assistant Surgeon. Granted one month's leave of absence on account of sickness, from February 7, 1917.

WILLIAMS, L. L., Jr., Assistant Surgeon. Relieved from duty at Hygienic Laboratory, Washington, D. C.; ordered to proceed to New Orleans, La., for duty in malaria investigations.

WITTE, W. C., Assistant Surgeon. Ordered to proceed to Irving, Texas, to address meeting on rural sanitation.

#### *Boards Convened.*

Board of commissioned medical officers convened at the Marine Hospital, Stapleton, N. Y., for a medical survey of a keeper in the U. S. Coast Guard to determine his physical condition, board to meet at call of chairman. Detail for the board: Senior Surgeon G. W. Stoner, chairman; Surgeon M. K. Gwyn, recorder.

Coast Guard Retiring Boards convened on February 27, 1917, as follows: Marine Hospital, Savannah, Ga. Members of the board: Surgeon W. J. Pettus, Passed Assistant Surgeon J. R. Ridlon. Marine Hospital, Baltimore, Md. Members of the board: Surgeon C. W. Vogel, Assistant Surgeon J. D. Reichard. Marine Hospital, Detroit, Mich. Members of the board: Surgeon H. W. Wickes, Assistant Surgeon R. W. Hart. Marine Hospital, Chicago, Ill. Members of the board: Surgeon J. O. Cobb, Assistant Surgeon R. R. Spencer.

## Births, Marriages, and Deaths

### *Born.*

GAMBLE.—In Roland Park, Md., on Sunday, February 18th, to Dr. James L. Gamble and Mrs. Gamble, a daughter.

### *Married.*

BURK-DENNIS.—In Painfield, N. J., on Wednesday, February 21st, Dr. Frank L. Burr, of Rocky Hill, Conn., and Mrs. Floretta Dennis.

MCCONAUGHEY-O'NEILL.—In Wayne, Pa., on Wednesday, February 28th, Dr. James Collier McConaughy, of Philadelphia, and Miss Edna N. O'Neill.

SMITH-SMART.—In Lutherville, Md., on Saturday, February 17th, Dr. F. Janney Smith, of Detroit, Mich., and Miss Jeannie Wilmer Smart.

### *Died.*

ANDERSON.—In Rochester, Minn., on Friday, February 23rd, Dr. Perry Liewellyn Anderson, of New York, N. Y., aged fifty-seven years.

BAILEY.—In South Warwood, W. Va., on Monday, February 19th, Dr. Millard F. Bailey.

BURNS.—In Fremont, Mich., on Friday, February 23rd, Dr. George Burns, aged forty-one years.

COCHRAN.—In Fort Myers, Fla., on Thursday, February 15th, Dr. John F. Cochran, aged seventy-one years.

CONKEY.—In Waterbury, Conn., on Sunday, February 25th, Dr. Caroline Root Conkey, aged sixty-seven years.

CUNNINGHAM.—In Cambridge, Mass., on Tuesday, February 27th, Dr. Thomas E. Cunningham, aged twenty-six years.

DILLON.—In Manchester, N. H., on Thursday, February 22nd, Dr. Richard Hastings Dillon, aged fifty-one years.

FOOKS.—In Laurel, Del., on Thursday, February 22nd, Dr. John W. Fooks, aged sixty-five years.

GLIDDEN.—In Danville, Ill., on Monday, February 19th, Dr. Stephen Clifton Glidden, aged forty-seven years.

GOCHENAUER.—In San Diego, Cal., on Tuesday, February 20th, Dr. David Gochenauer, aged seventy-six years.

GORTON.—In Summit, N. J., on Sunday, March 4th, Dr. Eliot Gorton, aged fifty-three years.

GREENE.—In New York, N. Y., on Thursday, March 1st, Dr. Simon H. Greene, aged thirty-nine years.

KOONTZ.—In New York, N. Y., on Monday, March 5th, Dr. Alexander F. Koontz.

LANE.—In Boston, Mass., on Thursday, February 15th, Dr. A. C. Lane, of Woburn, Mass., aged sixty-six years.

LYON.—In Brockton, Mass., on Wednesday, February 21st, Dr. Arthur Vinal Lyon, aged fifty-four years.

MCCARTHY.—In Lewiston, Me., on Monday, February 19th, Dr. Henry J. McCarthy, aged thirty-eight years.

MCCOLLIN.—In Philadelphia, Pa., on Saturday, February 24th, Dr. S. Mason McCollin, aged seventy-three years.

MCLAUGHLIN.—In Glens Falls, N. Y., on Sunday, March 4th, Dr. Charles S. McLaughlin, aged sixty-one years.

MOFFAT.—In Ithaca, N. Y., on Sunday, February 18th, Dr. John L. Moffat, aged sixty-three years.

MORRIS.—In Wheeling, W. Va., on Sunday, March 4th, Dr. John W. Morris, aged sixty-four years.

NAYLOR.—In Plattsburg, Mo., on Monday, February 19th, Dr. Alva Naylor, aged forty-seven years.

O'BRIEN.—In New York, N. Y., on Thursday, March 1st, Dr. James Aloysius Joseph O'Brien, aged seventy-one years.

PAKKER.—In Pawtucket, R. I., on Sunday, February 18th, Dr. Edward S. Parker, aged forty-two years.

RUHL.—In New York, N. Y., on Sunday, February 25th, Dr. Henry Ruhl, aged seventy-one years.

SMITH.—In Pittsburgh, Pa., on Friday, February 23rd, Dr. Lewis Watson Smith, aged forty-four years.

STRAIGHT.—In Bradford, Pa., on Tuesday, February 20th, Dr. A. Miner Straight, aged seventy years.

TEAGUE.—In New York, N. Y., on Thursday, February 22nd, Dr. Edward P. Teague, aged forty-one years.

TOBIN.—In Tyrone, Pa., on Tuesday, February 13th, Dr. Thomas Tobin, aged sixty-two years.

WHITE.—In New York, N. Y., on Wednesday, February 21st, Dr. Whitman Vassel White, aged eighty-four years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 11.

NEW YORK, SATURDAY, MARCH 17, 1917.

WHOLE No. 1998.

## Original Communications

### THE MEDICAL CORPS OF THE NAVY.

*The Navy Needs More Medical Officers.*

BY SURGEON R. C. HOLCOMB, U. S. N.,  
Washington, D. C.

On August 29, 1916, to provide for the large increase in the personnel of the Navy, Congress made provision for a corresponding increase in the Medical Department. Of special interest to the physician is the Naval Medical Corps, and the medical division of the Naval Reserve Force.

*The Medical Corps.*—This corps, before the passage of the act referred to, consisted of 345 medical officers. The increase provided for a corps of 683. As there are at the present time over 300 vacancies, the present offers a most favorable time to enter this corps. The age limit for appointment in this corps is fixed by law at from twenty-one to thirty-two years.

The Navy is a special field of medical work, eminently scientific in character, offering many lines of research and progress. The Surgeon General of the Navy has prepared a pamphlet entitled *The Navy as a Special Field for Medical Work*, which may be obtained by any person interested, by addressing a letter to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C. This pamphlet describes the character of the work of the naval medical officer in greater detail than I can attempt in this brief article.

The examination for appointment consists of a physical examination and a professional examination.

The physical examination is thorough and searching. Candidates for the regular corps are required to meet a prescribed standard, and to possess a reasonably robust physique. No candidate is accepted as a good risk unless in the opinion of the examining board his physical condition warrants an expectation of active service until he reaches the retirement age.

The professional examination is comprehensive, but should be within the attainments of any well qualified physician. This examination is divided into two parts. The first examination is for enrollment in the Naval Reserve Force. If successful the candidate then attends a course of instruction at the Naval Medical School on full pay and allowances, and upon completion of the course takes his final examination for appointment in the Medical Corps of the Navy.

The pay of an assistant surgeon on shore duty is \$2,000 per annum, with quarters, or an allowance for quarters, when quarters are not supplied by the Government, amounting to \$432. At sea the assistant surgeon receives \$2,200, his quarters and attendance being furnished him aboard his ship. Every five years the pay of an officer increases ten per cent., though not to exceed forty per cent., calculated on the annual base pay of his grade; but the pay of a medical director with the rank of captain is limited to \$5,000, that of medical inspector with the rank of commander to \$4,500, and that of surgeon with the rank of lieutenant commander to \$4,000. The pay of a medical director with the rank of rear admiral is \$6,000 for the lower half, \$8,000 for the upper half of those in that grade.

The naval service, by reason of its world wide intercourse, requires in its personnel the instincts, discernment, and conduct of a gentleman. As officers of the Navy come into contact with the most cultivated and interesting people of every country, it is essential that personal qualifications should enter into the determination of general suitability for the service. The wide range in the character of the work and responsibilities, calls for high professional standards and ready adaptability. In connection therewith the candidate's preliminary education should be of the best.

*The Naval Reserve Force.*—To augment the regular Navy, Congress has provided a Naval Reserve Force. A candidate for enrollment as a medical officer is first examined for enrollment in the provisional grade of assistant surgeon, rank of lieutenant (junior grade), United States Naval Reserve Force. Afterwards, if his enrollment is accomplished, should he so desire, he makes request for active duty for confirmation in grade, and after the completion of a minimum period of three months' active service at sea he is again examined, and if found qualified, is recommended for a commission as an assistant surgeon, United States Naval Reserve Force.

Legislation establishing the United States Naval Reserve Force is in substance as follows: A member must be a citizen of the United States. A member obligates himself, and may be ordered to serve in the Navy throughout a war or during the existence of a national emergency declared by the President, should either arise during his term of enrollment. A member enrolls or reenrolls for a term of four years. In time of peace, and when no national

emergency, exists, a member may be discharged upon his own request, upon reimbursing the Government for any clothing gratuity that may have been furnished during his current enrollment.

A member is required to take the oath of alle-

giance to the United States, or promoted to a higher rank therein, unless he shall have been examined and recommended for such appointment, commission, or promotion by a board of three naval officers not below the rank of lieutenant commander, nor until



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giance to the United States. A member is given a provisional grade—assistant surgeon—upon first enrollment in accordance with his qualifications determined by examination. A member, after enrolling, may, in time of peace, upon his own request, be assigned active duty in the Navy for such periods of instruction and training as may enable him to qualify for and be confirmed in grade. For confirmation in grade a member must serve the minimum amount of active service required, three months in one period, or in periods of not less than three weeks

he shall have been found physically qualified by a board of medical officers to perform the duties required in time of war, except that former officers and midshipmen of the Navy who shall have left the service under honorable conditions and who shall have enrolled in the United States Naval Reserve Force may be appointed in the grade and rank last held by them without examination other than the physical examinations herein prescribed.

A member receives retainer pay of twelve dollars per annum while enrolled in a provisional grade.



BACTERIOLOGICAL LABORATORY OF THE UNITED STATES NAVAL SCHOOL, WASHINGTON, D. C.

each year, and must qualify by examination under regulations prescribed by the Secretary of the Navy.

No person shall be appointed or commissioned an officer in any rank in any class of the United States

provided he makes such reports concerning his movements and occupation as may be required by the Secretary of the Navy. After confirmation in grade his annual retainer pay is two months' base



pay of the corresponding rank in the Navy. Retainer pay is in addition to any pay to which a member may be entitled by reason of active service. Members of the Volunteer Naval Reserve do not receive any retainer pay.

A member who reenrolls for a term of four years, within four months of expiration of last complete enrollment, and who has performed the minimum amount of active service required during the preceding term of enrollment, for each reenrollment receives an increase of twenty-five per cent. of his base retainer pay. A member who completes twenty years of service, and who has performed the minimum amount of active service each term of enrollment, on his own application will be retired with rank held, with a cash gratuity equal to the amount of his retainer pay during his last term of enrollment.

A member may accept employment in any branch of the public service except as an officer or enlisted man in any branch of the military service of the United States or any State thereof. A member is subject to the laws, regulations, and orders for the

employed in authorized travel to and from such active service in the Navy.

A distinctive badge or button will be issued to be worn only by members of the United States Naval Reserve Force. A penalty is assigned for unau-



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thorized persons wearing or using this emblem.

A member actively employed receives the same pay and allowances, gratuities, and other emoluments as an officer of the Naval Service on active duty of corresponding rank and of the same length



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government of the Regular Navy only during such time as he may by law be required to serve in the Navy in accordance with his obligation, when on active service at his own request, and when em-

ployed in authorized travel to and from such active service in the Navy. When not actively employed a member is not entitled to pay, bounty, gratuity, or pension, except as expressly provided by the provisions of the act.

When first reporting for active service for training during each period of enrollment officers are credited with a clothing allowance of fifty dollars, except the Volunteer Naval Reserve. In time of

ment and who have performed the minimum amount of active service required at sea, each enrollment may receive promotion to the rank of lieutenant on third enrollment, and to the rank of lieutenant commander on the fifth enrollment, upon performing the minimum amount of active service required at sea in the new enrollment, provided they are found qualified physically and professionally on examination.

The duties of an officer of the Reserve Force are varied, and soon after his appointment he will be given a designated duty in the event of mobilization. Naturally one of the first and very important duties which will arise in connection with mobilization are the duties of recruiting officers. Many new recruits must be examined, officers and men of the Naval Militia will flock to their various rendezvous, all requiring a physical examination prior to muster in. To prepare reserve officers for their duties in this



NURSES' HOME, UNITED STATES NAVAL HOSPITAL, WASHINGTON, D. C.

war or national emergency he is credited with one hundred and fifty dollars, less the amount previously credited, if any, during the current enrollment.

The various grades not above lieutenant commander in rank, corresponding to those in the Navy, are allowed. Officers in the United States Naval Reserve Force rank with but after officers of corresponding rank in the Navy. Officers are commissioned by the President.

Candidates for provisional enrollment are examined physically and professionally by duly appointed medical examiners. The physical examination is thorough. The professional examination comprises the general subjects of medicine, surgery, and hygiene, being mainly oral.

*Confirmation in Grade.*—Assistant surgeons provisionally enrolled in the Naval Coast Defense Reserve, Class 4, United States Naval Reserve Force, or Volunteer Naval Reserve, for duty in the Naval Coast Defense Reserve United States Naval Reserve Force, who apply to the Bureau of Navigation through their commanding officer for permission to perform the minimum amount of active service required at sea for confirmation in grade, and who after completing the active service required request permission to be examined for confirmation in grade, will be issued a permit to appear for examination at a designated place before a statutory board appointed for this purpose.

Medical officers enrolled in the United States Naval Reserve Force shall be appointed in time of peace not to exceed 500 in number. To provide for promotion, medical officers who reenroll within four months after the termination of each enroll-

ment and who have performed the minimum amount of active service required at sea, each enrollment may receive promotion to the rank of lieutenant on third enrollment, and to the rank of lieutenant commander on the fifth enrollment, upon performing the minimum amount of active service required at sea in the new enrollment, provided they are found qualified physically and professionally on examination.

The duties of an officer of the Reserve Force are varied, and soon after his appointment he will be given a designated duty in the event of mobilization. Naturally one of the first and very important duties which will arise in connection with mobilization are the duties of recruiting officers. Many new recruits must be examined, officers and men of the Naval Militia will flock to their various rendezvous, all requiring a physical examination prior to muster in. To prepare reserve officers for their duties in this

connection a Naval Correspondence Course has been established at the Naval Medical School, Washington, D. C., and the reserve officer is given an opportunity to acquire instruction along this and other lines. Reserve officers will also be assigned to duty at navy yards and stations for duty at the yard and on board ship. They will usually not be assigned to a ship until they report at the navy yard. The navy yard will always be at a known location, but a ship moves from place to place and might at the moment of mobilization be inaccessible to the desig-



NAVAL HOSPITAL AT NORFOLK, VIRGINIA.

nated medical officer, and then too it might not be wise to publish broadcast the distribution of the naval forces. Their duties at sea may be an assignment as the junior medical officer of a battleship, or on board a cruiser or scout, and any one of the various types of auxiliaries, of fleet or district activities. These duties require young men, of high temperamental qualifications, ready to assume the responsibilities which result from more or less professional isolation.

There is often much confusion in the minds of medical men with regard to medical service in the Navy. The present war has fixed in the mind of many persons an idea of base hospitals with a busy

## PREVENTION AND TREATMENT OF CANCER BASED UPON X RAY FINDINGS OF DENTAL INFECTION AND THE USE OF AN AUTOGENOUS VACCINE.\*

By SINCLAIR TOUSEY, A. M., M. D.,  
New York.

*Frequency of Cancer.*—One person in fourteen in the state of New York dies of cancer, and the proportion would doubtless be very much greater if it were not for all those who succumb to tuberculosis and other diseases. The underlying cause must be



QUARTERS FOR SICK OFFICERS, UNITED STATES NAVAL COLLEGE AND HOSPITAL, WASHINGTON, D. C.

surgical service as a characteristic of all military medical service. But base hospital camps could only rarely be a part of naval medical service and then in connection with advanced base operations. The greater part of the Medical Corps must be employed with ships. The life is virile and stimulating, both mentally and physically, characterized by ever changing scenes and often filled with rare adventure.

**The Influence of Acidosis on Surgical Procedures.**—W. A. Lincoln (*Annals of Surgery*, February, 1917) says that the points he wishes to emphasize are the possibility of acidosis occurring in many conditions besides diabetes; the necessity for surgeons to have their eyes open to its dangers; the necessity of a proper and continued examination of the urine for acid byproducts, and the danger of a too prolonged starvation in the preparation of patients for operation, especially in the case of children or those suffering from any form of exhaustion.

of very widespread occurrence, for no class, age, or sex is immune. I have always felt that the discovery of the cause might bring about the cure of some, but probably not all cases, and doubtless the prevention of very many cases of cancer.

*Exciting Causes.*—Smoking a clay pipe, hot, dirty, and wet with saliva, might determine the location of a cancer of the lip. A bruise of the breast, or mastitis, or a laceration of the cervix may cause cancer in those regions, and so may an x ray irritation. None of these local causes militate against the theory of the underlying infection as a predisposing cause. Not every person with such local exciting cause manifests cancer. Somewhat analogous are the cases of Colles's fracture followed by painful subperiosteal swelling due to dental infection and cured by extraction of the teeth and an autogenous vaccine.

In the nonmalignant infection we just mentioned

\*Part of a paper read at a meeting of the Roosevelt Hospital Alumni Association, February 26, 1917.





Patients with septic endocarditis due to dental abscess show in the latter a strain of *Streptococcus viridans* which has a selective affinity for the tooth pulp and the endocardium and will experimentally produce corresponding lesions.



FIG. 4.—Dental infection in a case under treatment with the x ray, to prevent recurrence after operation for cancer of the breast. Destruction has taken place around the ends of the roots instead of extending downward from the neck of the tooth when the infection would have been noticed and treated.

My own observations show severe dental infection in all cancer patients so far examined, including the few illustrative cases cited herewith. No complete study of the microorganisms in these abscesses has yet been made; the reports on the cultures so far being *Streptococcus viridans*, nonpathogenic microorganisms; *Bacillus tumefaciens* not found. I hope that the publication of this paper will lead competent authorities to identify all the different organisms in the pus from these dental abscesses in cancer patients and to study the relation of each to the experimental production of cancer. Such research may discover a specific cancer germ or a specific strain, or it may show that inveterate infection with any of the organisms will eventually produce cancer in a certain percentage of cases. While it is not to be supposed that every case of dental infection leads to cancer, the early discovery and eradication of all dental infections will doubtless prevent cancer of the stomach and gallbladder and possibly many cancers of other internal and external organs. The existence of severe dental infection in my cases of cancer of the breast is not to be lightly regarded as a coincidence when the same sort of infection has been proven to be causative of cancer of the stomach.

*X Ray Examination of the Teeth.*—This is vitally important for a person with even trivial symptoms indicating dental infection. It is a precaution against the more serious secondary consequences of which I believe cancer to be one. A patient with cancer should have the teeth radiographed so as to discover and eradicate foci

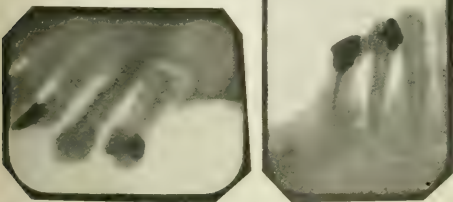


FIG. 5.—Dental infection in a case of cancer of the breast with pulmonary recurrence. Pyorrheal destruction of the alveolar process.

of infection, to study the microorganisms with a view to securing an autogenous vaccine, and to the possible discovery of a specific germ.

*Treatment of Cancer.*—The sooner the dental foci of infection are eradicated the better the chance of

success with operation by the knife or electricity, combined with x ray and radium. An autogenous vaccine will doubtless be indicated in a greater percentage of cancer patients than among the arthritic cases, where the eradication of the dental focus usually overcomes the general infection. The patient's hopes should not be unduly raised, because, even if the autogenous vaccine proves to be a specific, the nature or the stage of the disease may make death inevitable. We see this in many cases of nonmalignant streptococcal infection.

CASE I.—Man aged sixty-seven years, patient of Doctor Cossitt, with cancer of the stomach indicated by Fig. 1. The teeth had long been known to be badly infected but had received no treatment. Radiograms like Fig. 2 showed extensive pyorrhea destruction of the alveolar process and severe apical abscesses. He is now dying from apoplexy, another effect of the dental infection.

CASE II.—Woman aged forty-seven years, patient of Dr. H. C. Coe and Dr. C. N. Dowd, operated upon for cancer of the breast and now under treatment by x ray and radium for deep seated recurrence. Radiograms like Fig. 3 showed severe apical abscesses of an upper bicuspid and a lower molar. Both have been extracted and necrotic areas curetted. The culture was reported by Doctor Sondner to show "*Streptococcus viridans* and nonpathogenic microorganisms and no *Bacillus tumefaciens*." An autogenous vaccine is being administered.

CASE III.—Woman thirty-six years old, patient of Dr. Otto H. Schultze and Dr. C. N. Dowd, operated upon for cancer of the breast and now under x ray treatment to prevent recurrence. The dentist, Doctor Wambold, reported the loss of some of the teeth by pyorrhea; that none of the teeth had had the nerves killed and none showed discoloration, elongation, looseness, tenderness, pain or swelling. To the normal dental tests every tooth appeared vital. Among the radiograms Fig. 4 showed apical infection of both lower centrals.

CASE IV.—Lady forty-five years old, patient of Doctor Runyon. Pulmonary carcinoma following operation for cancer of the breast. Radiograms showed several areas of marked pyorrheal pocketing as in Fig. 5.

I am not yet ready to report upon the results of the eradication of dental septic foci or the administration of an autogenous vaccine in cancer cases. The present article is published for purposes of priority and to bespeak the cooperation of those interested in cancer research.

850 SEVENTH AVENUE.

## FURTHER OBSERVATIONS UPON THE SURGICAL TREATMENT OF PUERPERAL SEPTICEMIA.\*

BY ARTHUR S. BRINKLEY, M. D.,

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Associate Surgeon, St. Elizabeth's Hospital.

Since my last paper on puerperal sepsis was published (1) I have had several interesting cases, and I am becoming more convinced every time I see a case that puerperal sepsis is a surgical condition in every instance.

It has been my good fortune to observe cases of puerperal sepsis in a hospital where all the usual methods of treatment were employed, including the surgical procedure of Pryor, and the conclusions that I have drawn from my hospital training and practice are that culdesac drainage should be done by the Pryor method just as soon as the condition is diagnosed.

\*Read before the Richmond Academy of Medicine and Surgery, May 9, 1916.

Of course, puerperal sepsis is a most unfortunate condition, resulting generally from faulty technic in sterilization, either from childbirth at full term or from abortion. Our knowledge of aseptic surgery should prevent sepsis in labor and in legally induced abortion, and the moral conscience of the profession

severe toxic symptoms early in the disease. This supply consists of three sets: mucous, muscular, and peritoneal, each of which anastomoses by a network of capillaries. They converge and empty into the subperitoneal tissue from which the collecting trunks take origin and then empty into the inguinal, iliac, sacral, and juxtaaortic lymph glands. From the above short description, we find that the surface of the uterus has an enormous as well as a widely distributed lymphatic supply.

In describing the operation, I will repeat the technic advised in my paper (1): The patient should be given a general anesthetic, and placed in the lithotomy position, with the buttocks protruding over the edge of the table. The vagina should be swabbed out with fifty per cent. tincture of iodine in alcohol, or irrigated with one per cent. lysol solution. The anterior lip of the cervix is grasped with blunt tenaculum forceps and the uterine cavity carefully explored with sponge holding forceps for any remaining debris. The cervix in this condition is usually

dilated and needs no instrumental dilatation. One should be very careful in using any instrument in the uterus in this condition. A sharp curette should never be employed under any circumstances, as the walls are soft and boggy and there is great danger of puncturing the uterus or of doing perma-

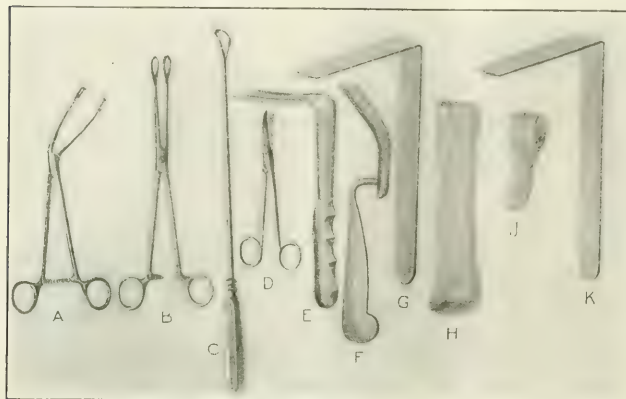


FIG. 1. Instruments required for Pryor culdesac drainage: A, uterine tenaculum forceps; B, sponge holding forceps; C, round curette; D, pair of blunt nosed curved scissors; E, Pryor culdesac retractor; F, Pryor trowel retractor; G and H, right angled retractors; I, small iodoform gauze strip for uterine drainage.

and laity should prevent the occurrence of criminal abortion, in which we find sepsis so frequently. Notwithstanding the ideal plan of existence for the puerperal state, we have had to deal with the follies of the ignorant and unscrupulous since the beginning of time, and an important part of our mission is to do what we can to correct these neglected conditions. In a small number of cases, however, which have been treated by the most conscientious and scrupulously aseptic obstetricians, puerperal sepsis will develop, the origin of which cannot be accounted for. Very probably, some of these cases come from lowered resistance and metastases from some heretofore unknown infection elsewhere in the body.

Puerperal sepsis is an exceedingly grave disease that every surgeon and general practitioner is confronted with, and, since it occurs so often, it behooves us to take the situation in hand and act promptly. Hesitation or unnecessary delay to find out how severe the infection is may result in the death of the patient. Personally, I believe there is only one way to treat puerperal sepsis, and that is radical surgical intervention right in the beginning of the disease. The same principles are involved here that we have with infection in any other part of the body. What treatment do we advise in a badly infected hand or an appendicular abscess? Modern surgical experience teaches us to establish free drainage. Why not do the same with puerperal sepsis? The same principles exist only in a more exaggerated form, as the interior of the uterus is a large raw surface through which the bacteria and toxins are quickly absorbed by an abundant lymphatic supply.

If we review briefly the lymphatic system of the uterus, we readily understand why there are such

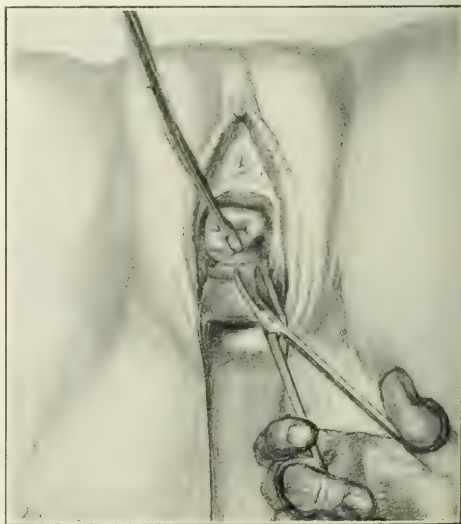


FIG. 2.—Posterior lip of the cervix grasped with a blunt tenaculum forceps. The culdesac retractor is here used to retract posterior wall of vagina. The dotted line shows where the incision is made with a pair of blunt-nosed curved scissors. This line represents the junction of the vaginal wall and the body of the cervix.



nent injury to uterine mucosa. The cavity of the uterus should be thoroughly swabbed with pure tincture of iodine, the excess being wiped out with plain gauze strips. Then a very narrow strip of iodoform gauze is *loosely* packed in the uterine cavity, for if tightly packed it will interfere with drain-

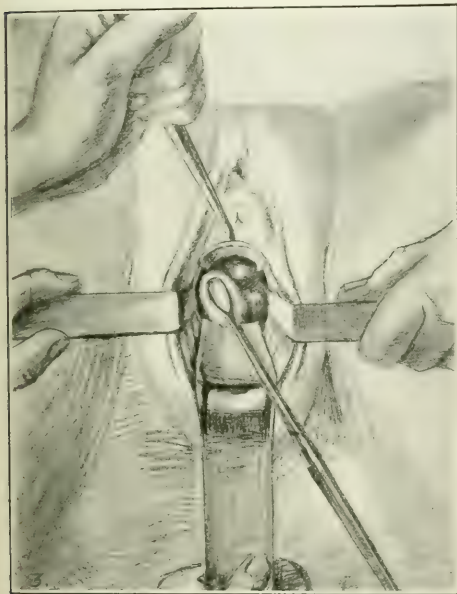


FIG. 3.—All the retractors in place. After the culdesac has been opened and the pockets broken up, the sponge and the sponge holding forceps are in the act of pushing the loop of intestine out of the culdesac.

age. With the cervix patulous, the necessary drainage is secured, while the presence of iodine in the gauze assures the best possible antiseptic application. The posterior lip of the cervix is then grasped with blunt tenaculum forceps, making upward traction, and with blunt curved scissors the line of union between the neck of the uterus and the posterior vaginal wall is incised, care being taken to hug the wall of the uterus to keep from cutting into the rectum. If the precaution is taken to cut transversely about one half inch in the middle line at the junction of the vaginal wall with the cervix, no harm can be done to any of the structures. The gloved finger is introduced through this small opening into the peritoneal cavity and the opening enlarged by dilatation. If any septic serous transudate or pus is present, this must be wiped out carefully with gauze sponges. If adhesions have formed between the posterior surface of the uterus and the broad ligaments and the intestines, they should be freely broken up, being careful to find the line of cleavage and also being gentle in making separation to avoid injury to the walls of the bowel. In separating these adhesions the finger is carried well out to the pelvic brim on either side.

With this accomplished, and having removed all

of the debris in the pelvis by gentle swabbing, the patient is placed in the extreme Trendelenburg position. This allows any loops of intestine which may be in the pelvis to gravitate out of the way. This is very important as one of these loops might otherwise become caught in the gauze with which we are about to wall off the pelvis and so cause obstruction. The opening in the culdesac is then retracted anteriorly and posteriorly by Pean-Pryor trowels, instruments that are shaped very much like a mason's trowel, but with a narrow, straight sided blade, slightly bent near the shank. The sides are retracted with long, right angled retractors. The pelvis is now packed through this opening in the culdesac with the ordinary iodoform gauze folded to make loose rolls about one inch wide and about eight inches long. These rolls, slightly flattened, are introduced through the opening and carried upward laterally to the level of the broad ligament. This is held with forceps until the right angled retractor is withdrawn and reintroduced with the gauze behind. In this manner it is possible to get the dam symmetrical and it can be placed more readily. Usually two rolls are placed behind each broad ligament and one directly behind the uterus, the whole making a dam or compress of gauze which shuts off the pelvic organs from the general peritoneal cavity. The end of each roll protrudes into the vagina. The loose packing in the uterus is removed in forty-eight hours. The culdesac packing is removed in seven days and two additional loose pieces inserted at this time to secure further drainage.

The second dressing is changed about the third or fourth day, and one small strip left in the wound to prevent closure. This strip is changed every three or four days until drainage has ceased and the wound is nearly closed, at which time the cervix is pressed backward and held by a transverse packing placed immediately over the anterior fornix.



FIG. 4.—Sagittal section of pelvis with the gauze *in situ*, just before the culdesac and trowel retractors are withdrawn.

This packing is intended to bring the uterus forward and restore the uterus to its former position.

The general treatment should be carried out as in any acute infection. The head of the bed should be well elevated, or in very bad cases the extreme Fowler's position should be maintained; saline solu-

tion per rectum should be given every four hours; if very septic, hypodermoclysis, fifty c. c. an hour, should be administered until some contraindication presents itself, such as edema of lungs, overcrowding of heart, etc.; sparteine sulphate, grains one to two, hypodermically every four hours, should be used, and morphine, grains one sixth and one fourth, every four hours hypodermically if necessary. Nothing is given by mouth for forty-eight hours except water; then liquids, except milk, are given every two hours in full quantities. After the fifth or sixth day, fractional doses of calomel, followed by a saline, are ordered unless contraindicated. After this, soft diet may be started.

The points of advantage in this method of procedure are these: First, all the debris is removed from the cavity of the uterus and the walls of the uterus are sterilized with tincture of iodine which prevents further absorption from uterine cavity. Second, the septic transudate or pus which has already formed in the pelvis is evacuated and further trouble from this is prevented. Third, the dam of iodoform gauze walls off the general peritoneal cavity, thereby greatly retarding the possibility of general peritonitis by continuity. Fourth, the gauze from the pelvis through the opening in the culdesac into the vagina forms a natural drainage. Fifth, the presence of iodoform in the gauze sets up a reaction in the immediate field, causing plastic exudate to be thrown out, which seals up the mouths of the lymphatics and prevents further absorption into the general circulation.

I will report two very interesting cases I have had within the last six months.

CASE I.—Mrs. X., white, aged 25 years, married, occupation, housewife; admitted to hospital October 5, 1915. The patient gave a history of having missed her regular menstrual period eight days before admission to hospital. Four days before admission she said that she did something to make herself abort, but did not care to tell what it was. She began to flow the same day. Hemorrhage was not profuse, but continuous. She began to feel quite badly on the third day with severe pain in the lower abdomen. She felt as if she had a high fever. On the fourth day she called in her family physician. Her temperature was then 103° F., pulse 150, weak and thready. She was still flowing, the abdomen was badly distended, and the expression pinched. A blood count was made, which showed leucocytosis of 21,400 polymorphonuclears 84. A urinalysis was also made: highly colored; albumin present; specific gravity 1.020; abundant acetone; and a few hyaline casts. She was brought to the hospital immediately, given a general anesthetic, and uterus emptied of debris and swabbed with iodine and one strip of iodoform gauze, loosely packed in for drainage. The Pryor operation for culdesac drainage was then done. About three or four ounces of toxic looking fluid were found in culdesac. The patient was given the usual after treatment described previously. Twelve hours later her temperature was 99° F., pulse 108. Twenty-four hours later her temperature was 101°, pulse 110. Her temperature gradually dropped after the second day. On the fifth day her temperature was normal, pulse 78. The gauze was changed on the sixth day and again on the tenth day. All removed on the fourteenth day and opening closed by placing a piece of iodoform gauze, rolled, in front of the cervix. She left for home on the seventeenth day in good condition.

CASE II.—Mrs. Z., white, aged 32 years; married; housewife. Admitted to hospital January 30, 1916. The patient was about two and one-half months pregnant. She attempted an abortion on herself about six days before being admitted to hospital. She had an incomplete abortion five days later and sent for her family physician, who completed the abortion and swabbed out the uterus with iodine. Her

temperature was then 101.4° F. and pulse 116. In spite of this treatment she grew worse rapidly. The next day her temperature was 102° and pulse 130 and very weak. She had severe pain in lower abdomen, marked distention, tenderness, and rigidity. She was brought to the hospital that afternoon. On arrival at hospital her pulse rate was ranging from 145 to 160, very weak and thready. Her expression was quite bad. The uterus was again explored with sponge forceps and a few small pieces of membrane removed and the cavity swabbed out thoroughly with tincture of iodine. One small strip of iodoform gauze was packed in loosely for drainage. The Pryor operation for culdesac drainage was then done. About eight or ten ounces of toxic looking fluid was found in culdesac. The usual after treatment was given. Her condition was alarming all of the following night. Twelve hours later her temperature was 97.2° and pulse 140, volume better, but expression still bad. Twenty-four hours later her temperature was 101° and pulse 130. Her expression was much better. A blood count was made and leucocytosis of 23,600 was found; polymorphonuclears, 88. A urinalysis was also done. Highly colored; albumin, heavy cloud; specific gravity 1.018; acetone present; occasional hyaline and granular casts. Her temperature and pulse gradually dropped after the second day. On the seventh day her temperature was normal and pulse 82. The gauze was changed on the seventh day, on the eleventh, and again on the fifteenth day. It was removed on the eighteenth day and the wound was closed by placing a roll of iodoform gauze in front of cervix. She left for home on the twenty-seventh day in very good condition.

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1. BRINKLEY: The Pryor Method of Treatment for Puerperal Septicemia, *Gynaecological Monthly*, April 9, 1915.

617 WEST GRACE STREET.

## THE SURGICAL ASPECTS OF GASTRIC AND INTESTINAL STASIS.

### A Résumé.

BY HENRY F. GRAHAM, M. D., F. A. C. S.,  
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Methodist Hospital.

The word stasis as commonly used in medical literature has acquired a broader meaning than the mere sluggish onward movement of the gastric and intestinal contents. It also implies a certain amount of chronic poisoning of the entire body due to a breaking down of the protective and absorptive mechanisms.

Some stasis cases show a thickened and edematous condition of the intestine on gross inspection; others show microscopical changes; while others show nothing abnormal. Many factors seem to be concerned. If the problem was purely a mechanical one it would be easy to solve. We could separate adhesions, divide membranes, replace prolapsed organs, and remove excessive angulations, but, unfortunately, in every case we have to consider a possible neuritis of the abdominal plexuses, bacterial infection of the intestinal wall, abnormal intestinal flora, abnormal intestinal chemistry, weakened musculature, and many other unknown factors.

This problem, because it is so difficult and because there is still so much to learn, has an intense fascination and will occupy all the energy of the keenest mind.

When we pause to survey the accepted causes of stasis we find that their name is legion. There are, however, certain well known facts in regard to etiology, symptomatology, diagnosis, and treatment.

We shall endeavor to correlate these and set them forth in a simple and definite way.

The entire digestive tube must be considered as a whole in studying each individual, for the local symptoms are often very misleading. Vomiting, for instance, can no more be regarded as purely a stom-

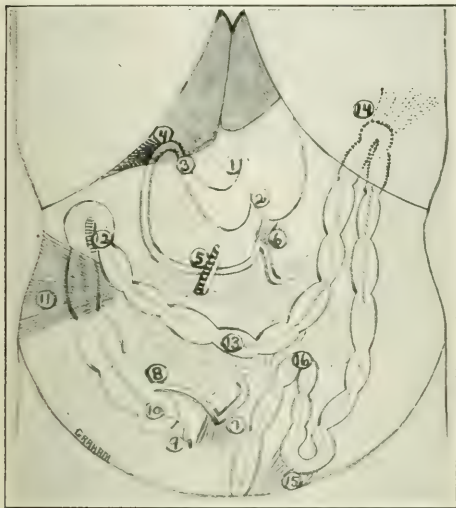


FIG. 1.—Diagram showing causes of gastrointestinal stasis: 1, Prolapsed stomach; 2, hourglass stomach; 3, pyloric obstruction; 4, adhesions at the duodenum; 5, mesenteric ileus; 6, adhesions at duodenojejunal angle; 7, Lane's kink; 8, incompetent ileocecal valve; 9, chronic appendicitis; 10, mobile and dilated cecum; 11, Jackson's membrane; 12, adhesions at the hepatic flexure of the colon; 13, prolapsed colon; 14, adhesions at the splenic flexure; 15, adhesions at the sigmoid; 16, angulation at the sigmoid.

ach symptom than constipation. Our physical and x ray investigations should cover the entire tract in every case.

#### GASTRIC PROLAPSE AND ATONY. WATER TRAP STOMACH.

Prolapse of the stomach below the level of the navel can no longer be considered a disease. It has been repeatedly shown that the pylorus may occupy a very low position in individuals who have perfect health (1). In fact, disease is more apt to arise when the pylorus is firmly fixed high up and the stomach proper sags down, causing a duodenal hill over which the food must be lifted after leaving the stomach. Normally this hill, from the junction of the first and second portions of the duodenum to the most dependent portions of the stomach, measures less than three and a half inches, but in the water trap stomach (2) the distance increases at times even up to nine inches.

Symptoms of ill health arise only when muscular atony is superimposed on the prolapse in these individuals. Of these symptoms constipation is the first and most constant, while pain immediately after eating, vomiting, loss of weight, and the nervous symptoms of autointoxication follow. The emptying time of the stomach may be normal and in only forty per cent. of the cases is there gastric retention from five to seven hours (3).

The diagnosis may easily be made by the fluoroscope or x ray negative, preferably in the erect posture, after a bismuth meal. Auscultatory percussion, the administration of the separate halves of a Seidlitz powder, or gastric inflation through a stomach tube may be used. In many instances simple inspection will suffice. Ulcer of the stomach, colitis, nervous diseases of the stomach, and pyloric stenosis must be thought of and eliminated. While usually found in women, gastropnoptosis, or perhaps more accurately because of its frequent association with a sagging colon, gastrocloptosis, does occur in men. The constipation, unlike that of ulcer, is improved by rest in bed. The pain is located to the left of the mid line and is caused by the ingestion of large meals, while small meals, even of highly spiced or sour food, are well borne.

All the symptoms improve when the recumbent posture is maintained for any length of time, for a horizontal position removes the necessity of lifting the food over the duodenal hill. We will not go into the medical treatment of these cases except to emphasize the value of frequent small meals, the recumbent posture upon the right side, and the use of suitable supports for the lower abdomen.

When medical measures have failed and surgery becomes necessary we must consider these questions before and after the abdomen has been opened. Is the trouble due primarily to weakened musculature or to a water trap stomach with the duodenum fixed so high up in the abdomen that the gastric muscles are constantly working at a disadvantage? Is there an abnormal ligament (4) lying over the second portion of the duodenum which can be severed and thus facilitate a more rapid emptying of the stomach (5)? Is the gastrohepatic omentum,

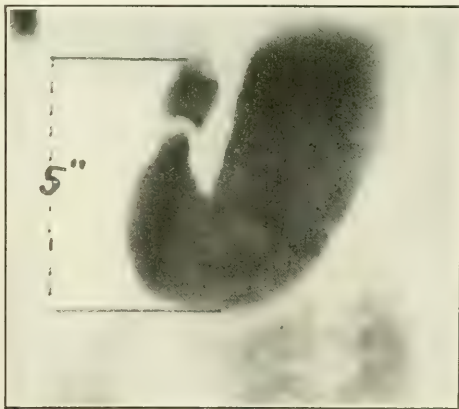


FIG. 2.—Water trap stomach. Note the abnormal vertical distance between the parallel lines.

if it is reefed, strong enough to aid in supporting the stomach? Will a suspension of the colon support the stomach? Are there lesions lower down in the digestive tube that must be corrected also in order to insure a cure? A gastroenterostomy is the last operation to be considered, although Stiles, of Edinburgh, disagrees (6).



The most popular method is probably an indirect suspension of the stomach by means of a Coffey suspension of the colon; namely, suturing the greater omentum at its colonic extremity transversely across the upper abdomen to the parietal peritoneum (7). In addition to this a Beye operation—pleating the gastrohepatic omentum—can be added with advantage.

If the pylorus is anchored unduly high and can with safety be loosened and allowed to drop to a lower position this may aid in bringing about better mechanical conditions. To obtain an operative cure it is necessary to bring to pass the prophecy of Isaiah, "Every valley shall be exalted, and every mountain and hill shall be made low."

Fixations of the hollow viscera must usually be viewed with suspicion, but the operation devised by Rovsing, of Copenhagen, for prolapse of the stomach (3) is running a close race for popularity with the one described above. He sutures the anterior wall of the stomach to the anterior parietal peritoneum in the epigastrium. Rovsing claims seventy-five per cent. of cures from this operation. He especially emphasizes the fact that coincident fixation of the liver and shortening of the transverse mesocolon may be necessary.

We have done it four times. One patient has obtained perfect health. One, who was heard from in an unverified way, was said to be much better. Another, a sufferer from toxemia, has gained ten pounds in weight, but thinks he is worse. He had a combination of the Rovsing and Coffey operations. The last could not be found.

#### MESENTERIC ILEUS.

This is an uncommon condition. Perhaps it should be described under the heading of chronic intestinal obstruction, but as the symptoms are similar to those of stasis it is included under this head. The immediate cause is the pressure exerted upon the transverse duodenum by the structures in the mesentery of the small intestines, more especially by the superior mesenteric artery. Sufficient constriction to cause symptoms can only be brought about by the presence of the collapsed and empty small intestines in the pelvis making traction upon their mesentery in a backward and downward direction.

It follows prolonged wasting diseases such as typhoid fever. Other predisposing factors are the prolonged dorsal position, a prolapsed stomach making pressure on the mesentery and marked lumbar lordosis (8). As a result of this, the stomach and duodenum became dilated above the spot where the artery rests upon it, like the old man of the sea upon the shoulders of Sindbad. The dilatation of the stomach has been attributed not only to mechanical difficulties in emptying, but also to reflex inhibition by the dilated duodenum.

Vomiting is the only important symptom. It may come in attacks with a free interval of weeks. It may be frequent or only once or twice a day. It is usually a regurgitation of stomach contents and not expulsive in character. At times there is pain in the region of the duodenum or merely epigastric distress and oppression. There is constipation and rapid loss of weight. Scanty high colored urine containing acetone and diacetic acid is voided when the vomiting is frequent.

Physical examination shows a flat or scaphoid lower abdomen. I believe it is impossible for mesenteric ileus to occur with a distended lower abdomen. The upper abdomen may or may not be distended. Dilatation of the stomach to percussion and tenderness and rigidity are not always found. In one of our cases x ray examination was valueless, as the bismuth did not enter the duodenum. Pfahler asserts it can be outlined by first putting the patient on the right side and later on the back while the exposure is made (9).

A positive diagnosis and at the same time a cure may be effected in many cases by placing the patient in the knee chest position and allowing the intestines to drop out of the pelvis and relax the pull on the mesentery. Following this the foot of the bed should be elevated and the patient instructed to lie on the abdomen with the left knee drawn up a little. When these measures fail operation should be successful if the disease has not progressed too far. Preliminary treatment with alkalies will be necessary if the urine shows the presence of an acidosis. Most of the cases in the past have received a gastro-enterostomy, but, in suitable cases, an anastomosis through the transverse mesocolon between the de-

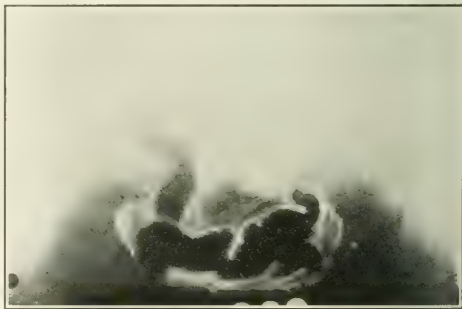


FIG. 3.—Lane kink found at operation. Note the bismuth mass outlined in the terminal ileum.

scending duodenum and the jejunum seems to be a more suitable operation. This has been done by the Murphy button and by suture also (10).

#### LANE KINK. INCOMPETENT ILEOCECAL VALVE. SPASM OF THE ILEOCECAL SPHINCTER.

Adhesions have been described at various points along the small intestine, but they are difficult to diagnose and locate before operation. There is, however, a condition found at the lower end of the ileum, known commonly as Lane's kink because first emphasized by Sir Arbuthnot Lane, which has certain definite features that make it worthy of study.

It has been variously described as an acquired adhesion and as a congenital fold. The probability is that both causes operate to produce the same result in different cases. Two anomalous folds of peritoneum have been described connecting the terminal ileum with the parietal peritoneum. The first, called the bloodless fold of Treves (11) passes from the peritoneum lining the iliac fossa low down on the right side upward and inward over the cecum and appendix to be attached to the peritoneum covering the last few inches of the ileum. The second

is the genitomesenteric fold of Reid (12). When present it connects the terminal ileum with the ovary in the female and the internal ring in the male. The folds of Treves and Reid may be found side by side forming one continuous structure. The acquired adhesions are short firm bands shackling the terminal ileum immovably to the adjacent parietal peritoneum behind it. They seem to be the result of infection and repeated mild trauma acting upon a comparatively fixed portion of the gut.

Incompetency of the ileocecal valve (13) and spasm of the ileocecal sphincter (14) have also been given as causes of ileal stasis. Case states that one sixth of all gastrointestinal cases examined by him show an incompetent valve, and Kellogg, after an operative experience of one hundred cases, says a marked improvement of health follows an infolding operation to produce a water tight valve (15). The



FIG. 4.—Incompetent ileocecal valve. Taken after a bismuth enema. Outlined.

operation was done in those cases in which a barium or bismuth enema ran back into the terminal ileum and a bismuth meal by mouth revealed ileal stasis. In many of the cases no Lane kink was present. A spastic sphincter results from irritative lesions of the appendix or other portion of the gastrointestinal tract.

The symptoms of ileal stasis, whether due to spasm or kink, are constipation, pain, tenderness, nausea and vomiting, loss of weight, and other symptoms of toxemia. Some cases have acid eructations and epigastric pain very suggestive of ulcer. In fact, gastric symptoms may be practically the only complaint. There is one positive diagnostic sign, namely, the retention of bismuth in the coils of the terminal ileum more than nine hours (9) after a bismuth meal has been eaten. When the word bismuth is thus used we always mean some substance

opaque to the x ray, suitable for these examinations. Fluoroscopic examination is very valuable in showing whether these bismuth laden coils are movable or not when the abdomen is palpated. If they are fixed a true kink is probable.

The treatment of advanced ileal stasis is always surgical. For the spastic sphincter Martin recommends an incision parallel to the long axis of the gut and suture in the opposite direction. Incompetency of the valve may be recognized, after opening the abdomen, by placing a rubber covered clamp on the ileum about fifteen inches above the cecum and milking all its contents into the cecum, and then raising the tension in the cecum to see if a regurgitation takes place into the ileum. Kellogg's operation unites adjacent surfaces of ileum and cecum and produces a greater protrusion into the lumen of the cecum.

The first step in the relief of Lane's kink consists in division of the limiting band and free mobilization of the terminal ileum. Next the raw surface is covered with peritoneum by suture or omental graft and last the upper leaf of the mesentery is pleated, as recommended by Coffey, to hold it in a more elevated position. Like other adhesions, Lane's kink seems to have a strong tendency to recur. At least the symptoms often recur. We have had seven typical ones. None of these patients has been perfectly cured, although one is nearly so. Three others have been improved; two are unimproved; and one is worse. This last one had generalized adhesions in addition to the Lane kink. These results tally fairly well with other cases I have found with adhesions elsewhere in the abdomen. A complete cure is seldom effected. I have sometimes wondered if a resection of the terminal ileum and an anastomosis with the ascending colon would not give better results. The end results are probably better where congenital folds are found.

A letter received from one of the Lane kink patients illustrates the aftercourse.

#### DEAR DOCTOR:

I received your letter of the 14th and was glad to hear from you and will be glad to answer your questions.

I have pains very often and am bothered with constipation lately by spells. I have gained in weight. I am not perfectly well. My general health is not very good. I have considerable pains in the right side around the place where I was cut for the operation, and quite considerable pains around the left side under the lower ribs, and sometimes it goes all through the place where the intestines are. After I eat I feel worse than I did before. It gives me pains just below where the ribs come together on the chest only a little to the left. I cannot stay bent over except only a little while, for it gives me pains in right and left side. I feel as if I was tired or had a lazy feeling all the time. I have a headache, but not so very often, that is a hard headache, but it feels heavy and dull. I do not feel so well when I get up in the morning. I get doubled up in my sleep and when I wake up I have a cramped feeling through me. Most everything keeps breaking up in my throat after I eat it, like fish, butter, nuts, onions, and such things.

After receiving this letter I wrote to him advising the use of Russian oil and a bulky vegetable and fruit diet with moderate exercise. Two months later I received this reply:

I do not feel as strong as usual yet, but hope to be soon. That medicine you told me to get was very satisfactory. It made me feel like a new person.

CÆCUM MOBILE, DILATED CÆCUM, JACKSON'S  
MEMBRANE.

In 1904, Wilms, of Germany, called attention to a pathological condition of the cecum characterized by elongation and abnormal motility due to imperfect fusion of the cecum with the structures behind it. It may occupy so low a position in the pelvis that it rests upon the bladder or rectum, causing symptoms referred to those organs.

Jackson, of Kansas City, in 1908 read a paper on Membranous Pericolicitis, in which he called attention to the condition which is now commonly called "Jackson's membrane." He first applied in surgery a knowledge of a structure which anatomists call the parietocolic fold of Jonnesco and Juvara. This is usually a fan shaped vascular membrane which has its handle at the inner side of the ascending colon and spreads out across the anterior surface to become attached by a broad extremity to the parietal peritoneum of the lateral abdominal wall.

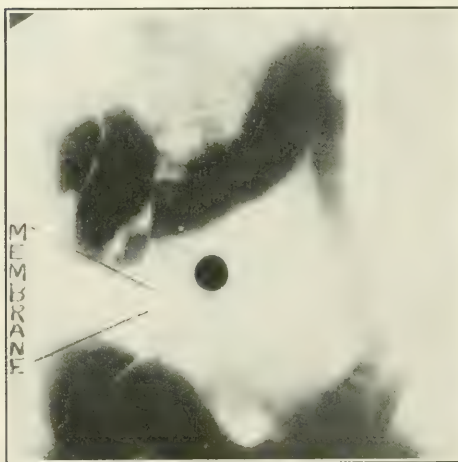


FIG. 5.—Jackson's membrane. Taken after a bismuth enema.

The origin of this membrane is now commonly regarded as congenital. The most probable explanation of its formation is that in the fetus while the cecum is still subhepatic it becomes adherent to the lateral peritoneum. Later it descends and rolls inward on its vertical axis, drawing the parietal serosa out into a broad sheet, which ultimately lies across the anterior surface of the ascending colon.

There are a few who believe these membranes to be entirely the result of infection and inflammation. Others, including Mr. Lane, say that they are crystallizations of lines of force—a physiologic response to a demand for support. The truth probably combines all of these, i. e., a congenital membrane, thickened and strengthened by infection, inflammation, and repeated traction.

A dilated cecum may form a disease entity by itself. It is also associated with Jackson's membrane that is causing obstruction, with obstructions at the hepatic flexure and with the cæcum mo-

bile of Wilms. Martin says it may come from a spastic ileocecal valve which never allows enough material to enter the cecum at any one time to cause a forcible distention, which is the physiological stimulus to contraction and emptying of hollow organs. Consider for a moment the mechanical effect of this change in the cecum. Double the diameter and double the length and you increase the working load eight times. It is easy to see how this stretches and strains the musculature and probably makes an incompetent ileocecal valve.

The symptoms of these membranes, prolapse and dilatation of the cecum, will all be considered together, for they are group symptoms referable to the entire right half of the abdomen, but most marked in the right lower quadrant. Including chronic appendicitis they have been described under the term "right seditis." Constipation may be the only indication of a dilatation or of a nonconstricting membrane. Membranes across the ascending colon are a common sight on the operating table and most of them can be disregarded, but exceptionally one sees a patient suffering greatly whose disease is entirely due to the iron grasp of a Jackson's membrane. This severe type can be best described by the following case history.

CASE I.—A woman, thirty-six years old, had always been constipated. She would sometimes go a week at a time without a movement of the bowels, if cathartics were neglected. There was much gas in the stomach and intestines. When a cathartic was taken it seemed to settle in the right side and at times the entire right half of the abdomen swelled up and the patient could feel gas there. She had a drawing sensation and queer, uncomfortable feelings in the right abdomen. Bilious attacks, pain over the eyes, and nausea were common. There was loss of weight. She had diffuse tenderness over the right abdomen, but there was no localization of the tenderness. Operation consisted of a division of the dense membrane that was found and plication of the cecum. Two months later the bowels were moving twice daily without cathartics and five months later she had gained twenty pounds in weight. She has been well ever since.

For a splendid exposition of the clinical side of these membrane cases Jackson's article should be consulted (16). If the condition is borne in mind it may often be diagnosed as your patient sits in the office and tells his story.

Next comes the question of diagnosis. A gurgling tumor may be present in the right iliac fossa. X ray examination will reveal a dilatation, show the position of the cecum, and disclose a retardation of a bismuth meal in the cecum and ascending colon for twenty-four hours or more after its ingestion. We have found pictures taken after a large bismuth enema very valuable. In the Jackson's membrane cases there is almost always a fan shaped absence of bismuth shadow just below the hepatic flexure and just above the cecum.

This dictum may be expressed: When there are definite symptoms pointing to the right abdomen and x ray plates show a broad constriction just below the hepatic flexure operation will usually disclose a Jackson's membrane, and division of this will accomplish a cure.

Operation.—Dilatation of the cecum can be cured by plication, commencing near the appendix. A Pagenstecher suture is passed back and forth, uniting the anterior and external longitudinal bands.



Each loop is carefully tightened so that the length of the cecum is diminished as well as its calibre. The suture may be carried up nearly to the hepatic flexure. Near its termination the amount included is lessened each time to avoid pouch formation. When a prolapse is also present the cecum is fixed to the anterior parietal peritoneum in the right lower quadrant. A similar method of introducing the

would have stasis, for one seldom sees a plate that does not show a very acute angle at the splenic flexure. It is in these cases also that palpation under the fluoroscope aids us greatly in determining the presence or absence of crippling adhesions. We must be largely guided also by the situation and length of time of the bismuth retention in the colon

#### PROLAPSE OF THE COLON.

Prolapse of the colon is no more a disease than a drooping eyelid or a double chin. When we reach its surgical consideration, however, we arrive on the firing line where the battle rages most fiercely. Some would be altruists and aid in the colonic uplift; others would leave it alone. One day we advise dieting; the next day an abdominal support. In our conservative moments we merely tack up our patients, and in our periods of frenzy we disembowel them, ablate the colon, or, taking a short cut, do an ileosigmoid anastomosis.

A rational way to determine the necessity for surgical intervention and the amount necessary to be done is to consider carefully these factors: 1. The character of the medical treatment and the length of time it has been used—especially the diet. 2. The intensity of the toxemia still present. 3. The effect of the mechanical measures—supports, corsets, etc. 4. The amount of bismuth stasis and the amount of intestinal displacement and distortion shown on the x ray plate.

A proper support for the lower abdomen will often give great improvement in symptoms. The Curtis abdominal support is probably the most effi-



FIG. 6.—Prolapsed colon. Constipation much relieved by a surgical corset.

stitches is used, but they are made interrupted instead of continuous, and passed through the parietal peritoneum before being tied. One woman upon whom I operated had a cecum lying in the pelvis. It was as large as a muskmelon and was filled with fluid. The ileum lay alongside and was adherent. An actual intestinal obstruction was present. Plication and fixation of the cecum as previously described was performed with marked relief from symptoms.

The end results are splendid. In six cases where this was the only operation with possibly an additional appendicectomy there were four complete cures, one marked improvement, and one not found. One of these patients also had a Jackson's membrane. Wilms says that following cecopexy seventy-five per cent, had normal bowel movements, and Klose, after fixing 154 mobile cecums, had eighty-nine per cent. cures (17).

The operation for Jackson's membrane consists of stripping up the membrane from the underlying peritoneum, dividing it between ligatures, and plicating the cecum when it is dilated. We have had four or five well marked, uncomplicated cases. The results are superb—practically 100 per cent. cures. This corresponds to the experience of Williams and others who have written on the subject. The end results obtained by dividing congenital membranes must not be confused with those obtained from separating adhesions around the cecum and ascending colon which have resulted from previous inflammations. The latter is a much less promising field for surgical effort.

Angulations at the hepatic and splenic flexures of the colon are a competent producing cause for stasis at times, but it is not caused by every sharp angle that shows on an x ray plate. If it were, all of us



FIG. 7.—Angulation at the sigmoid. Outlined. Courtesy of Doctor Durham.

cient, but it requires careful fitting or it will prove very uncomfortable. In women a good straight front surgical corset, tight below the navel and loose above, applied in the recumbent position with the hips elevated, gives the best all around satisfaction. The simplest operative procedure is a suspension of the colon by the method of Coffey. The colonic

extremity of the greater omentum is united to the parietal peritoneum transversely across the upper abdomen by a series of interrupted Pagenstecher sutures. I have done it a number of times myself and assisted at many more, yet I consider it an illogical operation.

There is a long prolapsed colon hanging down to the symphysis pubis in a deep curve. The length of this colon is about twice the distance from the hepatic flexure to the splenic flexure. Here the surgeon arrives and, with the superlative art of an interior decorator, arranges that colon in a series of most artistic festoons and angulations that will enable him to crowd this overgrown colon into an undersized space. Actual measurements on an x ray plate gave the following: Distance from one flexure of the colon to the other, allowing a curve down to the navel: eleven inches. Actual length of the colon from one flexure to the other: nineteen inches. Excess length of colon: eight inches. In other words, the colon was nearly twice as long as the available space. The actual transverse measurement of the peritoneal cavity at the level of the navel was nine inches on the plate, i. e., almost the identical measurement of excess gut. But wonders will never cease. Strange to relate, this seldom gives trouble. In one case, however, the result, so long expected, came. Let me give briefly the history of this case.

CASE II.—A teacher, thirty-eight years old, had suffered since childhood from constipation. She had lost twenty pounds in weight, was nervous and complained of pain in the right lower abdomen and epigastrium. Her colon was prolapsed. An appendectomy and a Coffey suspension of the colon was done. One year later she returned with her same old symptoms and a much increased constipation. In one day she took sixty grains of cascara, two glasses of Hunyadi water, some Epsom salts, and an enema in order to secure an evacuation. An x ray showed marked angulation and torsion of the hepatic flexure and a dilated and prolapsed cecum. A second operation removed the terminal ileum, cecum, ascending colon and half of the transverse colon implanting the ileum into the transverse colon. About the tenth day her bowels began to move daily with the aid of a little mineral oil as she said "for the first time in years." But now there arose another feature of these cases—call it the neuromuscular factor if you will. Another x ray taken before she left the hospital showed an enormously dilated sigmoid. As her bowels were moving well we disregarded this and allowed her to return home. She became steadily worse and later came back for a resection of her sigmoid. The last report stated that she was as bad as ever again.

Coffey reports sixty-three per cent. cures from the operation in his hands.

When we consider the human derelicts who come to us for relief from intestinal stasis and toxemia, with prolapsed colons and probably many other things that we know not of, I feel that the use of the word "cured" must be only a relative one. It cannot mean restored to normal again. To use a Biblical phrase, how can we restore the "years that the locust hath eaten"?

In nine cases where the Coffey suspension was done we had only one complete cure. This patient, a man, seems to be in perfect health. At operation he was found to have, in addition to his prolapsed colon, an adhesion of the omentum to the parietal peritoneum. It is only fair to wonder if his cure may not have come more from the release of this

adhesion than from the Coffey suspension operation.

Four others were improved, but are still in impaired health or semiinvalidism. Two were not improved. One of these probably has a gastric or duodenal ulcer. Another patient, previously mentioned under the Rovsing operation, has gained ten pounds, but thinks he is worse. One could not be found. I do not wish to convey too pessimistic an impression of the Coffey operation. It is an easy operation to perform and attended with little risk to the patient. As our figures show, most of the people are improved after it, but it must not be regarded as a panacea for prolapsed colons, and a promise of complete cure should not be made. I expect to do more of them in selected cases.

Two ileosigmoid anastomoses for adhesions, one with intestinal obstruction, are well, but I feel that when this operation is applied for Lane's kink or intestinal stasis as recommended by Mr. Lane, the results are usually disastrous. Few American surgeons are doing this operation except in rare cases. The same remarks apply to total colectomy. The thought of one poor wreck whom I have met and talked with after an ileosigmoid anastomosis and a later colectomy for damming back into the colon is enough for me. We have never done these operations for stasis and shall never do them if we can avoid it. Hirschsprung's disease seems to be the best indication for a total colectomy.

There are, however, a number of ardent adherents of the partial colectomy for stasis. Draper and Lynch are most enthusiastic in advocating "developmental reconstruction of the colon," which consists of a removal of terminal ileum, cecum, ascending colon, and about one third of the transverse colon, with anastomosis of the ileum into the colon. The Mayos also have done it a number of times, but have not as yet, I believe, published their end results as far as relief from symptoms goes. I have heard that Crile tried it for a year and has now given it up. Some time ago I saw a number of Bloodgood's cases after operation, and, although they were improved, the results were still far from brilliant. It is a splendid and successful operation for obstruction, but is still debatable ground for use in stasis, and the future must determine its value. At present it should only be done in the bad cases when other means have failed.

#### ANGULATION AT THE SIGMOID.

In 1913 Delatour called attention to this subject. He says: "By angulation at the sigmoid we mean that the intestine is so bent upon itself, at either the upper or lower end of the sigmoid, that complete or partial obstruction to the passage of the fecal current is established" (19).

The symptoms are persistent constipation, pain and weight in the pelvis or left iliac region, backache often, and general toxic symptoms. Sometimes the loaded descending colon can be felt. Intestinal obstruction may develop with its chain of symptoms. Cathartics are usually of no avail, but a valuable diagnostic aid is the use of the knee chest position with or without an enema. This will frequently be followed by a copious evacuation. An x ray examination gives valuable aid, showing the

sharp angle. Operation offers the only chance for permanent cure. A straight channel for the feces should be made by button, suture, or resection.

We have had three angulations of the sigmoid with stasis. One had a button anastomosis made with a large button. It fell into the sigmoid on the wrong side and refused to pass, necessitating a second operation for its removal. The second had a resection, returning later because of symptoms of intestinal obstruction due to the adherence of a loop of small gut to the site of suture of the meso-sigmoid. This was easily relieved, but the patient died a year or two later from tuberculosis. I have already mentioned a third resection. Perisigmoiditis at times gives similar symptoms and both angulation and perisigmoiditis are often found together.

Before leaving this fascinating subject we must touch briefly on the question of medical treatment. Absolutely no case of intestinal stasis should be operated upon until thorough, persistent, and competent medical care has failed and every possible aid has been used to insure accurate diagnosis and localization. No case should be dismissed after operation without prolonged careful dieting and medical treatment.

The best diet is one containing practically no meat, eggs, or fish and having an abundance of cooked fruit, bulky vegetables, and cereals. A study of the carnivorous dog with his constipated movements and straining at stool, the grain eating horse with larger, softer evacuations and the herbivorous cow's large watery dung is very instructive in connection with this. Spinach, asparagus, celery, lettuce, olives, carrots, squash, string beans, bran, and agar agar all furnish plenty of residue to keep the colon busy and prevent it from getting into mischief. Many patients are benefited by mineral oil. Exercise and fresh air are essential.

Of the end results of surgery it may be said that in certain well selected cases a complete cure may be promised, but the vast majority must be content with improvement only—an improvement, however, that could not have been obtained without the aid of surgery.

#### END RESULTS OBTAINED FROM THIRTY-SIX OPERATIONS FOR GASTRIC AND INTESTINAL STASIS.

	Cured.	Improved.	Unimproved.	Worse.	Died.	Not followed.	Total.
Gastroparesis .....	1	..	..	..	..	2	4
Lane Kink .....	..	4	2	1	..	..	7
Dilated Cecum .....	..	..	..	..	..	2	2
Jackson's Membrane .....	..	..	..	..	..	..	..
Colopostomy .....	1	4	2	1	..	..	8
				With Coffee			
Resection of Cecum, etc. ....	..	..	1	..	..	..	1
Angulation Sigmoid ..	1	..	..	..	1	..	2
Ileosigmoid Anas-tomosis .....	2	..	..	..	TBC	..	2
							36

It is a perplexing, discouraging kind of work at present, even when all possible care is used in diagnosis and treatment. The future will give better results. Children suffering from poor nutrition and constipation as the result of congenital maldevelop-

ment of the intestinal tract will be subjected to x ray examination and operation early before incurable changes have taken place; new measures will be devised for the relief of these cases and many will be saved from lives of invalidism—objects of discouragement to themselves and care to others.

In approaching this subject the viewpoint has been entirely that of the surgeon, not that of the radiographer, the gastroenterologist, the proctologist, or the internist.

Nearly all of the cases here reported have come under the personal observation of the writer. Most of them were at the Methodist Hospital in the service of Doctor Spence. Two were in the service of Doctor Campbell. There were a few private cases of the writer at the Methodist Hospital and two were in his service at the Norwegian Hospital. I wish to express my thanks to Doctor Spence and Doctor Campbell for the privilege, so readily granted, of using their material, and also to Doctor Durham for the use of one of his x ray plates.

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474 FIRST STREET, BROOKLYN.

#### THE SALIVA IN DIABETICS.

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An affection of extreme interest and indeed baffling in nature up to the present time is that of diabetes. Much study has in the past been directed toward this malady, and notwithstanding the definite advances that have been made with respect to an alleviation or cure of the symptomatology, it seems that no definite knowledge of the true cause is forthcoming. In striving for a clearer conception of the underlying factor we are prone first to acquaint ourselves with the obvious aspects of the case, which as a rule are the result of malfunction or perversion of some portion of the mechanism, before delving into the depths of the subject. History, hearsay, physical and microscopical examination having failed, we are forced to go further by studying the more intrinsic characteristics of the malady, i. e., the various body fluids, secretions, and excretions. In diabetes the blood constituents, the urine, the various tissue changes, and the metabolic



variations have been the subject of extensive study, but there is still work to be done with reference to the digestive functions.

In diabetes, it is well known that we have a metabolic disturbance which interferes with the proper disposition of the carbohydrate food elements, i. e., the ability of the organism to safekeep sugar. Many hypotheses have been advanced regarding the production of glycosuria, but as yet we are probably without a known true proximate cause. Whether it is a condition in which the organism cannot metabolize the sugar that has entered its confines, and in consequence of which glucose accumulates in the tissues in excess, and thus by the blood is transmitted to the kidneys to filter through in the urine (pancreatic diabetes); or whether it is due to the fact that the regulating control of the organism over the quantity of blood sugar has been disturbed (Bernard's pique, alimentary glycosuria) is a moot question. We must, however, confess that much therapeutic assistance has followed the painstaking experimentation conducted in connection with this affection.

Experiments upon animals in which a glycosuria had been produced by an extirpation of the pancreas, or by the injection of phloridzin, has revealed results that seem to suggest the possibility of original causative disturbance in the pancreas, the blood, or the kidneys. Further experimental work also points to a possible cause in the liver, Claude Bernard's centre in the fourth ventricle, and in the glands of internal secretion.

Later studies have established a rather close relationship among the functions of the internal secretions of the pancreas, adrenals and other endocrine glands; and it is suggested that the true primary focal disturbance may be located in one or in any of these organs. In similar manner, further studies may elicit the fact that other organs, now not prominently mentioned in connection with this affection, may be implicated in some degree.

The inseparable relationship between the diabetic organism and carbohydrate foodstuffs during metabolism has suggested to us a study of the digestive functions in diabetes as a possible field to reveal practical knowledge. This idea applies especially to the salivary glands, since the salivary secretion is the first potent factor, to which the carbohydrate food elements are subjected during the process of digestion.

Because of the lowered capacity of the diabetic organism to dispose of its sugar intake, we were curious to know just what the saliva of a diabetic was capable of doing. At first it seemed obvious that the diastatic activity of the saliva might be low, probably because the starch was not properly digested, therefore entering the tissues in a form that would not permit adequate oxidation. This idea appears reasonable, since we know that in a diabetic the tissue oxidation or tissue metabolism proceeds with similar avidity to that in a normal person, although progressive loss of weight, weakness, and glycosuria obtain. It also occurred to us that an increase in body acidity, as is the case in diabetes, might interfere with salivary diastatic activity, since we have believed hitherto that an alkaline medium was essential for its proper action;

whereas, an acid medium was supposed to lower its activity appreciably. For these reasons, as well as because of other facts that will be mentioned later, we made a study of the salivas in twelve cases of clinically true diabetes. To recognize a condition which has been unsuspected and to discover that a suspected condition does not exist are all we can justly maintain.

The saliva is normally a mixed secretion consisting of the secretory products of the submaxillary, sublingual, and parotid salivary glands, and of the mucous glands of the oral mucosa. The secretion of saliva is regarded as due to reflex stimulation of the secretory nerve fibres supplying these glands (1). This reflex may be brought about through sensory, psychic, chemical, or mechanical stimuli whereby the bulbar, or cerebral autonomic, and the sympathetic autonomic systems are used, either separately, or conjointly, as conduction paths. It is strongly suspected that a salivary centre exists in the medulla which governs the secretion of the saliva, and that this centre in turn may be stimulated either to secretory activity or to secretory inhibition by reflex stimuli from remote sources (2). Such manifestations are evident, for instance, in salivation in gastric, appendicular, and gallbladder disease, and salivary inhibition as seen during states of fear, anxiety, and acute pain (3).

The saliva is a solvent for the elements of food that are easily soluble in water, and it facilitates the carrying of flavored material to the taste organs of the tongue and the mouth. Saliva also aids mastication, helps prepare the food for swallowing, and further assists this act by its lubricating properties. One of the cardinal functions of the saliva is that of carbohydrate digestion, which was first noted by Leuchs (4) in 1831. It is with this last mentioned function of the saliva that we are chiefly concerned in this paper. Berzelius (5), who was one of the first to interest himself with study of the diastatic action of the saliva, attributed this activity to a ferment which he designated "ptyalin." Since Berzelius's studies, many other investigators have been concerned with the examination of this secretion, and many important contributions have been made. In our experiments, the salivas of twelve diabetic adults were subjected to diastatic study. The salivas of adults were employed because adults only were treated for diabetes mellitus during the period covering this investigation.

*Age.*—Many authors have been interested in the affect of age upon the activity of the saliva, and several diverse opinions have been adduced. Since the child in the first month of life receives a liquid diet which contains no starch or other food elements requiring insalivation, it may be inferred that the saliva in the newborn and in sucklings in all probability contains little or no diastase. Bidder and Schmidt (6) were the first to study this phase of the subject, and found only vestiges of diastatic ferment in the small quantities of saliva obtained from children during the early weeks of life. In the saliva of the newborn they found no ferment. Rutter von Ritterhaun (7) advanced the opinion that the saliva of children up to six weeks of age or even a little older could not convert starch into sugar. Coutaret (8) took exception to this. Po-

litzer (9) and Schiffer (10) later asserted that they had found a diastatic ferment in the saliva of the newborn and in children of early life. Since then numerous observers have disputed these findings, particularly Korowin (11) and Schlossman (12), who found that the saliva of children of the first week of life was capable of digesting starch paste. According to their findings they concluded that the diastatic activity of the saliva in children up to the eleventh month increases with age, and that at eleven months the degree of activity approximates that found in the saliva of adults. Therefore, according to cited observations there is more or less uniformity of diastatic power after the eleventh month. The work of Litmanowitz (13) holds that no marked differences were noted in the activity of salivas of the newborn and the adult. Hirata (14) in his studies examined patients between the ages of nine and eighty-one years, but found no definitely marked deviation that could have been attributed to variations in age.

*Sex.*—It was found, also, that sex, quality of food, and time and frequency of feeding had no decided influence over diastatic activity. This was recorded by practically every worker along these lines—Litmanowitz (15), Hirata (16), Wohlgenuth (17), Chittenden and Ely (18), and Fleckseder (19).

Hunger was also found to have no bearing upon the salivary activity according to von Noorden (20), except in those cases where it was practised for a long period, or where nutrition was markedly diminished. It is further stated by Urstein (21) that the excessive smoking of strong tobacco may temporarily abolish diastatic activity, but that the activity reappears after a short period. According to Hirata (22) tobacco produces an increase in the flow of saliva, but has no effect upon its diastatic function.

According to Paschutin (23), ptyalin which has once converted starch into sugar cannot again similarly perform this function, because the ptyalin has lost some of its diastatic energy. Hirata (24) found that the quantity of saliva secreted has no bearing upon its diastatic action. In those to whom atropine was given he found a diminution in the quantity of secretion of saliva, but upon investigating the diastatic properties found no marked deviation from the normal.

*Temperature.*—Roberts (25) says that the height of diastatic power obtains at a temperature between 30 and 45° C. According to Chittenden and Martin (26) and Paschutin (27) this power is practically nil at 65° C. Kjeldahl (28) believes that the height of its activity is reached at 46° C. In our experiments we adhered to the temperature range of Hirata (29) and Wohlgenuth (30), which varied from 38 to 40° C., because these writers state that a variation of one or two degrees has no influence over the final result. In our tests we endeavored to maintain a temperature nearer to 38° C. than to 40° C. in order to approximate the so called body temperature. In some of the recent salivary studies of T. R. Brown (31) a temperature of 38° C. was found satisfactory.

*Reaction.*—According to Langley and Eves (32), ptyalin is most active in an absolutely neutral medium. Chittenden and Smith (33) and Schlesinger

(34) also assert that neutralization of an alkaline saliva increases its diastatic properties. According to Schierbeck (35) and Watson (36) the diastatic action is even more powerful when a minimal degree of acidity exists.

The reaction of the normal saliva has in the past been considered alkaline or neutral; yet, in our opinion the saliva is probably acid in reaction more often than hitherto suspected. Of course, this acidity often results from unclean or diseased teeth, infected tonsils, and sinus affections, in any of which conditions a fermentative state may become established with consequent acid production. Acid saliva may possibly be found in cases where an increase in the general body acidity exists, as in the gouty or lithemic diatheses, diabetes, gastrointestinal disorders, and nephritis.

The reaction of the saliva in our series of twelve diabetic patients was given special consideration. Whether the degree of acidity of the saliva has an influence upon salivary activity is still unsettled. Some authors hold that the amylolytic activity of the saliva is most powerful in a solution of a minimal acidity, i. e., a solution of acidity much less than .03 per cent. Langley and Eves say that whenever the acidity reaches .03 per cent. the ferment has already lost some of its diastatic power. The saliva is also said to act powerfully in an alkaline medium, but even more so in a neutral medium.

In twenty specimens from diabetics we found only one that gave an alkaline reaction; all the others were feebly acid in reaction. We also examined ten specimens of saliva from normal persons, and found them all acid. The acidities of these specimens were all of minimal degree. Upon testing the different salivas with litmus paper no definite immediate change of color indicating the true reaction occurred, except in two instances when a slight coloration was observed. The results of litmus paper testing may, therefore, falsely impress us, and one should always resort to other means to establish accuracy. We relied upon phenolphthalein as an indicator and NaOH a hundredth normal or HCl solution for titration for the determination of acidity or alkalinity in all our specimens.

There is no marked difference in the degree of reaction of the saliva of normal persons and that of diabetics. It may be true that a minimal acidity or alkalinity favors diastatic activity, but we found no uniformly corresponding relationship between the degrees of minimal reaction and diastatic power. We are also inclined to believe that many neutral reactions formerly suggested by litmus paper tests showed in reality a minimal acidity or a minimal alkalinity.

We also examined the saliva in every instance for the presence of potassium sulphocyanate, but nothing of definite importance was found. There was a failure of reaction in two specimens, and in every other instance a faint or a decided reaction occurred. In the two specimens where the reaction was absent it was noted that one specimen was alkaline and the other faintly acid.

*Amylolytic function.*—Our studies were confined chiefly to the diastatic power of the saliva obtained from persons suffering from diabetes mellitus. This was determined through the action of saliva upon



soluble starch. The result of the interaction gives an estimate of the degree of digestion that the carbohydrate element (starch) has undergone. The products resulting from starch digestion may be erythrodextrin, which gives a reddish coloration with iodine, in contradistinction to starch which changes to a bluish hue. The next product of digestion beyond erythrodextrin is achroodextrin, which in the presence of iodine gives a yellowish color. The final product of digestion is sugar, which, according to Mering, Musculus, Kultz, and Vogel, is maltose. Some authorities also assert that traces of dextrose may be found.

One of the earliest methods recommended for the study of diastatic activity was that of Roberts (37); later Salkowski (38) studied the amylolytic power of saliva by a somewhat different method. Walter (39) filled small calibrated tubes with colored starch, and as in the Metts method for proteolytic study estimated the degree of diastatic action by measuring the digested column of starch.

Wohlgemuth (40) recognized many fallacies in the older methods and devised the following: To a series of test tubes containing decreasing amounts of ferment solution he added separately ten c. c. of a six per cent. starch paste. The series was placed in an incubator for a definite period. It was then placed in an icebox to terminate digestion completely. Each tube was examined later. The last tube exhibited a deposit of liquid starch and was considered the low limit of digestion.

Wohlgemuth soon recognized the disadvantage of this method, and after numerous experiments decided upon the following: Several test tubes containing decreasing amounts of ferment solution to each five c. c. of a one per cent. starch solution are added. Each test tube is placed in ice water immediately after the addition of the starch to prevent activity of the ferment until the entire series is ready for the water bath. They are then removed from the ice water and transferred to a water bath of 38 to 40° C., where they remain for thirty to sixty minutes. At the end of this period the tubes are again returned to the ice water to terminate promptly ferment action. The test tubes are next filled with distilled water to within a short space from the upper edge. To each tube is added a drop of dilute Lugol's solution, and by the color change that follows the degree of starch digestion is deduced. The tube which first shows blue is regarded as the lower limit of diastatic power.

The power of the ferment activity was also ascertained by determining the number of c. c. of a one per cent. starch solution which could be converted into dextrin by one c. c. of saliva. If 0.0125 c. c. of saliva digests five c. c. of a one per cent. starch solution in sixty minutes, then one c. c. of saliva is capable of digesting 400 c. c. of a one per cent. starch solution; therefore, the diastatic activity for 38° C., time sixty minutes, is 400.

The method we employed in our studies is based upon that of Wohlgemuth herein outlined, and although a slightly different technic was employed it yielded the diastatic power as ascertained by him. In our experiments the water bath, tubes, starch solution, etc., were in readiness and the additions of saliva were made promptly and the tubes placed

in the water bath for an hour, temperature 38 to 40° C. They were then removed and tested with a one to ten dilution of Lugol's solution; we thus avoided the use of ice water. We also used two c. c. of a one per cent. starch solution instead of five c. c. as employed by Wohlgemuth. Instead of adding one drop of the diluted Lugol's solution we added a number of drops to make sure that further change of coloration was impossible.

Our method was as follows: Into each test tube of a series two c. c. of saliva, diluted with distilled water, were placed as follows:

No. 1	No. 2	No. 3	No. 4	No. 5
1—10.	1—25.	1—50.	1—100.	1—200, etc.

To each tube was then added two c. c. of one per cent. soluble starch. The series was then placed in a water bath at 38° C. for one hour. To each test tube after removal from the water bath and before testing with the iodine a quantity of distilled water was added to within about an inch and a half from the upper rim of the tube.

Immediately after the addition of water each tube was treated with enough drops of a one to ten dilution of Lugol's solution to assure us that no distinctly different coloration would follow. The tube which showed a definite bluish violet tinge indicated the lowest limit of action and the presence of unchanged starch.

Wohlgemuth and others in their experiments made use of Kahlbaum's soluble starch, but as we were unable to obtain this make we employed the soluble starch of Kingsford, which is considered equally valuable for laboratory use.

The diastatic power of the saliva in normal and in diseased conditions has been the object of numerous recorded study observations. The result obtained by the majority of workers seems to point to the fact that the amylolytic activity in pathological states does not differ materially from that in so called normal states. The idea brought forth by these men is that the enzyme of the saliva has a wide range of activity in the normal as well as in diseased conditions; and that no constant style of action above or below the limits of this range occurs in any one class of cases. The diastatic power of the saliva has been studied by different authorities who concerned themselves with its action in various pathological states, as in febrile diseases, affections of the digestive tract and liver, blood diseases, diabetes, etc.

**Diastatic Power.**—According to Wohlgemuth and Hirata wide ranges are given for normal diastatic activity, by the former from 125 to 780, and by the latter from 160 to 640. In the ten normal specimens examined by us, the high points of diastatic power varied from 50 to 200. It therefore is to be noted that our normal diastatic values are somewhat lower than those given by the above authors. The diastatic values were also found by us to vary slightly in the same individual on different occasions.

The remainder of our work was directed toward the study of the saliva in diabetes. Various investigators of this subject do not differ markedly in their conclusions. Litmanowicz (41) in studies of the diabetic saliva found no definite variations from the normal except in severe types of the disease where acidosis had developed, in which instances



the diastatic power was increased, provided the saliva, according to his opinion, was faintly acid. Where the reaction of this saliva was markedly acid—beyond .03 per cent.—no increase in diastatic activity was noted. According to Jawein (42), Robertson (43), and Schlesinger (44) the saliva in diabetes is appreciably poor in ferment. Wiesel (45) examined nine specimens of diabetic saliva in which he found that eight exhibited a normal or slightly higher diastatic action, and one a lowered power. Von Noorden (46) also found that the saliva even in serious cases of diabetes exhibited normal activity.

We examined twenty specimens of saliva from diabetic patients, and found that the diastatic power varied from 75/500. It also varied considerably in the same individual on different days. There seemed to be no uniformity of action in any particular case. On the whole, the diastatic powers seemed to incline toward a higher level in the diabetic cases than in the normal per-

the quantities of  $n/100$  NaOH required to neutralize each c. c. of specimen was noted, whereas, in the diabetic specimens definite variations may be observed. According to these findings the acidity of the saliva in diabetics is in some instances higher than in the normal, and in some even lower. In terms of HCl the actual quantity of acid in each c. c., excluding the alkaline specimen, varied from 0.000365 gm. to 0.0007665 gm., or from 0.00365 per cent. to 0.07665 per cent.

#### CONCLUSIONS.

1. In our opinion the saliva is more often acid in reaction than has heretofore been reported, and probably is acid in more instances than it is either alkaline or neutral.

2. The litmus paper does not always give an immediate and true record for the reaction of saliva.

3. Probably, as other authorities have brought forth, a minimal acidity does favor diastatic activity, but the degree of minimal acidity has no special

#### LABORATORY RECORD OF CASES STUDIED.

Date.	Name	Percentage of sugar in urine.	Analysis.	DILUTIONS										D. A.
				KCN.S.	1:25	1:50	1:75	1:100	1:125	1:150	1:175	1:200	1:250	
Dec. 9, 1915.	A. G., 1st specimen	4.2	.1	+ A and E	A and E	E	E	E	E	E	E	E	E and S	400
Dec. 11, 1915.	Meyer, 1st specimen	1.5	.2	+ A and E	A and E	E	E	E	E	E	E	E	E and S	400
Jan. 3, 1916.	A. G., 2nd specimen	3.5	.1	+ A and E	A and E	E	E	E	E	E	E	E	E and S	400
Jan. 6, 1916.	Nich, 1st specimen	Negat.	.2	-	E	E	E	E and S	E	E	E	E	S	75
Jan. 14, 1916.	Kieffer, 2nd specimen	1.5	.7	+ A and E	E	E	E	E	E	E	E	E	E and S	400
Jan. 28, 1916.	Wilson, 2nd specimen	Negat.	.9	-	E	E	E and S	E and S	E	E	E	E	S	50
Jan. 28, 1916.	Trox, 2nd specimen	2.5	.6	-	E	E	E	E	E and S	E and S	E	E	S	100
Jan. 31, 1916.	Hunter, 2nd specimen	1.0	.5	+ A and E	E	E	E	E	E and S	E and S	E	E	S	100
Feb. 3, 1916.	Cunningham, 2nd specimen	3.5	.6	+ A and E	E	E	E	E	E	E and S	E and S	E and S	S	300
Feb. 3, 1916.	Wolf, 2nd specimen	2.2	.2	+ A and E	E	E	E	E	E	E	E	E and S	S	500
Feb. 3, 1916.	Wilson, 2nd specimen	1.0	.7	+ A and E	E	E	E	E	E	E	E	E	E and S	100
Feb. 3, 1916.	Hunter, 2nd specimen	0.25	.5	+ A and E	E	E	E	E	E	E and S	E and S	E	S	200
Feb. 3, 1916.	Kieffer, 2nd specimen	1.5	1.1	+ A and E	E	E	E	E	E	E	E	E	E	500
Feb. 27, 1916.	Trox, 2nd specimen	1.25	1.1	+ A and E	E	E	E	E	E	E	E	E	E	300
Mar. 1, 1916.	Snyder, 1st specimen	Negat.	.7	-	E	E	E	E and S	E	E	E	E	S	100
Mar. 1, 1916.	E. J., 1st specimen	5.7	.7	+ A and E	A and E	E	E	E	E	E and S	E and S	E	S	200
Mar. 14, 1916.	J. W., 1st specimen	4.0	1.3	+ A and E	E	E	E	E and S	E	E	E	E	S	75
Mar. 20, 1916.	J. W., 2nd specimen	2.0	.9	+ A and E	E	E	E	E	E	E and S	E and S	E	S	100
Apr. 13, 1916.	Spare, 1st specimen	3.0	.1	+ A and E	E	E	E	E	E	E	E and S	E	S	200
Apr. 6, 1916.	Hoade, 1st specimen	Negat.	.5	+ A and E	A and E	E	E	E	E	E	E	E	E and S	500

c. c. of centinormal NaOH to neutralize 1 c. c. saliva.

#### NORMAL CONTROL CASES.

Date.	Name.	c. c. centinormal NaOH to neutralize 1 c. c. saliva.	KCN.S.	DILUTIONS										D. A.
				1:10	1:25	1:50	1:75	1:100	1:125	1:150	1:175	1:200	1:250	
Dec. 6, 1915.	L. K., 1st specimen	0.5	+	A and E	A and E	E	E	E	E	E	E	E and S	S	100
Dec. 8, 1915.	L. K., 2nd specimen	0.5	+	A and E	E	E	E	E and S	E	E	E	S	S	50
Dec. 15, 1915.	L. K., 3rd specimen	0.4	+	A and E	A and E	E	E	E	E	E	E	E and S	S	100
Dec. 18, 1915.	A. D., 1st specimen	0.5	+	A and E	E	E	E	E and S	E	E	E	S	S	50
Dec. 20, 1915.	R. S., 1st specimen	0.5	+	A and E	E	E	E	E	E	E and S	E and S	S	S	75
Dec. 23, 1915.	R. S., 2nd specimen	0.6	+	A and E	E	E	E	E	E	E	E	E and S	S	100
Dec. 26, 1915.	F. L., 1st specimen	0.4	+	A and E	A and E	E	E	E	E	E	E	E and S	S	100
Dec. 27, 1915.	G. M., 1st specimen	0.5	+	A and E	E	E	E	E	E	E and S	E and S	E	S	75
Jan. 14, 1916.	H. K., 1st specimen	0.5	+	A and E	A and E	E	E	E	E	E	E	E	E	200
Jan. 28, 1916.	B. K., 1st specimen	0.5	+	A and E	E	E	E	E	E	E	E	E and S	S	100

Normal cases—no sugar in urine. A—achroodextrin; E—erythrodestrin; S—starch.

sons. It will be noted that the height in diastatic power in almost every instance fell within the wide limits of Wohlgenuth and Hirata. The accompanying table shows the results of our findings in the various specimens examined. It also will be noted that no definite relationship exists between the diastatic power of the saliva and the quantity of sugar secreted in the urine. The D. A. in the one case of alimentary glycosuria gave a high record, 500, although his urine at the time gave no evidence of sugar. One case (Hunter) was not a true diabetic, having only exhibited glycosuria since a recent operation, panhysterectomy. Another case exhibited a reduction in urinary sugar following the Allen treatment, but gave no marked evidence of change in diastatic action.

In the normal specimens no marked difference in

bearing, so long as it is not too high, i. e. approximately .03 per cent.

4. Diastatic activity varies within the wide limits in normal, as well as in pathological cases.

5. In diabetes the diastatic activity varies within wide limits. Salivary power was slightly higher in this condition than in our normal control cases; but we are not inclined to believe that this is a constant feature. Further experimentation will be necessary to show the constant diastatic activity of the saliva for normal adults.

6. We can trace no definite relationship between the diastatic energy of the saliva and the quantity of sugar in the urine.

7. The normal specimens of saliva all had about the same degree of acidity, ranging from .0146 per cent. to .0219 per cent.

8. Excepting one specimen which was alkaline in reaction, all the others exhibited acidities ranging from .00365 per cent. up to .07665 per cent.; therefore, quite a number showed acidities higher than .03 per cent., the limit of Langley and Eves, where diastatic activity is supposed to be retarded, and yet the diastatic activity sustained itself quite well.

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1810 CHESTNUT STREET.

1402 SPRUCE STREET.

## SIGNIFICANCE AND TECHNIC OF CARDIAC FUNCTIONAL TESTS.\*

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The study of the functional pathology of the vital organs of the body has progressed rapidly in recent years. Modern medicine, though not minimizing the significance of morbid anatomy, strives to estimate the functional efficiency of an organ or group of organs. How often in our routine examinations of patients and findings on the operating table and fluoroscopic screen we discover organs morphologically imperfect, yet functioning normally. The liver or the stomach may show pathological or anatomical defects which may have no bearing whatsoever on the patient's symptom complex. A part or the whole of a kidney may be destroyed by disease, yet renal function may be unimpaired. The heart may be hypertrophied and murmurs may be present, yet from the functional standpoint its response to effort

may be practically normal. Compensatory changes must always be reckoned with. It is this neglected factor which often makes our most conscientious prognostications go wide of the mark, thus bringing embarrassment and destroying confidence. Functional diagnosis is therefore a prerequisite to rational therapeutics and scientific prognosis.

It is the purpose of this paper to review some of the more simple and practical methods of estimating cardiac function and to discuss briefly the significance of such tests. Theoretical considerations and methods entailing the use of involved formulas and special apparatus will be excluded from this discussion.

The function of the heart muscle, as you will recall, is a complicated one possessing the power of impulse formation, excitability, conductivity, contractility, and tonicity. If we could measure separately each one of these five properties we could get an exact estimate of the heart's efficiency. But present methods are still far from being accurate and conclusive, although electrocardiographic studies and other graphic methods promise much in this direction. Late studies have taught us that the heart muscle itself, rather than its innervation, is the fundamental factor at which our therapeutics must be aimed. Cardiac efficiency tests are more easily interpreted after we have made a careful analysis of a patient's subjective sensations with respect to his environment. Symptoms of a failing heart, such as breathlessness, pain, or exhaustion following moderate effort, are practically always present when the heart's efficiency is in any way affected. These symptoms, together with the heart's response to treatment, give us data well worth considering. A careful investigation of hereditary influences gives useful information, for we know that cardiovascular weakness can be inherited. An anatomic diagnosis of the condition of the heart is of course important, but should never by itself be the basis for estimating the heart's capacity for work.

An irregularity of the cardiac rhythm does not necessarily mean any deterioration of function. A person may have a sinus arrhythmia or an occasional premature contraction and have a normal cardiac reserve. With true heart block, auricular fibrillation, or pulsus alternans the case is different. These disturbances of the cardiac cycle must of necessity be recognized, else the interpretation of our functional tests may be incorrect. Not infrequently functional irritation is added to organic disease and complicates the situation. The influence of neurosthenic and hypochondriacal constitutions upon the heart's efficiency—Graves's disease, the anemias, tobacco, tea, coffee, and drug poisoning, peripheral irritations such as visceroptosis and uterine and prostatic disorders—must of necessity be kept in mind in interpreting functional tests. It is extremely important not to mistake functional disorders of the heart for organic disease. By such an error not only may our therapeutics meet with complete failure, but we may lose valuable time and thus mar the usefulness of a life. The error is most easily made when vague subjective symptoms occur with a cardiac murmur which is either temporary or the evidence of an old or well compensated lesion. Sup-

\*Read before the tenth annual meeting of the sixth district branch of the Medical Society of the State of New York, Cortland, October 3, 1916.

pose after ruling out the neurogenic and functional factors we have presented to us a heart which is beginning to show some of the effects of excessive strain as expressed in an accentuation of the aortic second sound, a weakened first sound, and beginning hypertrophy of the left ventricle, the first thing to determine is whether the conditions present are pathological or whether the heart has been working beyond the limits of its physiological strength. Upon the results of the above study depend the advice which we should give our patient.

The ordinary methods of examining the heart in clinical diagnosis are well adapted to disclose diseases of the organ, but often the heart has passed a good physical examination and may yet be inefficient. Numerous attempts have been made to devise methods for determining the heart's functional capacity. It must be admitted, however, that no entirely satisfactory method has been perfected up to the present time. This is partly due, of course, to the fact that we cannot measure vascular tonus or estimate the role of psychic processes. However, some of the methods about to be described do enable us to obtain a fair estimate of cardiac function, especially if we accept the results with due reserve. Many methods entailing the use of complex formulas have been devised, but these often magnify the error and lead to confusion. The limitation of methods which depend on the use of mechanical contrivances is due to the fact that the body at rest affords no opportunity for estimating the reserve force of the heart. Before an estimate of cardiac function is attempted it is well first to differentiate neurocardial from myocardial influences. Of value in this investigation are the following tests: 1. Trigeminal irritation by the inhalation of strong smelling salts slows the normally steady heart, but accelerates the neurotic heart. 2. Oculocardiac reflex of Aschner is elicited by pressure on one or both eyeballs, resulting in a change of the heart's rhythm. The normal cardiac rate is slowed from four to ten beats per minute. Any increased retardation suggests disease of the cardiac nervous mechanism instead of myocardial degeneration. 3. The administration of atropine, as demonstrated by Talley, will indicate whether the heart is disturbed through the action of the vagi nerves or through muscular degeneration. It is a familiar fact that stimulation of the vagi slows the heart or even stops it, and that anything which inhibits or removes vagus control of the heart allows it to beat more rapidly. Atropine, we know, has a paralyzing effect upon the vagi. Talley found that an injection of 1/25 to 1/50 grain of atropine increased the normal heart from thirty to forty beats per minute, but in hearts with myocardial degeneration the heart beat is increased only twenty or less.

The largest group of cardiac functional tests include those which depend upon the reaction of the heart muscle to various types of active or passive exertion. The staircase test of Selig is perhaps the test most generally used. The pulse and systolic blood pressure are taken before and after the subject rapidly climbs a flight of twenty steps. Normally there is an increase of twenty beats a minute and a rise in blood pressure of eight mm. of Hg.

If the myocardium is insufficient the pulse rate increases to thirty beats or more and the blood pressure rises more slowly and less in amount than normally or may fall. The length of time taken for the recovery to the normal systolic pressure may be taken as a measure of the amount of cardiac inefficiency present. The hopping test, which consists in having the patient hop twenty paces on one foot, is a modification of the Selig test, but not so valuable, inasmuch as the work performed cannot be computed.

Graupner's test consists in having the patient perform a definite amount of work with a special instrument called the ergometer, and depends on a comparison of the behaviors of pulse rate and arterial pressures. In the normal heart under exercise the systolic pressure rises after the acceleration of the rate and on rest is maintained longer; in the impaired heart the pressure rise is at best delayed and diminished; hearts gravely impaired cannot carry the pressure at all, indeed, it may even sink and recover itself slowly. Cabot and Bruse have recommended using a measured amount of stair climbing, which, of course, is a more practical and useful method. They estimate the amount of work in foot pounds, which is readily computed by multiplying the number of pounds the individual weighs by the number of feet ascended.

Herz uses simple flexions and extensions of the arm and finds that in persons with weak hearts the rate increases five to twenty beats a minute. James Mackenzie proposes as a test to note carefully at the stopping point of the manometer how many beats are arrested and how many come through. Katzenstein's test consists in compressing both femoral arteries. If the arterial pressure rises some fifteen mm. and the pulse rate does not rise, or even falls a little, the heart is vigorous. If the pressure falls and the pulse rises in rate the heart is insufficient.

Another test is to note the difference in the rate of the pulse between standing and lying. In a healthy heart the transitions from the vertical to the horizontal position are accompanied by a slowing of the pulse of ten to twelve beats a minute, but if the heart is insufficient the pulse tends to become quicker or to remain constant. If on raising the arm from the dependent to the vertical position the strength of the pulse is poorly maintained frailty of the heart may be suspected. The same is true if peripheral pressures are not enhanced after raising vasomotor tone by abdominal massage.

The study of venous pressure gives information as to the degree of venous stasis present and may be used as a rough estimation of cardiac decompensation. Instrumental methods for measuring venous pressures have been devised, but for clinical purposes the most practical way is to consider the venous pressure equal to the height above the right auricle measured from the angle of Louis, at the second rib, at which the veins of the hand are seen to collapse. Measured by the aid of a metre rule it measures the auricular pressure in mm. of blood, which approximates water in its specific gravity sufficiently closely to be translated without correction. Normally the venous pressure varies from two to sixteen mm. water. Any increase beyond this point indicates



a pathological condition. The following convenient, though rougher, modification for bedside use has been suggested by Recklinghausen. The left hand of the patient in the recumbent posture is allowed to rest by his side on the bed, the right is placed on his thigh. If the veins of the right hand collapse while those of the left hand fill, normal pressure relations exist. If the veins of both collapse venous pressure is low; if they both fill, venous stasis is indicated.

The study of pulse pressure representing the pumping capacity or load of the heart is an important consideration in functional diagnosis. Taking the normal pulse pressure at fifty we are justified in assuming that any increase over this figure is pathological and represents cardiac overload. Some idea as to the energy required in overcoming this additional load can be obtained by multiplying the difference between the normal and pathological pressures by the pulse rate a minute. The greater the pulse pressure as compared with the diastolic pressure the more imminent is the onset of cardiac failure. A low diastolic pressure therefore with a high systolic pressure augurs badly. If treatment is followed by an increase in the diastolic pressure and a fall in systolic we have good evidence that compensation is being reestablished.

The Russian test, which consists in having the patient hold the breath as long a time as possible, has long been used empirically for estimating cardiac function. Voluntary apnea puts a strain upon the heart muscle, especially the right ventricle. In patients showing an inability to inhibit the act of respiration for longer than fifteen seconds myocardial insufficiency is the rule.

The therapeutic test for cardiac efficiency, in which the heart's response to small doses of digitalis is studied, gives very useful information. We may infer that there is a substantial survival of cardiac capacity when the heart reacts favorably under digitalis medication.

Tigerstedt's formula for determining the efficiency of the heart as a pump has been recently studied by Swan, of Rochester, who thinks it one of the most important tests. Reduced to its lowest terms for the sake of brevity Tigerstedt finds that the pulse pressure divided by the systolic pressure equals the efficiency of the heart as a pump. This coefficient in a normal individual is from twenty-five to thirty-five per cent., and a cardiac efficiency factor of forty per cent. or over is indicative of myocardial weakness.

Röntgenoscopic and röntgenographic studies of the heart, although of valuable diagnostic significance, do not assist much in functional diagnosis. The electrocardiogram may give the scientific accuracy needed in estimating the functional capacity of the heart, but this instrument still besets us with many as yet unsolved problems.

In prescribing the Nauheim treatment at The Glen Springs, one of the methods which has been found of value in determining the limits to place upon treatments aimed at increasing cardiac efficiency is to give the patient a test carbonated brine bath and note his subjective and objective reactions. The principle of the Nauheim bath being that of cardiac

gymnastics, its value as a functional test is evident. The temperature, duration, and brine and carbon dioxide strength of the bath are determined by the conditions in the individual case. For the average case a bath at 92° F. of ten minutes' duration, one half strength brine, and second strength carbonation is used. If the blood pressure remains constant or rises and returns to normal in one to two minutes after the bath it indicates cardiac efficiency; if it falls or rises first and then falls rapidly without a tendency to rise again after several minutes it suggests inefficient myocardium. Especially is this true if the pulse is increased in rate instead of lowered or if during the bath the patient becomes cyanotic or dyspneic, or manifests vertigo or headache. This hydropathic test not only furnishes a clue to cardiac efficiency, but by taking blood pressure readings and pulse rates from time to time before, during, and after the baths throughout the course of treatment, we are enabled rationally to increase the strength of the succeeding baths and the degree of graduated exercise—such as the Schott exercises, Oertel hill climbing exercises, etc.—which are well within the limits of the patients' strength.

No fixed method in estimating the heart's efficiency should be adopted, but the tests should be fitted to the individual case. We must not overlook the fact that the response to certain of our functional tests may depend as much upon local or general muscular development as upon the heart muscle itself. Normal hearts vary in their response to effort; hence the only practical standard of measurement is to determine to what extent the heart's response to effort is restricted. We should not be content with the information derived from only one test. Several different tests should be made and the results of these verified by repetition. Conclusions should then be drawn from a general average of the results. The personal factor in the observer and the neurotic factor in the patient demand recognition in interpreting the results of our observations. Elaborate calculations and the use of refined apparatus are often of less value than common sense observations and the use of the simpler tests. Often the desired information can be obtained by having the patient raise himself hingewise in bed several times, walk briskly about the room, climb up and down a flight of stairs or step on and off a chair a certain number of times and by then noting carefully the effect upon the pulse and blood pressure, the development of cough, dyspnea, precordial discomfort, giddiness, feeling of anxiety or exhaustion. Special stress should be placed on examining the patient at frequent intervals after test exercises have been given in order that the patient's recovery time may be noted and also whether cough, nervousness, or insomnia have developed subsequently. Obviously, the end and aim of our functional diagnosis should be to discover signs of cardiac inefficiency at the earliest possible moment. By the time objective signs of cardiac embarrassment develop heart failure is well on its way and the reserve force practically exhausted.

Cardiac functional tests enable us to place restrictions upon physical effort during convalescence from the infections, the forceps, and the knife. The

convalescent should not be permitted to resume his accustomed activities until his reactions to the tests show at least a fair cardiac reserve. If this were the routine practice fewer patients would suffer from weak hearts and enfeebled circulation. On the other hand, an unnecessarily protracted stay in bed is often as bad as a curtailed one for inactivity under certain conditions destroys cardiac tone almost as much as overactivity. The tests enable us to give definite advice, not guessed at, to the elderly who seek our advice as to what limits to impose upon their physical strength, and to the parent who is anxious to know the kind and amount of exercise her feeble child should have.

We must not lose sight of the fact that the estimation of functional efficiency is a sociological problem as well as a physiological one. It is not enough to know how much physical exertion a patient is capable of, but whether or not he is able to stand the stress and strain of his occupation and his environment. It must be remembered that efforts which are well within the limits of a cardiopath's strength during the early part of the day may be excessive toward the end of the day when fatigue has lowered cardiac tone. Inadequate food both as to quality and quantity, disturbed or insufficient sleep, questionable habits, and mental worries all have an important bearing upon the estimation of cardiac efficiency. It is our duty as physicians to study our heart patients from the humanistic as well as from the mechanistic standpoint. Where it is evident that the heart is easily overtaxed or where we can detect the earliest evidence of cardiac inefficiency we should urgently advise a change of occupation which is well within the limits of the patients' strength.

## THE TREATMENT OF DUODENAL ULCER FROM THE MEDICAL STANDPOINT.\*

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In the treatment of duodenal ulcer two factors must be taken into account, viz.: the mechanical effects of the ulcer and the condition of the ulcer at the time of treatment; hence our treatment differs markedly according to whether the ulcer is or is not in the phase of severe hemorrhage, and if it is not in this phase, whether or not we have to deal with a surgical condition. When there is severe hemorrhage we must consider the immediate treatment and the subsequent treatment. When there is no severe hemorrhage we must distinguish the cases in which there is known to be a surgical condition present, from the cases in which this condition is not present or is not known to be present.

When there is severe hemorrhage the immediate treatment is as follows: 1. Secure physical and mental quiet by avoiding as much as possible physical examinations and excitement, and by having the patient lie flat on his back, without pillow, and with an ice bag over the epigastrium. Should one

give morphine? This is a vexed question, some believing that one should not do so because morphine lowers the tone of the bowel wall and so tends to increase its dilatation and consequently to increase the bleeding. I think, otherwise, however, for morphine not only quiets the mind, allays restlessness, and diminishes the chance of vomiting, but it also, while lessening the tone of the general stomach muscles, induces closure of the pylorus, and thus assists in the purpose of keeping the duodenal ulcer region free from gastric contents for the time being. 2. Give nothing by mouth, not even a teaspoonful of water or cracked ice. 3. Allay thirst by the rectal administration of a pint or two of warm saline solution or tap water.

If the patient is exsanguinated, administer 1,000 or 1,500 c. c. of normal saline by hypodermoclysis or by venous infusion; contrary to the general belief, this does not lessen the coagulability of the blood. If it is possible, the best procedure would be the transfusion of blood. If the hemorrhage appears to be continuous one may inject subcutaneously every six hours, for three doses, twenty or thirty c. c. of human, horse, or rabbit serum, or intravenously twenty c. c. of a freshly prepared ten per cent. solution in normal saline of coagulum or coagulose, the so called "solid serums." The serums usually take six to twelve hours to affect the hemorrhage. Or one may employ subcutaneously or intramuscularly, but not intravenously, a like amount of a ten per cent. saline solution of thromboplastin, a lipid extract prepared from ox-brain. The calcium salts are probably of little, if any, value.

Is surgery indicated at the time of a hemorrhage from a duodenal ulcer? Not as a rule, because usually the hemorrhage ceases spontaneously or as the result of the measures applied. Hence if there is no exsanguination one is disposed to postpone operation and wait for the natural cessation of the hemorrhage; whereas if there is exsanguination the patient is then already a poor surgical risk. It has been estimated by Moynihan that not over three per cent. of profusely bleeding gastric or duodenal ulcers could be treated successfully by laparotomy. Therefore, as a rule, surgical help is limited to saline infusion or transfusion.

The subsequent treatment consists in continuing to keep the patient quiet, and to rest the upper part of the digestive tract, as follows: 1. Keep in bed. 2. Allow nothing by mouth for about three days (an arbitrary length of time). This is to avoid, as far as possible, stimulation of the gastric activities, both secretory and motor to keep from the ulcer gastric material of sufficient quantity to irritate, and to prevent dilatation of the stomach by gas. 3. Allay thirst through the rectum by the injection of one half to one pint of saline or tap water every four to eight hours, or by a Murphy drip of saline or tap water at twenty to sixty drops a minute, i. e., two and a half to seven and a half ounces an hour. 4. Cleanse the bowel by a daily soapsuds enema. It is desirable especially that all blood should be passed from the intestines, as otherwise it is prone to putrefy rapidly. 5. Give a nutrient enema, if considered desirable, two or three times

\*Read at the New York Academy of Medicine, January 16, 1917.



in twenty-four hours. It is necessary that plenty of water be administered, but it is probable that the small number of calories that can be made available by rectal feeding in three days will be of very little benefit. However, one likes to do all that one can and so may employ the nutrient enema. A very good one consists of six ounces of milk peptonized twelve hours, two drams of glucose, the yolk of one egg, and a pinch of salt. Alcoholic foods, such as whiskey and liquid peptone preparations, should not be added, as alcohol by rectum promotes the secretion of highly acid gastric juice. 6. Keep the mouth clean with peroxide of hydrogen or simple mouth washes. 7. After three days following the cessation of profuse hemorrhage, treat the same as for ulcer when there is no severe hemorrhage.

Treatment of duodenal ulcer at the time when there is no severe hemorrhage, or after severe hemorrhage has ceased for at least three days, is as follows: If the case is definitely surgical there is no use in wasting time on the medical treatment. I should consider the treatment surgical: 1. If there is acute perforation; 2, if there is chronic perforation, as demonstrated by Röntgen rays; 3, if there are adhesions, as demonstrated by Röntgen rays; 4, if there is pyloric obstruction; 5, if there is a suspicion of carcinomatous change. It is true, cancerous change is very rare with duodenal ulcer, but one cannot always be quite sure that the ulcer is duodenal and not prepyloric. 6. If in spite of proper medical treatment it is the site of repeated copious hemorrhages, or of persistent hemorrhage even small in amount, or if it is a constant source of pain or nausea, or if it interferes persistently with nutrition.

If it is not surgical, the relief of symptoms by medical treatment is as a rule quite prompt. *If it is not known to be surgical*, the failure of relief of symptoms by medical treatment suggests that *it is surgical*; but even when at the outset it seems to be in all probability surgical, a course of medical treatment may prove it otherwise. For example, it may be impossible to say that a pyloric stenosis is permanent, that is, cicatricial, and not due to inflammatory swelling or edema, or spasm, or at least partly due to spasm. Therefore, a form of treatment for differentiation may be required. The patient may be put to bed on the ordinary ulcer diet and medication, but in addition, since there is in such a case at least a temporary obstruction, there should be given a daily lavage, best perhaps late in the afternoon. In some of the retention cases, however, the milk diet results in such marked milk sourness as to render the use of milk impossible. In this event the diet should consist of strained cereal with butter, potato, macaroni, wetted bread or toast, soft egg, and perhaps shredded chicken or scraped cooked beef, the afternoon lavage being continued and the patient kept in bed. If these measures do not overcome the retention the treatment is surgical.

It is to be borne in mind that there are certain cases in which, though the pyloric obstruction is purely spasmodic, nevertheless the pylorospasm recurs so readily as to constitute a more or less continuous obstruction. I believe that in such cases of

persistent pylorospasm the treatment is surgical, even though at operation, under the action of the anesthetic, the pylorus becomes relaxed and shows no obstruction.

An ulcer that seems to be nonobstructive and non-surgical demands a *purely medical treatment*. The objects of this medical treatment of duodenal ulcer are to protect the ulcer from irritation of food or acid, to abolish pain, especially hunger pain, to avoid hypermotility, and to avoid distention, while maintaining the nutrition. To secure a cure of the ulcer, the treatment which attains these objects must be prolonged for weeks and months, with only gradual additions to the diet, and gradual extension of the patient's activities. The treatment consists of:

*Rest*.—This is obtained by keeping the patient in bed for a period of three to four weeks, then allowing him to sit in a chair, say twenty minutes the first day, and each day thereafter for two weeks an increasing length of time; then allowing the patient to walk, increasing the distance each day, but always avoiding even slight fatigue. Until the end of the sixth week or so the patient should lie down after each feeding. The length of time before the patient can attend to his usual affairs is at least two months; the length of time before diet rules may be abolished is six months to a year. The reason for failure of cure is often enough failure to continue the treatment a sufficient length of time. Rest is to favor quiet and ease, to prevent body strains, to lessen the food requirement, and by the horizontal position to favor emptying of the stomach and to eliminate drag on the supports of the duodenum and stomach. During the whole period a reasonable amount of mental calm favors the cure, and this is sought by light reading, keeping away all but especially desired visitors, and sometimes, in the case of a business man, allowing him to talk business for a few minutes a day with someone from his office. During the bed period, I permit the patient to get up to empty the bowels, either using the bathroom, if that adjoins the bedroom, or using a commode in the room. This not only favors bowel movements, but also keeps the patient's legs and body in better condition.

*Diet*.—We would make more progress in treating ulcer if we should forget the diets of Lenhart and von Leube. They have served a good purpose, but can be improved upon. The principles governing the diet are: 1. Meals should be small. Opitz says that the intragastric pressure is from six to nineteen cm. of water at the cardiac end and from twenty to 162 cm. at the pyloric end. And since in duodenal ulcer there tends to be hyperperistalsis with high pyloric pressures, it is wise to feed but little at a time, for with small meals the stomach remains contracted and the increase in pressure at the pyloric end tends to be less. 2. Meals should be frequent. Food should be given every hour if possible during the waking hours, to satisfy the caloric need, and to prevent accumulation of unsatisfied acid. 3. Food should be bland, nonirritant, and arranged to combat hyperacidity or hypersecretion and hypersensitiveness of the stomach, even though high acidity is not always present. It should contain no coarse or gritty or fibrous particles, no alcohol, spices, seasoning, acids, or salti-



ness. Unlike Lenhartz, I prefer it not ice cold. For the purpose there are no foods better than milk, eggs, and cream. At the outset it is desirable to prevent the normal change of milk to the solid form in the stomach through its coagulation by the rennet ferment. This is accomplished either by peptonization, or by the addition of three grains of sodium citrate to each feeding. After the first week this precaution is not usually taken.

If the stomach permits, feed every hour, high calory, otherwise every two hours, low calory. Allow water as desired in amounts up to four ounces. If eggs pall on the taste, substitute two ounces of cream for each egg. If cereals make discomfort or gas, omit for a few days.

First day.—Peptonized milk, three ounces every one or two hours from 7 a. m. to 9 p. m. and once in night if patient is awake. Serve hot or cold, but not ice cold.

Second day.—The same, but four ounces every one or two hours.

Third day.—One egg in each quart; four ounces every one or two hours.

Fourth day.—The same; five ounces every one or two hours.

Fifth day.—Two eggs in each quart; five ounces every one or two hours.

Sixth day.—Three eggs in each quart; five ounces every one or two hours.

Seventh day.—The same; six ounces every one or two hours.

Eighth day.—Plain milk, three eggs in each quart; six ounces every one or two hours.

Ninth day.—The same, but for second feeding give saucer (five ounces) of oatmeal gruel or white cereal (arrowroot, cream of wheat, farina, hominy, rice) with cream or milk and sugar.

Tenth day.—The same, but for one evening feeding a saucer of junket, custard or farina with cream or milk and sugar.

Eleventh day.—The same, but at 1 o'clock, milk toast made with one full slice of toast, four ounces of hot milk, and one ounce of cream.

Twelfth day.—The same, but with two slices of toast with hot milk and cream. Make next feeding two hours later.

Thirteenth day.—The same, but for evening meal one coddled egg, one slice of toast and butter, and junket, custard, or farina with cream or milk. One glass of milk or water to drink.

Fourteenth to eighteenth day.—7 a. m. Cereal as above, one poached or coddled egg, one slice of toast and butter, one glass of milk. 9 a. m. One glass of milk and egg, or equal parts of milk and cream. 11 a. m. Same. 1 p. m. Minced chicken, creamed sweetbread or brain, or scraped cooked beef, one small baked potato with butter, one slice of bread and butter, milk or water to drink. 3 p. m. One glass of milk, or milk and egg, or equal parts of milk and cream. 5 p. m. Same. 7 p. m. One soft poached egg on toast, or soft boiled egg with toast, and custard, farina, blanc mange, junket, plain rice pudding or boiled rice, with cream or milk and sugar. 9 p. m. One glass of milk, or milk and egg with two plain crackers.

Nineteenth to twenty-eighth days.—Breakfast.

Cereal as above, two eggs, toast, a glass of milk or cup of cocoa made with milk. 11 a. m. A glass of milk and egg, or milk and cream. Dinner. 1. Thickened, strained soup or puree, not made from meat stock, of potato, peas, beans, asparagus, corn, celery. 2. Chicken, lamb chop, beefsteak, creamed sweetbread, brain or stewed tripe. 3. Baked potato, creamed macaroni or spaghetti, rice, strained squash or carrots, asparagus tips. 4. Bread, toast, or zwieback with butter. 5. Lettuce with olive oil and salt. 6. Milk or water to drink. 4 p. m. A glass of milk and egg, or milk and cream. Supper. One egg, toast or bread with butter, and a dessert—custard, jelly, farina, cornstarch, junket, vanilla ice cream, milk and cereal puddings, tapioca. 9 p. m. A glass of milk, or milk and cream with crackers.

Fifth week and thereafter.—Hyperacidity diet.

*Medicinal Treatment.*—In the main this consists of antacids, demulcents (bismuth and oil), and laxatives, i. e., *drugs to combat hyperacidity and hypersensitiveness with pylorospasm, and measures to avoid intestinal stasis.* For example, at the outset one might use: 1. Sodium bicarbonate, half a level teaspoonful in half a glass of water between feedings, four to eight times a day. That this sets free gas when in contact with acid has not proven clinically to be a bar to its use. 2. The milk of magnesia, one half to one ounce with water, two ounces, at bedtime, or magnesium oxide, ten grains, mixed with sodium bicarbonate and given during the day. 3. Bismuth subcarbonate, thirty grains, with a little water three or four times a day. This drug is not astringent, but is demulcent or protective. It may be given every two hours in ten grain doses, alternating with sodium bicarbonate, or mixed with it. 4. A soapsuds enema daily if needed.

At the end of the second week, for thorough cleansing, castor oil, one ounce, may be employed, or calomel, two grains at night,  $\frac{1}{4}$  grain every  $\frac{1}{4}$  hour, followed next morning by a saline cathartic. After that, or from the beginning, mineral oil one half to one ounce may be given two or three times a day. The advantages of the mineral oil are that it tends to decrease acidity and sensitiveness, to relax the pylorus, to soothe the ulcerated area, and to act as a laxative. When the patient is up and about one may allow a nightly dose of phenolphthalein or cascara, or an aloin, belladonna, and strychnine pill. It is not to be expected that a cure can be obtained unless the bowels are kept in good order. Atropine has been much employed to lessen hypersecretion and overcome pylorospasm. I have experimented much with this drug and believe that it does not have these effects unless it is administered hypodermically and in maximum doses, i. e., doses that will produce dryness of the throat, dilated pupils, or cerebral excitability. These pharmacological actions preclude its frequent use. Chlorosis, but probably no other form of anemia, may be successfully treated by daily hypodermics of 0.5 to one c. c. of a ten per cent. solution of iron and ammonium citrate.

*Special Indications.*—The so called "empty pain" may be due to hunger contractions, spasm of the pylorus, free hydrochloric acid, or acids of fermen-

tation. If there is fermentation, as in retention cases, this "empty pain" may be present, even though there is plenty of food in the stomach. Any pain from acids is probably due to the induction of hunger contractions, for in six cases of stomach ulcer, Hertz gave four ounces of 0.5 per cent. hydrochloric acid with no pain, though this strength of acid hurt when applied to a skin abrasion. He found also that one per cent. lactic and one per cent. acetic acids in the stomach caused no pain. If the general treatment with bismuth, alkalies, and bland food is not successful, codeine one grain or atropine sulphate grain 1/50 by hypodermic may be employed, and a hot water bag or mustard plaster placed over the stomach region. In some cases it is best to stop all feeding for one or two days, as this results in inhibition of the hypersecretion.

If at any time distention is troublesome, one may take measures to open the bowels, may apply a hot water bag, and give sodium bicarbonate thirty grains with spirit of peppermint five minims or other carminative. For a day or so it may be necessary to feed less often and to omit cereal from the diet. If the stomach is atonic it calls for the administration of strychnine. If the gas is entirely colonic and especially if it collects in the splenic flexure, it may yield quickly to an enema or colon irrigation; if there is tympanites it may require carminative enemas of turpentine or spirit of peppermint, and the application of hot stupes, a rectal tube being left in the rectum for half an hour or so.

Vomiting is unusual, and arouses suspicion of a gastric ulcer. There is the vomiting of intolerance to food. If this does not yield to the regular ulcer treatment, it demands daily lavage, duodenal feeding, or surgery. There is also the vomiting of hyperacidity, perhaps accompanied by hyperperistalsis. This is usually preceded by the nausea accompanying severe hunger contractions and it yields to the regular treatment. The vomiting of retention requires lavage and usually a milk free diet, as outlined earlier in this paper.

In some cases in which a course of a week or two of ulcer diet is unsuccessful in abolishing the pain and other symptoms, or when the ordinary ulcer treatment is followed soon by recurrence, a course with duodenal feeding may be successful. This may be tried especially when the patient objects strenuously to surgery.

In duodenal ulcer without obstruction the intermittent character of the attacks makes the patient seem to be cured when he is not. Hence freedom from pain and discomfort obtained by proper treatment does not of necessity mean a cure until time proves it to be permanent.

57 WEST FIFTY-EIGHTH STREET.

**Blood Pressure as a Guide in Major Operations.**  
—Harold G. Giddings (*Interstate Medical Journal*, January, 1917) writes that the blood pressure index is a valuable guide in major surgical work, especially in operations likely to be of long duration. In grave operations about the head and neck it gives warning, as nothing else can, of approaching asphyxia or cerebral anemia. It is not, however, to be advocated as a routine measure.

## Abstracts and Reviews

### OPPORTUNITIES IN NEUROLOGY.\*

By FREDERICK TILNEY, M. D.,  
New York.

Doctor Tilney said that the indispensable task of classifying, recording, and cataloguing the diseases of the human nervous system was now nearly completed, due to the genius and industry of the past century. Attention could now, therefore, be devoted to the underlying causes and more thought could be given to the mechanism rather than to the syndrome. The nervous system had come to be recognized not only as a reflector of the many currents of life, but also as a regulator of these currents. Called into being by the need of coordination, the nervous system held an intimate relation to the processes of metabolism. The necessity of understanding the mechanism of this relation was now becoming clearer and its problems better defined. These were the problems of organic differentiation and the maintenance of such differentiation, of growth and the limitations of growth, of the management of the chemical sources of energy—in a word, the regulation of metabolism; all of which problems lay within the province of neurology.

The underlying factors were in part mechanical, but more certainly chemical. There was a rich field for investigation for neurologists in the important bearing of the discrete endocrinous organs on the control of differentiation and growth. Present day interest in internal secretion demanded that every possible source of such secretory activity be explored and its mode of action investigated. It was known that the thyroid was capable of accelerating somatic differentiation, but had no power to stimulate growth. On the other hand, there was no evidence that the thyroid possessed the power to inhibit growth; when such suppression did occur, due to disturbance in this organ, it was incident to such rapid differentiation that proper growth was prevented. Experimental evidence also showed that the thymus had the power to stimulate somatic growth, but lacked the power of producing differentiation.

That the gonads, especially in the male, had much influence upon somatic growth and sex differentiation, had long been recognized. A number of other structures must now be added to this class, chief among them being the cortex of the adrenal. This organ was genetically related to the gonad and in the lower forms remained distinct from that portion described as the medulla of the mammalian adrenal. During the breeding season, in pregnancy, and after castration the cortex of the adrenal body enlarged. Disease of it in females led to the diminution of certain female sex characteristics and the development of male characteristics.

The relation of the pituitary gland to somatic growth and sex differentiation had, perhaps, received more extensive attention than any other endocrinous organ. But even here there was room for further investigation, particularly in the relation of this gland to the epiphysis cerebri.

\*An address before the New York Neurological Society, February 6, 1916.

Differences of opinion still existed concerning the essential nature of the pineal body. It was regarded by some as an active gland, by others as a vestigium. The question was raised as to whether the nervous system was capable of giving rise to glandular tissue, and this at first glance seemed like a serious obstacle. Certainly the nervous system was the most highly differentiated of tissues and the least likely to be pluripotent in its derivatives. Notwithstanding this, however, it might be demonstrated that it was quite possible for glandular structures to develop from the encephalic roof plate. There was evidence also that the epiphysis was primarily concerned in glandular development, but this required further investigation. Upon a decision in this matter would depend the acceptance of the pineal relation to growth and sex differentiation as well as its reciprocal relations with the pituitary gland.

There was an opportunity for the study of mechanisms in the fact that, while the sympathetic nervous system in one capacity held sway autonomically over the biochemical and physical aspects of the vegetative life, in its equally important phase it served as the intermediary between this life and the psychic activities. In these respects there was indeed an opportunity for the study of mechanisms. There could be little doubt but that in the light of this study manifold complexes, sexual, gastroenteric, cardiovascular, and respiratory, would disclose the secret of their difficulties and much less frequent use would be made of the convenient carryall diagnosis, neurasthenia.

The striatal was a part of the nervous system which was a particularly promising subject for subsequent consideration. In addition, recent advances in knowledge of the cerebellar mechanism required attention, particularly in the matter of cerebellar localization. The newer work on muscle tonus, especially in its relation to the sympathetic system, introduced another point of view which should be investigated. In a word, there was no more fascinating or ultimately profitable field of investigation in neurology today than the study of those mechanisms which contributed to the organization of somatic motion.

No prospectus of neurological thought or endeavor was complete without a word concerning psychoanalysis. The psychoanalysts had built up a valuable method with which to search out and release the hidden difficulties of many who otherwise would not have received relief. But there was danger in the indiscriminate application of this method. Many believed that other parts of the body preempted cerebral activity while the gonad was yet little more than a struggling anlage, and that desires and repressions arose from impulses other than those directly or indirectly connected with sexual life. The restriction of psychoanalysis to the sexual sphere would seem to deprive a good method of its fullest application. It might be that there were opportunities for the psychoanalysts in the study of the phylogeny of behavior. In any event, the researches of the animal behaviorists could not fail to be constructive in the conception of psychic activity.

While intent upon the investigation of the mechanisms of the nervous system, clinical obligations should not be overlooked. Something of practical

value should be demonstrated. The most promising opportunities along this line seemed to be in the relation of neurology to social problems which included those pertaining to mental hygiene, mental defectiveness and delinquency, prison reform, industrial regulation guarding against the development of occupation neuroses, the epidemiology of acute infectious diseases involving the nervous system, and other allied subjects having sociological aspects.

#### Chronic Gonorrheal Urethritis in the Female.

—L. Bizard and P. Blum (*Presse médicale*, January 22, 1917) believe urethral localization of chronic gonorrhea in the female to be favored by peculiarities in the conformation of the neatus, a markedly lacunar structure, and insufficient treatment during the acute stage. Though inconspicuous, chronic urethral gonorrhea comes next to uterine gonorrhea in frequency. It is met with especially in young girls and nulliparæ, and while tending to remain latent, may show recrudescence as a result of fatigue, repeated coitus, walking or horseback riding, alcoholic indulgence, and menstruation. Though sometimes primary and chronic from the first, it usually occurs in subjects who have already recovered from a primary vulvovaginal gonococcal infection, appearing as a slight greenish yellow oozing upon cotton placed before the neatus. In spite of the brevity of the female urethra three distinct forms of urethritis may be recognized, viz., those of the canal, the meatal region, and the glandular structures, including Skene's glands. For diagnostic purposes the patient must be examined before micturition and often in the morning upon awakening. The consistency of the urethra should be felt with the finger in the vagina and pressure exerted from behind forwards to express, if possible, a drop of pus from it. Endoscopic examination with a small speculum may show gray, glassy patches of mucosa contrasting with the normal reddish hue elsewhere. Examination for the gonococcus should be carried out repeatedly, preferably in the morning, either a droplet of pus or the product obtained by gentle scraping of the membrane with a platinum wire or small blunt edged curette being employed. The treatment consists of massage, irrigations, and applications with a probe. Massage with the finger in the vagina should be mild, especially posteriorly, greater pressure being applied as the meatus is approached. Irrigations may be carried out with Janet's reflux cannula, introduced as far as the vesical neck, or by mere repeated injection of 200 or 300 c. c. of fluid into the bladder. Appropriate solutions include potassium permanganate one in 4,000; mercury oxycyanide, one in 10,000, and copper sulphate, one in 500. Applications with a smooth probe covered tightly with cotton should be made daily, slowly, and gently, to avoid bleeding. The solutions used should be oily, watery solutions preventing the probe from sliding in the canal. Pure ichthylol or a solution of gomenol in oil may be used. Rest should follow the treatments. Internally, diuretics and mineral waters are alone of value. Periurethritis may require the use of a fine pointed galvanocautery or silver nitrate pencil. Strong modifying agents may be injected into Skene's glands.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

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Address all communications to  
A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

### Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transporta-  
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MARCH 17, 1917

## THE MEDICAL SERVICE IN THE UNITED STATES NAVY.

There are now more than three hundred vacancies in the medical corps of the United States Navy open to American citizens between the ages of twenty-one and thirty-two years who are graduates of medicine with hospital experience and who can pass the physical and professional examinations required. To the young man of adventurous spirit there are few careers more attractive than that offered in this particular field. His duties will carry him to every quarter of the globe and his position as an officer in the navy will give him access to the most agreeable social life wherever he may happen to be. His duties in time of peace are rarely onerous and he will be encouraged to carry on special studies in any line of medical research in which he may chance to be interested. The remuneration though modest is assured, and when the young surgeon has once been confirmed as an officer in the navy he may look forward with reasonable certainty to regular advancement until he reaches the rank of rear admiral with a pay of six thousand dollars or possible senior rear admiral with a pay of eight thousand dollars annu-

ally. On reaching the age of retirement (sixty-four years) he will be retired with two thirds of the pay of his grade at the time of retiring.

In addition to the 683 members of the regular naval corps provided for in the act of August 29, 1916, there is a medical division of the Naval Reserve Force which requires five hundred surgeons. A commission in this force should prove most attractive to those physicians who wish to be of service to their country in time of need, but who do not care to devote their entire lives to the naval service. Membership in the Naval Reserve Force is open to all physicians under forty-four years of age who are American citizens and who can pass the examinations required. The successful applicant for admission is enrolled for service in national emergency or war declared by the President in the provisional grade of assistant surgeon for four years. He may in time of peace, if he chooses, apply for assignment for active duty, for instruction and training, for three months in one period or for periods of not less than three weeks each year. After this active duty he is confirmed in grade, after successful examination, when he becomes entitled to two months' retainer pay (assistant surgeon) every year of his enrollment in addition to service pay for any term of actual service which he may give. Members of the Naval Reserve Force who reenroll for a term of four years within four months from the date of the termination of their last term of enrollment, and who shall have performed the minimum amount of active service required during the preceding terms of enrollment, shall, for each such reenrollment, receive an increase of twenty-five per cent. of their base retainer pay.

To the younger members of the profession, particularly those residing on the seaboard, membership in the naval reserve force seems to offer many attractions. Members under orders receive the regular travel allowances. If the three weeks' annual service happens to be aboard ship, as it may, it would amount to little more than a vacation with pay to the average young practitioner. But the real attraction is that through the training which could thus be obtained the young physician has an opportunity to fit himself to serve his country most effectively in case of need.

Further particulars regarding the medical service in the navy will be found in an interesting article in this issue by Surgeon R. C. Holcomb, United States Navy, which has been contributed through the courtesy of Rear Admiral Braisted, the Surgeon General of the Navy.

## PROGRESSIVE INSIGHT INTO THE PROBLEM OF DRUG ADDICTION.

There is a note which grows clearer and more dominant in discussions of practical social concerns. Its steady increase can mean only one thing. Surely though almost imperceptibly there is dawning upon the social consciousness the pervading unity of all men, which signifies an uninterrupted, even if a deviating, growth with its continued struggle upward, often an agonizing one. This unity manifests itself too in the sympathy which is due all men as participants in the same struggle and as merely relative winners or losers in the same game. This tone characterizes the preliminary report issued by the Joint Legislative Committee authorized by the Senate and Assembly of the State of New York to make investigation concerning the distribution and sale of habit forming narcotic drugs. The aim is to meet and remedy existing conditions through legislation based upon a better understanding of them and the practical needs arising out of them. It is of no small moment that the chairman of this committee, the Hon. George H. Whitney, is a retail druggist, who thus represents an inner aspect of the problem where the question of need touches keenly the inadequate provision for supply. The report appeals for consideration of those who are afflicted with a disease from which they would gladly recover, but for the sufferings of which there is meantime no properly provided relief.

In this the report makes no plea for extension of the supply of these drugs and so an increase in their use. It only points out the present irrational method of procedure for combating this very widespread evil and its consequent ineffectualness. In a far broader spirit it takes account of facts as they exist. These facts are that a large number of people in this State, probably at least 100,000, are at present suffering from the taking of these drugs; and that these persons are suffering from a disease and not from a vicious habit. For these conditions our laws are inadequate and public opinion is grievously at fault.

The definite recommendations of the committee in regard to medical and legislative action concerning this evil are directed toward a more complete recording of the distribution of narcotics through the recognized media, physicians, pharmacists, veterinarians, and dentists; the registration of addicts in some central department of the State as a means of their recognition and an aid to their obtaining proper advice and treatment; amending of existing commitment laws to permit addicts to pass into the care of reputable private physicians; and the extension of the penal section of the present law to prevent more effectually the procuring and distributing of narcotic drugs through irregular channels and to put

further restrictions upon the possession and use of the hypodermic syringe.

Definite and practical as are such recommendations, they might still become a dead letter were it not for that deeper spirit that animates them, that dominant note which rouses attention. This it is that centres the discussions of the committee upon the problem as one first of all of an unfortunate group of people to be cured of a disease. It urges the public to reach out in this spirit, at least to understand this disease problem as a part of the common human struggle. It calls upon the physician most of all to understand what it is that he is about in this burning question. Is he going to work along in blind and careless ignorance of the real condition of the patient and his surroundings, or is he determined to discover the attacking point of the disease and really assist to a cure?

It is time to drop the advocacy of "cures" that are no cures. It must be recognized that an actual diseased condition is produced in the body from the continued use of these drugs, so that the mere removal of the drug without proper treatment produces such unbearable conditions that it will perforce be obtained by any means whatsoever. Moreover, the question as to what constitutes proper treatment and a "cure" is one which demands diligent investigation. There exists so much difference of opinion and so little real effectual knowledge upon this subject that the root of the difficulty must as yet have been barely surmised.

The tendency of the report is toward the heart of the matter, which seems to lie in that realm of causes which we are but beginning to explore. The problem, however, is a deeper one than recognized even here, and the cure attacked from the standpoint of the end product is a doubtful one. Intelligent understanding of the addict's need for help and sincere desire for cure has to deal with profounder issues. Unless physicians understand this there will be no real appreciation of the problem nor a complete effectual cooperation in the combat with the drug evil.

The individual is hampered in his life adjustments and discouraged by his inadequacy to cope with the difficulties which confront him and throw him back upon some pathway of easily obtainable relief. It may be physical pain or some more subtle obstacle in the way of a harmonious adjustment which has precipitated the use of these means; sometimes merely the temptation of momentary pleasure. In order effectually to reach these fundamentals of life where adjustments are made or where they fail, there is needed a deeper psychological knowledge of the human mind and its striving and of the individual in his particular problems.

## THE NEUTRALIZATION OF POISONS BY VARIOUS ORGANS.

Certain trends of conceptions of the nature of immunity furnish some foundation for the hypothesis that every organ in the body, every tissue, and indeed every cell possesses a certain amount of ability to deal with poisons by means of chemical receptors which unite with the toxophore groups. It is also reasonable to suppose that in the process of evolution which culminated in this complex organism, the animal body, tissues, or organs which had to deal constantly with poisons acquired a greater capacity for neutralizing toxic substances than tissues or organs whose chemical defensive forces were called into action less frequently. Thus it might be conceived that the liver would manifest a greater capacity for destroying poisons than, say, the skeletal muscles.

This topic has been experimentally taken up by W. N. Worontsoff (*Roussky Vrach*). The author isolated the liver, spleen, kidneys, and muscles of dogs and passed through the isolated organs Ringer-Locke's solution containing alcohol, muscarine, and ricin. He found that the kidney absorbed a certain amount of alcohol, but less than the liver and muscles. Thus, the liver neutralized 46.1 to 49.9 per cent. of alcohol, the muscles 33.9 to 38.4 per cent., and the kidneys only 18.4 to 25.9 per cent. Experiments with ricin showed that the kidneys not only failed to neutralize the toxicity of that substance, but actually increased it 27.7 to 36.8 per cent. Identical results were obtained when the poison was passed through muscles. On the other hand the liver neutralized the toxicity from 32.7 to 122 per cent. When muscarine was passed through the spleen, no loss in toxicity was observed nor was there any detoxication found when the substance was passed through the muscles. On the other hand, the liver destroyed from 16.4 to 150 per cent. of the poison. Similar results were obtained with ricin, neither the spleen nor the muscles showing any detoxicating effect.

These experiments, performed as they were on organs devoid of blood, afford some valuable light on the general problems of chemical detoxication.

## HIGH EXPLOSIVES AT CLOSE RANGE.

The world has grown quite unaccustomed to mere mass measurements of war's destructiveness. Battlefield tolls form only the conspicuous centre of a fringe of injury and waste in health and life which reaches out in every direction.

Thus trinitrotoluene, industrially known as TNT, is not only an efficient high explosive in actual warfare; it finds its victims in fewer numbers in the

munition factories, but evidently its work upon them is no less sure if its poisonous action has found opportunity. Martland (*Trinitrotoluene Poisoning, Proceedings of the New York Pathological Society, October-November, 1916*) has cited some recent investigations made in England and in this country with the purpose of discovering the effect of this action and providing defensive measures in the handling of the substance, since our own munition factories are now busily occupied with it.

It is not in the manufacture of TNT that the risk occurs, for that is conducted in closed retorts. The workman must later, however, be exposed to the fumes of the melted substance as it is poured into the shells and to the dust as he chips and scrapes off the amount that solidifies around the top of the shell and drills the core within for insertion of the detonator.

The inhalation and ingestion of this dust produce a serious irritation of the skin and mucous membranes and resulting disturbances ranging from blurred vision to severe intestinal disorder. The patient most closely observed had, however, been exposed only to the fumes. After seven weeks of work symptoms developed which obliged him to leave his work and in less than three weeks proved fatal. The autopsy confirmed the clinical diagnosis of hepatic failure due to the extensive destruction of liver cells, which appears to be the characteristic effect of TNT poisoning.

"The picture is that of a toxic hepatitis, characterized by extensive cloudy swelling, fatty degeneration, and necrosis of the liver cells, most marked in the region of the efferent veins, but not distinctly zonal in character; lymphocytic perlobular infiltration; bile duct hyperplasia; jaundice, and areas of extensive hemorrhage. The damage is beyond any known possibility of liver cell regeneration."

## FROM THE INSIDE.

It is quite the thing nowadays, and the proper and effective thing, to make investigations of institutions by masquerading as one of the inmates, by seeing things from the inside. Very great reforms have been brought about by those interested having themselves introduced as an inmate of a prison or other public institution for the care of unfortunate humankind. We think this method of study of public hospitals has not been tried, and we would like to suggest that such an investigation might in some instances open the eyes of trustees, lady visitors, and others interested in the institutions, and bring about many beneficial changes.

It would be easy enough to arrange to play sick and to have the ambulance call at one's door accord-



ingly. One would at once learn something, and if those whose business it is to handle patients were of the shifting, inexperienced, unsympathetic kind to be found in many hospitals, a mental note of considerable length might be recorded before the hospital was reached. There might be not a little humor developed in the experience of passing the entrance examination by the admitting intern—at least a little thickening of the arteries, a tobacco heart, or a tender appendix might be made out according to the symptoms described. Peradventure the healthy man or woman come to spy upon the institution might be classed as a neurasthenic.

Deposited in bed, the scarcity of nurses, the dearth of orderlies, the poor ventilation, the strangely assorted and ill cooked dietary—in fact a hundred and one things unrevealed to the official visitor might interest the spy greatly and add many pages to his future report. His experiences with the various interns and attendants, the sundry diagnoses and prescriptions of treatment would add spice to the adventure, and we doubt not the report, if the reporter were of a literary turn, might not only lead to great improvements in the institution, but might easily prove a best seller.

### THE JOURNAL OF UROLOGY.

One of the promising signs of the times is the rapid strides that are being made in medical journalism. Hardly a month goes by without the appearance of some new publication devoted to one of the many different branches of medical science. The latest addition is the *Journal of Urology*, which began its career with the February issue. It is a bi-monthly periodical devoted to diseases of the genitourinary tract. Many are not aware of the great advances that have been made in this important field, and one of the objects of this publication is to correlate and bring this work to the attention of the profession. The recent discoveries in urology have thrown considerable light upon the problems involved, both direct and collateral, so that today it is a most profitable and interesting field of research. The cystoscope, the new functional tests, and the experimental work that has already been done have contributed much to our knowledge and have given this subject an important place in modern medicine.

Another aim of this journal is to coordinate the various phases of the work, and to present papers on all the different aspects of the subject that are of common interest. It is in this field of work particularly that the internists and surgeons are learning the value of cooperation and mutual assistance. This is evident also in the personnel of the editorial staff, which is made up of men selected from all over the country. The editor in chief is Dr. Hugh H. Young, of Baltimore, and he has associated with him the leading authorities in the different departments of the work. This journal should prove indispensable to those interested in urological problems.

## News Items

**Harvey Society Lectures.**—The last lecture in the course will be given Saturday evening, March 17th, by Professor Francis W. Peabody, of Harvard University, on Cardiac Dyspnea.

**Philadelphia Legislation Committee.**—The Committee on Public Policy and Legislation of the Philadelphia County Medical Society met for organization at the office of the chairman, Dr. L. Webster Fox, on Tuesday, March 6th. Dr. A. C. Morgan was elected chairman, and Dr. Frank C. Hammond, Dr. Edwin O. Cook, and Dr. William S. Higbee were appointed members of the committee.

**Patients in State Institutions for the Insane to Make Hospital Supplies for the Allies.**—The New York State Hospital Commission is completing arrangements whereby the patients in the New York State hospitals for the insane will assist in preparing hospital supplies for use at the front. Roll bandages, folded gauze compresses, knitted socks, and knitted bandages can be turned out in large quantities. The material for these articles will be provided by the British and Belgian Relief Committee.

**New York Physicians' Association.**—This society will meet in the Chemists' Club, 50 East Forty-first Street, New York, Thursday evening, March 23d, under the presidency of Dr. Irving D. Steinhart. The program arranged for this meeting includes the following papers: A New Instrument for the Enucleation of Tonsils, by Dr. Jacob Braun; Seven Kinds of Irregular Heart and How to Know Them, by Dr. Louis Faugeres Bishop; Clinical Observations on the Treatment of Diseases of the Heart and Their Sequelæ, by Dr. Robert Abrahams.

**Meetings of Medical Associations to Be Held in Philadelphia during the Coming Week.**—Monday, March 19th, Clinical Association, Medical Society of Woman's Hospital, Society of Normal and Pathological Physiology, Blockley Medical Society; Tuesday, March 20th, West Branch, County Medical Society; Wednesday, March 21st, County Medical Society, Section in Otology and Laryngology of the College of Physicians; Thursday, March 22d, Pathological Society, Northwest Branch of the County Medical Society; Friday, March 23d, Neurological Society, Northern Medical Association, South Branch of the County Medical Society.

**Yorkville Medical Society.**—A stated meeting of this society will be held at Hotel Bon Ray, Madison Avenue and Ninety-second Street, New York, Monday evening, March 19th. Papers will be read as follows: Functional Neuroses, by Dr. Adolph Stern; The Mentally Backward Child, by Dr. Marcus Neustaeter; Syphilis of the Nervous System, by Dr. David J. Kaliski. The discussion will be opened by Dr. Israel Strauss and Dr. William Steinhach. The April meeting will be devoted to a discussion of internal secretions and the program for the May meeting will consist of clinical presentations and films. The June meeting will be of a social nature.

**Women of Westchester County Organize a Base Hospital with Motor Equipment.**—At a meeting of the Westchester County Chapter of the American Red Cross Society, held Tuesday, March 13th, announcement was made that the women of Westchester County, N. Y., had equipped a base hospital and had organized a motor unit to which 200 cars were pledged. They are also giving instruction in first aid treatment to 500 women, and additional training classes are being organized each week. They are preparing also to care for the families of National Guardsmen who may be in want while the guard is on duty. The chapter has 9,500 members.

**Changes in the Medical Faculty of the University of Vermont.**—Dr. Edmund P. Brown has been appointed professor of diseases of the eye, ear, nose, and throat, to succeed Dr. M. C. Twitchell, resigned. Dr. L. B. Morrison, of Boston, has been appointed instructor in radiography, succeeding Dr. W. J. Dodd, who died recently. Edmund C. Mower succeeds J. E. Cushman, deceased, as lecturer on medical jurisprudence. Dr. W. L. Wasson, professor of mental diseases, has been made superintendent of the Vermont Hospital for the Insane, at Waterbury. Arrangements have been made for a course in medical, surgical, and sanitary training for officers of the army and navy.

### Medical Association of the Greater City of New York.

A stated meeting of this association will be held in Du Bois Hall, New York Academy of Medicine, Monday evening, March 19th, under the presidency of Dr. Thomas S. Southworth. The topic chosen for discussion is the Treatment of Hemorrhage. Papers will be read as follows: The Control of Pulmonary Hemorrhage, by Dr. Dwight Clifford Martin; Thromboplastin in Hemorrhage, by Dr. Alfred F. Hess; Control of Nose and Throat Hemorrhage, by Dr. Lewis A. Coffin; Control of Uterine Hemorrhage, by Dr. Asa Barnes Davis; Control of Gastric and Intestinal Hemorrhage, by Dr. Edward Leland Kellogg. Among those who will discuss the subject are Dr. Henry Lowndes Lynah, Dr. Anthony Bassler, and Dr. Oscar M. Schloss.

### Annual Meeting of the Women's Medical Society.—

The eleventh annual meeting of the Women's Medical Society of New York will be held Monday, April 23d, at Utica, N. Y., with headquarters at the Hotel Utica, under the presidency of Dr. E. B. Ballentine, of Rochester. An interesting scientific program has been arranged for the morning and afternoon sessions, and in the evening the annual banquet will be held. The Medical Society of the State of New York will meet in annual session in Utica during the week of April 23d, and the Women's Medical Society planned its time and place of meeting so as to enable its members to attend the meeting of the State society. Dr. E. B. Ballentine, of Rochester, is president of the society and Dr. Ethel D. Brown, of New York, is secretary.

**The New Westchester County Hospital.**—The Board of Supervisors of Westchester County, N. Y., has just appropriated \$650,000, in addition to the \$300,000 made available last year, for the new county general hospital. Approximately 500 beds will be provided, 200 of which will be for tuberculosis patients.

The hospital will be one of a group of county institutions that are being erected upon a 400 acre tract of land two miles northwest of White Plains. Tentative plans have been drawn and the hospital will be constructed under the direction of a building commission composed of three leading citizens of the county appointed by the Board of Supervisors. The hospital will come under the general supervision of V. Everitt Macy, county commissioner of charities and correction.

**Health Insurance Inquiry.**—A bill was introduced into the New York State Legislature on March 12th, by Senator Ogden L. Mills, to create a commission to investigate health insurance. The bill provides that the inquiry shall cover sickness and accidents of employees and their families not reached by workmen's compensation; the causes; the loss to individuals and the public; the inadequacy of present treatment and of benefits now provided through commercial insurance, fraternal orders, and otherwise; occupational sickness, and existing methods of prevention. The proposed commission shall consist of two senators appointed by the president of the Senate, three assemblymen appointed by the speaker, and four other persons, not legislators, appointed by the governor, one of the number to be a representative of wage earners, one of employers, one a physician, one a lawyer, one an economist, and one a woman. The commission is ordered to hold public hearings throughout the State and to report to the Legislature on April 19th.

**Physicians Return from Berlin.**—Many Americans returned from Berlin with Ambassador Gerard's party, among them being the following physicians: Dr. C. Lincoln Furbush, of Philadelphia; Dr. Frank Harms, of Chicago; Dr. Christian Luginbuhl, of Chicago; Dr. Albert H. Roller, of Evanston, Ill.; and Dr. Jerome Pierce Webster, of Holderness, N. H. Doctor Furbush was sent over to Berlin as a special assistant to the ambassador, for the special purpose of inspecting the prison camps in Germany. The other physicians mentioned have all been attached to the embassy at Berlin for periods varying from four to ten months in the capacity of special agents of the Department of State for the purpose of inspecting camps for prisoners of war in Germany. Doctor Furbush, who took an active part in the campaign against yellow fever in Cuba subsequent to the Spanish War and in other sanitation work in Havana, was met in Havana by a delegation headed by the secretary of health who showed him the sanitary improvements in and around Havana.

### Physical Condition of Applicants for Enlistment.—

According to figures compiled by the New York State Department of Health, there are at present over half a million men in New York State available for military service, and about an equal number available for secondary defence. These figures are based upon census data and past experience regarding the physical condition of men presenting themselves for enlistment. The report of the Adjutant General of the United States for the year ending June 30, 1916, shows that less than one quarter of the applications for enlistment at recruiting stations throughout the country were accepted. On this basis, 570,000 men would be available for military duty in New York State, and the State Health Department estimates that the physical condition of at least the same number would not be such as to prevent them from home defence service.

**The Tri-State Medical Association, of Virginia and the Carolinas,** held its nineteenth annual meeting in Durham, N. C., Thursday, February 22d, under the presidency of Dr. J. Allison Hodges, of Richmond, Va. Dr. David T. Tayloe, of Washington, N. C., was elected president, and other officers were elected as follows: First vice-president, Dr. A. L. Brenizer, Charlotte, N. C.; second vice-president, Dr. J. R. Young, Anderson, S. C.; third vice-president, Dr. J. K. Hall, Richmond, Va.; secretary-treasurer, Dr. Ralph H. Hughes, Laurens, S. C.; reelected Executive council: Dr. A. L. Gray, of Richmond, Va.; Dr. E. L. Ward, of Elm City, N. C., and Dr. William W. Fennell, of Rock Hill, S. C. An interesting feature of the program was an address by Dr. William Seaman Bainbridge, of New York, on Treatment of Cancer, which was illustrated with lantern slides. Next year's meeting will be held in Spartanburg, S. C.

**The Henry S. Wellcome Prizes.**—The subjects for the 1917 competition for these prizes have been announced. For the first prize, which consists of a gold medal and \$300, the subject is Prisoners of War; Organization, Construction, and Administration of Prison Camps, with Reference to the Maintenance of the Health of the Prisoners of War and the Protection of the Health of the Surrounding Communities; for the second prize, which consists of a silver medal and \$200, essays must be based on the following subject: Sick and Injured Soldiers and Sailors: Their Distribution, Care, and Disposition Outside the Military Zones in Time of War. Competition is open to all medical officers and former medical officers of the army, navy, public health service, organized militia, U. S. Volunteers and of the reserves of the United States. For full particulars regarding the conditions of the competition address the secretary of the Association of Military Surgeons of the United States, Army Medical Museum, Washington, D. C.

**Personal.**—Dr. Mary Gage Day, who has practised medicine in Kingston, N. Y., for the past twenty years, is going to make her home in Ithaca, with her brother, Professor S. H. Gage, of Cornell University. Doctor Day will devote her time to researches in biology.

Dr. Ludwig Hektoen, of the University of Chicago, and Dr. Martin H. Fischer and Dr. Joseph Eichberg, of the University of Cincinnati, have been appointed Cutter lecturers on hygiene and preventive medicine at Harvard University.

Dr. J. J. R. Macleod, professor of physiology at Western Reserve University, Cleveland, was granted leave of absence to act as professor of physiology at McGill University, Montreal, during the months of February and March.

Dr. J. H. Long, professor of chemistry at Northwestern University, has been elected president of the Chicago Institute of Medicine.

Dr. Frederick P. Henry has resigned as professor of the practice of medicine in the Woman's Medical College, Philadelphia, to take effect at the close of the present term.

Dr. C. W. Strickler, of Atlanta, Ga., has been elected president of the medical board of Grady Hospital, Dr. Frank K. Boland was named vice-president, Dr. John Funke, secretary.

Dr. Francis C. Abbott, of Philadelphia, has gone to France for another term of service on the war front.

Dr. Frederick P. Gay, professor of pathology at the University of California, has been appointed a member of the medicine and hygiene committee of the national research council. There are seventeen members of this committee, appointed to aid in preparedness as regards national hygiene, and medical work in war and peace.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE TREATMENT OF LEAD POISONING.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.

Philadelphia.

(Concluded from page 466.)

The favorable effect of atropine in lead colic rests upon its well known property of paralyzing the peripheral distribution of the augmentor autonomic nerves in the intestinal walls. The effect of atropine taking place at the endings of these nerves, the action of lead, which according to Hirschfelder's evidence, is exerted at a less distant peripheral point in the nerve supply, is presumably blocked by the alkaloid. According to some, lead colic in man is not as readily overcome by atropine as that experimentally produced in animals. Such a difference, if it exists, is possibly due to different response of the intrinsic nervous structures of the intestinal wall (the Auerbach ganglion cells or fibres) to the lead in the human subject, and would seem to render all the more advisable the administration in conjunction with atropine, of an agent such as one of the nitrites, to relax directly the contracted intestinal muscle itself. To secure prompt results from the atropine sulphate, it is best given by hypodermic injection, though tincture of belladonna may instead be given by mouth, and Althoff has employed suppositories containing atropine with benefit. Mathieu, after procuring relief of the more distressing symptoms on the first day of treatment with morphine, starts on the second day with 0.0005 gram doses of atropine sulphate hypodermically, administered at first morning and evening, later three times a day. Under this measure the intestinal spasm frequently abates and a light purgative is rendered sufficient for opening the bowels. In some instances larger single doses of atropine, such as 1/60 grain (0.001 gram), are required to bring early relief. The possibility should be borne in mind, however, that an excess of atropine may impede the efforts simultaneously made to increase elimination of the lead by glandular action, e. g., through diaphoresis. Lian and Marcocelles have repeatedly noted a complete removal of the bradycardia during lead colic upon subcutaneous injection of atropine; the pulse acceleration produced was unaccompanied by any change in the blood pressure. I have personally observed the same effect on the pulse rate in these cases under the influence of moderate doses of belladonna tincture.

In severe lead colic morphine remains the chief remedial agent owing to its analgesic property. This alkaloid is, moreover, by no means devoid of power to relax the intestinal spasm, though the exact seat or seats of action in doing so are as yet undetermined. Just as small amounts of morphine are known to relax constricted bronchial muscle tissue, as in bronchial asthma, so they may be expected to reduce the mechanical disturbance of the bowels in lead colic. The constipating effect of

morphine, exerted in ways other than mere depression of intestinal tone, has been held up by some as an objection to its use on the ground that efforts to evacuate the bowels locked up by the lead will thus be defeated. The observation of A. Weber (1902) that in cases in which opium has been previously administered even large doses of atropine hypodermically prove ineffective is, however, of interest in connection with this. In cases in which the prompt and pronounced analgesic action of morphine is no longer a consideration, advantage may, perhaps, be derived from the substitution of another opium alkaloid, papaverine, which has been found by Pal (1913) to relax smooth muscle spasms without paralyzing contractility of the muscle, i. e., in the case of the intestine, without arresting normal peristalsis and causing constipation. D. I. Macht (1916) has actually used papaverine in a case of lead colic, an injection of 0.04 gram of the sulphate procuring distinct relief in this instance. This alkaloid has in addition some general analgesic power, which is, however, less marked and persistent than that of morphine.

Other measures, of possible value in subduing lead colic, include calcium permanganate, ¼ grain three times a day, recommended by Stevens, of Cardiff, England; hot applications of various kinds; counterirritant stupes or plasters, and where pain continues after the bowels have been opened, sodium sulphite in one half to one grain doses three or four times a day, as advised by Oliver. How this small amount of sulphite acts is by no means clear. In the less severe cases of lead colic it is probably wise to avoid morphine or opium and rely on milder analgesic drugs or physical agencies. Where morphine is used in the severe cases full doses at long intervals seem to act better than small ones frequently repeated.

Constipation in lead poisoning is often, in the severe cases, best treated at first by daily colonic injections of warm water, purgatives by the mouth merely causing increase of nausea and vomiting. Enemas containing one half to one ounce of magnesium sulphate, or large oil enemas, may be employed. After the vomiting has been relieved by the other measures, purgation by the mouth may be begun with drugs such as magnesium or sodium sulphate or castor oil, which will cause no especial trouble from systemic absorption if retained. The doses should preferably be small at first; then, if well borne, rapidly increased. The salts should be given in a hot solution. Combemale (1894) and Bram (1913) announce good results from copious administration of olive oil, one tumblerful daily, and according to Stuart (1909) alum in two grain doses in hot solution every four hours is effectual in overcoming the constipation accompanying colic. Elimination of lead, an important feature of the treatment, is secured not only by the purgation, but also with advantage by stimulation of the cutaneous and



renal functions and the use of potassium iodide. After the constipation has begun to yield to purgatives, the bowels should be caused, by appropriate doses, to act at least once and preferably two or three times daily. That lead may be removed by diaphoresis has been proved by Diesselhorst (1908). For this purpose the patient may be surrounded with hot water bottles and well covered; or one of the various forms of sweat bath may be administered, or if practical, hot tub baths, or electric light sweats may be employed. In a personal case the giving of a full dose of sweet spirits of nitre three times and later twice a day proved effectual. a period of sweating, albeit of moderate degree, following each dose. For diuretic purposes the same remedy and also potassium acetate or citrate in full doses every four hours are likely to be of service. Pilocarpine, sometimes recommended as a diaphoretic in these cases, seems contraindicated as it promotes intestinal spasm. Deléarde has reported relief of colic, constipation, and other lead symptoms within a few hours from saline hypodermoclysis.

Lead neuritis may be treated during the acute stages with warm applications and analgesics, including those of the coal tar series. For paralysis persisting after subsidence of the acute attack, electricity, graduated massage, strychnine, and passive followed by active movements are indicated.

**Treatment of Contracted Pelves, with Special Reference to Pubiotomy.**—A. J. Rongy (*American Journal of Obstetrics*, February, 1917) lays stress on the fact that in many cases of obstructive dystocia the difficulty lies with the size of the fetal head as much as with contraction of the pelvis. The fetal head is often engaged in the pelvic inlet at the thirty-seventh or thirty-eighth week of gestation, only to dislodge itself later and be floating above the pelvic brim when labor is about to commence. The resulting difficulties are often so serious that Rongy is led to urge careful watching of all primiparæ for disproportion of the fetal head and pelvis from the thirty-sixth week on. As soon as signs of disproportion appear, labor should be induced. In pregnancies allowed to continue much beyond the computed date, it has been found that the infants do not stand labor well, at least fifteen to twenty per cent. dying during the process. Rongy believes that among seventeen patients in whom he induced labor upon noticing signs of disproportion the morbidity was greatly reduced and the lives of not a few infants saved. In cases with a relative disproportion in which labor has already set in and the head fails to engage in spite of strong uterine contractions lasting twenty-four hours or longer, a stage has been reached in which Cæsarean section as a method of delivery must be eliminated, as it imposes a mortality risk of over twenty per cent. on the mother. High forceps should never be used in primiparæ, as it induces excessive mutilation and invalidism in the mother and yields a fetal mortality of over fifty per cent. In multiparæ with simple flat pelvis it may be occasionally tried. Craniotomy is only to be per-

Cæsarean section, even where the child is still fully viable, as infection must be presupposed in such cases. The only remaining alternative, pubiotomy, therefore becomes the procedure of choice. The mortality rate of the mother in pubiotomy is three per cent., as compared to over twenty per cent. from Cæsarean section in such cases, and in properly selected cases the infant mortality from pubiotomy should be very small. It should never be performed when the disproportion of head and pelvis is too great, injury to the sacroiliac point occurring if the separation of the cut ends of the bone exceeds five to six centimetres. The operator should have previously had proper training in obstetrical surgery. Rongy has resorted to pubiotomy in twenty-eight cases in the course of seven years. All the children were born alive, though eight later died.

**A New Treatment for Status Epilepticus.**—William Held (*Indianapolis Medical Journal*, February, 1917) states that he had never seen a case of status epilepticus which did not terminate fatally until he began to use the following method of treatment. He had now used the method on six patients, two of whom died while four survived. His description of it as follows: Use hot applications to the feet, cold cloth upon the head and plenty of fresh air admitted through the windows while the patient is kept well covered to prevent chilling of the body. Any phlegm in the mouth is removed with the protected finger to prevent its inspiration during breathing. A high rectal enema of two quarts of warm water is given. It is necessary to have at least one assistant during the convulsive state as the treatment must be given regardless of attacks. An arm is bared, constricted above the elbow with a towel or other bandage, and from ten to twenty c. c. of blood are drawn into a syringe. When there is great congestion of the head or the patient is plethoric, the full amount of twenty c. c. is preferred. The blood is emptied into two test tubes and chilled for a few minutes either in running water or on ice, and then is centrifugated at the bedside. The serum is drawn off, two c. c. taken, and added to the same quantity of sterile physiological salt solution, the mixture shaken and one half of it, i. e., two c. c., discarded. Again two c. c. of the salt solution is added, and the process of shaking and discarding of two c. c. repeated. This is done until two c. c. of the salt solution has been added fifteen times. To the last four c. c. of the solution obtained two minims of dissimilar antiepileptic serum is added, and after thoroughly mixing this solution five drops of the same are injected intravenously. In the text he says that the serum was that of any other epileptic under treatment at the time, but in a footnote he says: "Blood serum obtained from epileptic rabbits previously prepared with antirabic virus, inoculated with the serum—cerebrospinal fluid of particular epileptic also inoculated—serum inoculation continued until rabbit shows immunity to epileptic serum by not having anaphylactic reaction. Antiepileptic serum prepared from such rabbit's blood and tissue." This serum was not used in one of the two fatal cases, "the ferment not being on hand." No other reference to this ferment in connection with this method of treatment is given.

fever in <sup>the</sup> ~~and~~ where the child is dying or dead. A history sanitation work in Havara<sup>mination</sup> after the membranes delegation headed by the se<sup>tutes</sup> another argument against him the sanitary improve<sup>me</sup>

**Enucleation with Fat Implantation.**—J. W. Head (*Texas State Journal of Medicine*, February, 1917) asserts that the cosmetic effects obtained by the implantation of fat following an enucleation are better than those following the so called Mule operation, in which a glass sphere is inserted. He uses a purse string suture in Tenon's capsule, picking up each of the muscles as they come, placing a suture through the body of each one, carrying the same suture through Tenon's capsule and the conjunctiva, bringing the muscles on opposite sides together with Tenon's capsule and the conjunctiva, and tying them firmly together. If the fat breaks down there is no disadvantage excepting that the final recovery is slightly retarded.

**Aftertreatment of War Injuries.**—M. R. Thornley (*Indian Medical Gazette*, January, 1917) says that there has been so little experience in the surgery of nerve injuries before the present war that there are still many points which await elucidation. Those which appear to be clear are: 1. To avoid operation while there remains a chance of relighting an old infection. 2. To operate as soon as the diagnosis of a complete anatomical division is established. 3. To inflict as little trauma as possible on the parts. 4. Rigid asepsis. 5. Catgut sutures for the nerve and not silk. 6. Flaps of tissue from the vicinity rather than Cargile membrane for surrounding the sutured nerve to protect it from involvement in scar tissue. 7. Avoidance of all tension on the nerve until union is obtained. 8. Careful and prolonged aftertreatment of the paralyzed muscles, in which the splinting of the part to prevent extension of the paralyzed muscles is of first importance.

**Artificial Pneumothorax. A Plea for Partial Compression.**—C. M. Hendricks (*Southern Medical Journal*, February, 1917) finds that the clinical symptoms disappear in most cases as readily in partial collapse as in complete collapse; that the patient's general condition improves just as readily; that the sputum is reduced just as surely, but not so quickly; and that by partial compression the activity of the lung is greatly limited, so as to be appreciably immobilized, without rendering that lung unfit for the performance of its function at a future time. The disadvantages of partial collapse he considers to be: 1. Refills are necessarily more frequent. 2. The patients must be studied and examined very closely, both by physical examination and the fluoroscope in order to determine the time for refills. 3. The frequency of the refills requires only that one be careful of his technic, as the more often the pleura is entered the more liability there is to infection, air embolism, and pleural shock. The advantages he asserts to be: 1. The results are the same clinically. 2. Partial collapse may be used alternately in either lung, or at the same time in both lungs, if the case so demands. 3. There is less tendency to pleural effusions. 4. There is very little strain thrown upon the right heart. 5. There is no disturbance of the mediastinum. 6. There is less danger of spontaneous pneumothorax. 7. There is less danger of rupturing an abscess into the pleural cavity. 8. When the disease is arrested we have the unaffected portion of the lung performing its functions.

**Enucleation with Glass Sphere Implantation.**—Wallace Ralston (*Texas State Journal of Medicine*, February, 1917) is of the opinion that implantation of a glass sphere is better than an autogenous fat implantation. His method is as follows: The conjunctiva is carefully preserved by cutting close to the cornea. In each rectus muscle a No. 00 chromicized catgut suture is securely tied or double looped. All attachments are cut very close to the globe. As soon as the eye has been removed Tenon's capsule is lifted up and the sphere inserted. Tenon's capsule is then carefully sutured. The muscles are then tied together. The conjunctiva is closed by interrupted silk sutures placed parallel to the palpebral fissure. The implantation of a glass sphere is also indicated in those cases of sunken socket where enucleation has been performed some time previously. The technic of this operation is more difficult.

**An Unusual Case of Vesical Calculi.**—C. R. O'Crowley (*American Journal of Surgery*, February, 1917) emphasizes the importance of the following points: 1. It is a dangerous procedure to empty completely and suddenly by catheter an over-distended bladder, for it not only creates a condition of shock, but it also involves the risk of producing active hemorrhage, as happened in this case. 2. In cases of prostatic obstruction where there are retention and enormous distention and the introduction of a large catheter brings forth only an ounce or so of bright red fluid, one can feel reasonably sure that active bleeding is going on and that repeated catheterization or even the introduction of a retention catheter suprapubically will not be sufficient to evacuate the large clots; and, therefore, it is imperative to do a suprapubic cystostomy, remove the clots, and insert a large enough drainage tube. 3. When you have your fingers or hand in the bladder always explore it for stone, even though the patient evidences no symptoms of stone.

**A Simplified Technic in the Application of Schick's Reaction for Testing Immunity to Diphtheria.**—William Litterer (*Southern Medical Journal*, February, 1917) states that he dissolves dried diphtheria toxin in sterile normal salt solution and injects 0.2 c. c. into, not under, the skin. A positive reaction is shown by an area of inflammation varying in extent from two fifths to one inch in diameter, which is more intense in the centre and lasts for from ten to fourteen days, when it gradually disappears, leaving a brown, desquamating surface. Persons who give such a reaction as this are susceptible to diphtheria, while those who do not, have a natural immunity which is adequate to protect them. A pseudoreaction, perhaps due to local anaphylaxis to the protein content in the bouillon medium, has a less sharply circumscribed lesion which comes on earlier, disappears in from twenty-four to forty-eight hours, and leaves a slightly pigmented spot that does not scale. This test obviates the necessity of giving antitoxin to about one half of the persons coming in contact with diphtheria infection, saving them the discomfort, sensitization, and expense of the injection of serum. It shows a striking similarity in reaction in families which perhaps may indicate that immunity is a family condition.



**Nerve Grafting.**—A. W. Mayo-Robson (*British Medical Journal*, January 27, 1917) reports a striking case of complete restoration of function following nerve grafting undertaken seven months after division of all of the nerves supplying the forearm except the musculospiral. One of the nerves was sutured, but the ends of the median nerve could not be brought nearer together than two and a half inches and those of the ulnar also lay far apart. The ends of the latter were united by grafting with strands of the sciatic nerve of a rabbit and of the former by using a piece of a rabbit's spinal cord. Recovery of sensation began to appear eleven days after the operation, but it was nearly six months before both sensory and motor paralysis were completely restored.

**The Preoperative Treatment of the Hemorrhagic Tendency in Obstructive Jaundice.**—F. W. Aves (*Texas State Journal of Medicine*, February, 1917) concludes that: 1, Gelatin hypodermically is the most rapid and most uniform coagulant recommended; 2, serums and whole blood, so efficacious in the other hemorrhagic diatheses, are useless in the bleeding of obstructive jaundice; 3, calcium salts given by mouth are effective for a period of from ten to fourteen days, but their use intravenously for rapid action should be deferred until their safety and proper dose are determined; 4, calcium salts should be given by mouth preceding operation, but gelatin solution hypodermically must be relied upon for rapid action in preventing or checking hemorrhage in obstructive jaundice.

**Acidosis.**—James L. Whitney (*Boston Medical and Surgical Journal*, February 15, 1917) says that while the treatment of acidosis is still a matter for discussion, certain general principles are evident. No treatment is called for in the acidosis of high altitudes, anemia, and probably of pregnancy, since this is a beneficent reflex, intended to increase the aeration of the blood. Alkali therapy is apparently indicated in cases of overproduction of acid where the elimination is free, chiefly in cases of diabetes and of cyclic vomiting, but it must be remembered that the acid has to be not only neutralized, but excreted as well. A free flow of urine must be maintained. The best diuretic is water, and care should be taken in a severe case of diabetes that the volume of urine is not allowed to drop with the fall in sugar. When the kidneys refuse to pass out the acid it is doubtful if they will handle salts any better, so it would probably be safer not to use alkalis in the acidosis of nephritis, pneumonia, and terminal conditions, though an alkali which is largely excreted in the feces, like chalk or bismuth subcarbonate, might be tried. In some conditions, especially nephritis, a considerable amount of acid may be eliminated by the bowel, which probably explains the relief to the dyspnea of nephritis that often follows free purgation. Meat should be avoided in the diet of a patient with acidosis. The value of fresh air blowing across the face will probably be as great in other conditions as in pneumonia. Oxygen may be of value in some cases. Morphine should be used with the greatest care in all cases of acidosis, as in spite of the great relief it affords the paroxysms of nephritis the drug may be highly dangerous.

**The X Ray Treatment of Malignant and Other Diseases of the Face.**—H. W. Dachtler (*American Journal of Röntgenology*, January, 1917) reports a series of 530 cases of tumors of the face, lips, and neck treated during the past sixteen years. Of these sixty-two per cent. were diagnosed as malignant growths. Of the total of 530, 477 cases were cured, a percentage of ninety. The most favorable location as regards effective treatment was the forehead, only one failure being reported in seventeen cases.

**The Fate of Iodine, Iodides, and Iodates in the Body.**—Torald Sollmann (*Cleveland Medical Journal*, December, 1916) presents the results of some investigations made to solve this problem. These showed that following the administration of free iodine that substance was bound in the blood through the protein in such a way that it could not subsequently be liberated in the body owing to the need for a much higher hydrogen ion concentration than is anywhere present in the tissues. The same statement holds true of the liberation of free iodine in the body from iodides or iodates.

**Diathermia in the Treatment of Trifacial Neuralgia.**—Heinrich F. Wolf (*Medical Record*, December 30, 1916) describes diathermia as consisting of heating the tissues by means of the high frequency current and advises its use before other methods are tried such as injections of alcohol or ganglion resection. Wolf prefers to apply the electrodes in such a way as to have the ganglion between them as by putting one at the back of the neck and the other over the eye which is protected by cotton saturated with saline solution. The strength is usually 700 milliamperes and the duration of each treatment is from one half to one hour.

**Treatment of Proctitis.**—Allton L. Sherman (*Medical Record*, February 7, 1917) asserts that this condition is almost universally prevalent in some form. Successful treatment depends on three factors: enema of water at 100° F. followed by rectal irrigations of hot water for an hour twice a day; the local application once a week of a twenty-five to thirty per cent. solution of phenol in olive oil; opening of channels under local anesthesia and causing them to heal from the bottom. The irrigations may be begun at 125° F., gradually raised to 140° F., as the rectal mucous membrane is insensitive, taking care, however, not to scald the anal integument. Saline solution serves the purpose well.

**Transfusion and Splenectomy in Pernicious Anemia.**—H. Z. Giffin (*Journal A. M. A.*, February 10, 1917) states that up to the present time there is no evidence that splenectomy cures pernicious anemia, but it does produce marked temporary improvement so consistently as to be worth while in many cases. Splenectomy should be considered in persons in early adult life and middle age whose general resistance is good, but who show splenic enlargement and evidence of active hemolysis. The presence of active hemolysis can be determined satisfactorily by estimating the blood derived pigments present in the duodenal contents. Preoperative transfusion should be employed to raise the patient's general condition. A series of thirty-one cases so treated is reviewed and shows the excellent temporary results for periods of time up to six months.



**Remarks upon the Treatment and Prognosis of Chronic Glaucoma.**—A. A. Bradburne (*Ophthalmology*, January, 1917) says that the operation which, in his hands at least, has given every satisfaction and in which he has yet to meet with a failure, when performed in suitable cases and after due preparation, and carefully estimated consideration of the underlying cause, is a small, basal, buttonhole iridectomy of but a couple of millimetres, with subsequent massage of the eye within twenty-four hours. The last is the essential feature, and provided that but the slightest traumatism has been inflicted, can be carried out without pain or reaction. The operation, in that it leaves the pupillary border of the iris intact, allows the subsequent employment of myotics, if they should be deemed necessary. As a rule they are not needed, if the principles of automassage be learned properly by the patient and faithfully carried out, and the omission of myotics certainly removes a liability to return of tension from the irritating effects of the drops.

**A New Treatment for Myopia.**—Bacchi (*Bulletin de l'Académie de médecine*, January 16, 1917) describes and praises an apparatus devised by Roger d'Ansan, having for its purposes the restoration of lateral elasticity in the sclera and improvement of its powers of resistance against the almost constant pressure exerted upon it by the external recti in myopia. The apparatus consists of a frame resting on the ears, nose, and head, and provided with two adjustable rods each terminating in a rounded ebonite pad intended to exert backward pressure on the eyeball. During use of the device, the degree of myopia in each eye having been determined, the patient is seated with the head resting against a firmly supported pillow. The two pressure pads are adjusted exactly in front of the corneas, and pushed gently against the closed lids until slight resistance is felt, the patient being requested to keep the eyes absolutely still. After the compression has been maintained for one or two seconds, the pressure pads are withdrawn. The compression increases the transverse diameter of the sclera and hence reduces its anteroposterior diameter. The eyes are allowed to rest for a second or two, and the procedure continued for ten minutes. The lids are next washed with a little 90 per cent. alcohol and the patient taken with eyes closed into a dark room, where he remains ten minutes. He then opens the eyes and in three or four minutes is brought back into daylight, at first staying with the back to the light for three or four minutes, then facing the light for five minutes, after which the degree of myopia is again ascertained. After three or four sittings the early resistance to the pressure is noticed gradually to yield in the favorable cases. Results are obtained less rapidly in the aged than the young, and as a rule, less rapidly in marked than in slight myopia. In all subjects, however, the visual distance is increased by twenty centimetres at the first sitting. A man fifty-five years of age after a few sittings was able to read at 160 centimetres type which previously he could read only at twenty-nine centimetres. Improved vision was obtained in a case of retinal detachment. Daily or triweekly sittings may be given.

**Reduction of the Number of Injections in Anti-typhoid Vaccination.**—F. Widal and A. T. Salimbeni (*Presse médicale*, January 4, 1917) state that in the French army four prophylactic injections of the mixed typhoid and paratyphoid vaccine are still prescribed for men in active or reserve military service, and three injections for those in the "territorial" service. In America and Germany the injections are throughout limited to three. Researches of the authors have convinced them that the injections should now be reduced to two. They are using a simple heated emulsion of bacilli in saline solution. The typhoid and A paratyphoid organisms are heated at 56° C. for an hour and the B paratyphoid to 57°. The finished vaccine contains ten billion organisms in every three c. c. The three organisms are in equal numbers. The two injections, respectively of one and two c. c., are given at an interval of seven days, and include as many bacilli as the four injections previously employed. Reactions by this method, applied in 5,000 cases, were no greater than from the smaller amounts. Two thousand additional subjects were given a single injection of one and one half c. c. of the same vaccine, and even this large amount as an initial dose was well borne. Where, for some reason, two injections cannot be given, the single dose may be used. Further comparative trials will show whether a single routine dose will not be sufficient. The smaller the number of injections, the fewer will be the instances of incomplete vaccination and the less the chances of a reaction.

**Treatment of Burns by Paraffin.**—A. J. Hull (*British Medical Journal*, January 13, 1917) confirms the excellent results secured by French surgeons in the treatment of burns by means of a paraffin preparation called ambrine. This is a proprietary, secret substance, but Hull has been able to produce a substitute for it which has all of the advantages of ambrine and which eliminates certain of its disadvantages. The substance has the following composition:

	Per cent
R Resorcin, .....	1
Oil of eucalyptus, .....	2
Olive oil, .....	5
Paraffin (molle), .....	25
Paraffin (durum), .....	67

Melt the paraffin durum, add the paraffin molle and olive oil. Dissolve the resorcin in absolute alcohol, add to the above, and then add the oil of eucalyptus when the whole has cooled to about 55° C.

By a slight change in the formula betanaphthol may be substituted for the resorcin. This preparation melts at 48° C. and forms an antiseptic protective covering for the burned area which stimulates healing and reduces discomfort by acting as a splint to the tissues. The treatment of burns consists in cleansing with sterile water, drying thoroughly, and covering the surface with a layer of the paraffin by means of a soft camel's hair brush. Over this is laid a very thin layer of cotton wool, cut just the size of the wound, and a second layer of the paraffin is applied, the dressing being completed by adding a covering of wool and a bandage. The dressing should be changed daily or on alternate days, depending upon the amount of secretion.

# Miscellany from Home and Foreign Journals

**A Little Known Sign of Fracture of the Inferior Maxilla.**—L. Imbert and L. Gauthier (*Paris médical*, January 20, 1917) deem anesthesia in the distribution of the mental branch of the inferior dental nerve a pathognomonic indication of jaw fracture, whether it involves the horizontal ramus, the angle, or the lower portion of the ramus. In fracture the skin of the chin becomes anesthetic in a circular area about three cm. in diameter on the side of the lesion. Absolute insensibility to pin pricks exists and the anesthesia is constantly present. It is found also on the internal aspect of the lips, the vestibular portion of the gum as far as the line of fracture, and sometimes also on the lingual surface of the gum. Absence of anesthesia in the last mentioned situation is due to the presence of a few filaments of the uninvolved lingual nerve in this area. The sign is of considerable diagnostic value not only because it is constant in recent fractures but because it persists in old fractures. In the latter case it is sometimes the sole remaining evidence of the injury, all objective signs having been removed through early and careful dressing or by surgical intervention. The sign is usually wanting in fractures of the ascending ramus above the orifice of the dental canal, or of the coronoid process or condyle.

**Nephritis and Syphilis.**—P. Merklen and G. Henyer (*Presse médicale*, January 22, 1917) discuss that form of nephritis which appears relatively early in life, some patients being only thirty or forty years of age and the great majority not much above fifty. The condition is always associated with circulatory disturbances and belongs in the group of hypertensive nephritides or among the ozotemic forms of nephritis. In these cases infection is especially important as an etiological factor, and among the causative infections syphilis occupies a prominent place. The writers report three cases belonging to this syphilitic group, and refer to the statement of Lian and Vernes that out of ten cases of high blood pressure and renal trouble of the type referred to five exhibited a positive Wassermann reaction. Manifestly, in nephritis of this variety the three customary methods of determining syphilis as a factor should be brought into requisition, viz., the anamnesis, a search for physical evidences of syphilis, and the Wassermann reaction. In the absence of such evidence, an inquiry for some other former infection that might be responsible, e. g., scarlatina, should be conducted, though in some instances all attempts to locate an infective cause will prove fruitless. According to the data now available, about one half the infective cases may be considered due to syphilis. The syphilitic infection always dates back several years, the condition being thus a tertiary renal syphilis. Nephritis of this type is, of course, to be clearly distinguished from that occurring in older subjects as a result of extension of arteriosclerosis to the kidneys. Coexisting syphilis in such cases is merely a coincidence or is but slightly related etiologically to the renal condition.

**General Muscular Atony and Postoperative Ileus.**—R. R. Huggins (*American Journal of Obstetrics*, February, 1917) points out that when a patient shows evidence of chronic fatigue, with the poor tissue tone that follows chronic infection or prolonged strain, difficulty in dealing with ileus as a postoperative complication is always pronounced. Death from paralytic ileus is sometimes primarily due to lack of muscular strength in the gastric and intestinal walls, and the degree of postoperative distention depends largely upon the tissue tone of the individual previous to the operation, as well as upon the amount of exhaustion incident to the latter. While no instrument of precision for measuring muscular tone is available, much may be learned from a study of the pulse pressure where there is widespread muscular weakness. Most of the cases in question show the same relative weakness of the intestinal musculature as exists in the heart and bloodvessels. In all Huggins's patients careful investigation of the blood pressure is made upon admission. Operation is refused or deferred when there is a pronounced fall in the pulse pressure after exercise, e. g., a brisk walk or vigorous use of dumb bells; or, if operation is undertaken, the greatest care is given to the selection of the anesthetic and attention paid to the extent and duration of the operation. Patients handicapped in this way stand little stress.

**Choice of Operative Procedures in Cancer of the Rectum and Pelvic Colon.**—Charles H. Mayo (*Annals of Surgery*, February, 1917) gives the mortality from operations for cancer of the rectum as follows: Of 753 patients in the clinic a radical operation was performed on 430, with a general operative mortality of 15.5 per cent. Before 1910 the operative mortality was 17.8 per cent. From 1910 to 1913 it was 17.7 per cent., the operability being fifty-one per cent. In this earlier period a higher percentage of cases was seen late. Even at the present time fourteen per cent. of the patients with cancer of the rectum observed have not had a complete physical examination, although they have been under treatment elsewhere, and some even have been recently operated on for hemorrhoids. In 1913, 1914, and 1915 the mortality was reduced to 12.5 per cent., the operability was raised to 71.8 per cent., and the operative efforts were more radical. Judging from the character of the colonic contents it would seem that the lymphatic system of the large bowel is very inactive, very much less active than that of the small intestine. For this reason cancer remains a local disease for comparatively long periods of time. That metastasis through the lymphatics is somewhat modified also by age is evident from the fact that in old people cancer remains a local disease longer than in young people. In a considerable number of necropsies performed on persons who have died from cancer of the rectum without operation it is found that there was little or no glandular involvement, death having been caused by perforation, peritonitis, or obstruction.

**Compression Paralysis of Pott's Disease in Adults.**—Charles M. Jacobs (*Journal A. M. A.*, February 17, 1917) observed twenty-four cases of paraplegia in seventy-five cases of adult Pott's disease, sixteen of which were known to have terminated fatally. In adults he found that this paraplegia was not commonly due, as in children, to tuberculous granulation tissue, but was the result of the formation of an abscess within the spinal canal. Occasional cases in adults were due to granulation tissue, however. No method of treatment seemed to have any definite influence upon the ultimate outcome of this complication when abscess was present. The symptoms were found to vary from mild paraplegia to complete severance of the cord. Death in the majority of the cases resulted from pulmonary tuberculosis.

**The Causes of Coma.**—Wayne R. Bissell and E. R. LeCount (*Journal A. M. A.*, February 17, 1917) present an analysis of 400 cases of coma admitted to a general hospital. The diagnosis of the cause in each case was made at necropsy and it was found that of ninety-three patients dying within four hours after entrance to the hospital the diagnosis in over forty-seven per cent. was correct. Among those who died within the first twenty-four hours over fifty-five per cent. were correctly diagnosed. Relatively little difference in the proportion of cases diagnosed correctly was found as a result of the time which elapsed between admission to the hospital and death. The order of frequency of the causes, with the approximate percentage for each cause, was as follows: Fracture of the skull, thirty-six per cent.; cerebral hemorrhage, twenty-four per cent.; meningitis, nearly seven per cent.; lobar pneumonia, over five per cent., and uremia, just less than five per cent. Each of the remaining twenty-five causes produced less than five per cent. of the cases. In this study such causes as gas poisoning, morphine, or corrosive poisoning were excluded.

**Hereditary Deforming Chondrodysplasia.**—Albert Ehrenfried (*Journal A. M. A.*, February 17, 1917) concludes from an analysis of the literature that this condition is neither an extreme rarity nor is it almost unknown in America, for in this country there have been a total of some seventy-one cases, to which the author adds twelve discovered in about one year. About three males are affected to one female and heredity plays an important role, though one difficult to determine precisely from the lack of information on this point in many of the reported cases. The disease is marked by symmetrical, irregular juxtaepiphyseal hyperostoses, specially about the knees, hips, shoulders, ankles, and wrists. Other bones may also be involved. The disease is typically one of the period of skeletal growth and usually leads to a markedly disproportionate shortness of stature. Bony spurs usually develop and sometimes they become detached or undergo abscess formation from infection. There is often some bowing of the forearms owing to poor development of the ulna. Even the cranium may be involved though this is not usually the case. Nerve complications from pressure are very common.

**The Hecht-Weinberg-Gradwohl Test in Syphilis.**—R. B. H. Gradwohl (*Journal A. M. A.*, February 17, 1917) states that he has performed this modified Wassermann test in some 5,000 cases in direct comparison with the original Wassermann and believes it to have very decided advantages over the original method. In the first place it is more delicate and employs unheated serum, thus avoiding destruction of the thermolabile fraction of the reacting substance. It also eliminates the influence of natural antisheep amboceptor. It further gives decisive reactions—either positive or negative—not a large number of borderline ones. It gives a positive reaction in about fifteen per cent. more cases of syphilis than does the original Wassermann. It gives positive reactions in many cases in which the original gives negative ones such as ocular syphilis, visceral syphilis, intensively but inadequately treated cases provocative cases and cases of tertiary syphilis without symptoms. It also gives a far better indication of the effects of treatment than does the original method, for cases are often encountered which have become negative to the latter but which still react positively to the former.

**Concentration of Entameba Cysts in the Stools.**—J. W. Cropper and R. W. Harold Row (*Lancet*, February 3, 1917) state that they have worked out a very satisfactory method of concentrating the cysts of entamebas in specimens of stools which permits of a decided increase in the number of positive findings in suspected cases and of readier diagnosis. In brief it consists in mechanically breaking up one gram or more of the stool with thirty mills of normal salt solution by agitation for at least half an hour in a mechanical shaker; transferring the emulsion to a separatory funnel where it is shaken by hand with about ten or twenty per cent. of its volume of ether. It is allowed to stand for a minute or two until the mixture separates into two layers. The upper of these contains the fecal debris mixed with the ether, the lower is almost free from such debris but contains the ameba cysts. This lower saline layer is then drawn off and centrifugated at a slow speed for two or three minutes to throw down the cysts. This will concentrate the cysts some fifteen times, but they can be further concentrated if desired by decanting the supernatant fluid from the tubes, refilling with saline, and subjecting them to fractional centrifugation, discarding the material thrown out in the first ten seconds. By this method at least ninety per cent. of the weight of the stool is removed. If attempts to cultivate the cysts are to be made the process must be altered by the elimination of ether and the preliminary straining of the saline emulsion through a piece of silk having a mesh about forty microns in diameter. A simple method of counting the cysts present in stools is to make a ten per cent. saline emulsion of the stool fragment; using pipettes calibrated to deliver twenty c. mm., several drops of such size are placed on clean glass slides previously prepared by making on each a ring of vaseline an inch in diameter. Over the drop in the ring there is then placed a ruled cover glass such as that used with Böttcher's slides and all the cysts in the drop are counted.



**Thorium in Pyelography.**—J. Edward Burns (*Journal A. M. A.*, February 17, 1917) has continued his observations on the use of solutions of thorium for pyelography and concludes that they are the most satisfactory which are so far available. They give clear, clean cut shadows, they are clinically wholly nontoxic, they are virtually so even in enormous doses given intraperitoneally to animals, they are not irritating, the solutions are clear and watery with great fluidity so that they leave the urinary tract readily and promptly, they are clean and do not cause stains, and, finally, they are inexpensive. The best solutions are ten and fifteen per cent. of thorium nitrate, dissolved with about nine per cent. of sodium nitrate and twenty-one per cent. of sodium citrate.

**Von Dungen's Modification of the Wassermann Reaction.**—Erich Sonntag (*Medizinische Klinik*, December 24, 1916) has subjected this simplified method to a careful comparative investigation in 100 cases and finds that it has two important defects. The first is that it fails in certain positive cases especially those giving slight Wassermann reactions. The second is that it gives questionable results in a considerable proportion of cases definitely positive to the ordinary Wassermann reaction. It is therefore less delicate and much more uncertain than the original Wassermann technic. It was recommended on account of its relative simplicity as a suitable method for the use of clinicians, but the author finds that it is far from simple, and does not give good results unless carried out by one skilled in serologic technic.

**Meckel's Diverticulum: With Special Reference to Umbilical Disorders of Infancy.**—R. M. Harbin (*Southern Medical Journal*, February, 1917) summarizes his conclusions as follows: 1. Meckel's diverticulum, the incompletely atrophied remains of the vitelline duct, is found in two per cent. of the members of the human race, occupies usually the lower third of the ileum; occurs in males in the proportion of three to one of females; and is attached to other viscera in a third of the cases. 2. Clinical investigation should record the presence or absence of any history of polypoid growths, strawberry excrescences, hemorrhages, hernia, etc., about the umbilicus coexisting with diverticula which, before atrophy is complete, perhaps cause a large percentage of the protean intestinal disorders of early childhood. 3. In view of the comparative frequency of this abnormality it is surprising that so few cases of acute diverticulitis arise. In the acute case from this cause the symptoms would be those of ileus modified somewhat. The signs of obstruction are not so rapid in development, and the symptoms of peritonitis are more gradual, less fever, less tympany, and a less degree of leucocytosis. When the peritoneum is opened a bloody serum is suggestive. 4. Chronic diverticulitis should be more frequently investigated as an abdominal entity in the diagnosis of the cause of surgical indigestion. From an anatomical standpoint it is surprising that such a large percentage of Meckel's diverticula are symptomless. These overlooked diverticula perhaps explain a considerable percentage of unrelieved cases of surgical indigestion by operative treatment. The

atypical nature of symptoms may be explained by certain anatomical variations, and are suggestive compared with certain classical symptoms of dyspepsia from other causes. These cases frequently give histories of umbilical disorder in infancy, of irritable, colicky babies. Later, constipation occurs with occasionally bloody mucus in the stool, causing straining; there are usually pain about the navel, aggravated by running or by pressure, and bilious attacks without obvious cause, and the patient often says that his stomach is never right.

**Osteochondritis Dissecans.**—E. G. Brackett and Curtis Lee Hall (*American Journal of Orthopedic Surgery*, February, 1917) give an interesting report of eight operative cases, describing the symptoms, diagnosis, x ray findings, etc. They give their operative technic, using the median patella incision. After reviewing the theories of the various authorities on this disease relating to the etiology, they state that they believe the affection is due to trauma, and report as proof a case which was caused by traumatism, and which, upon operating, showed a portion of the cartilage partially attached to an expansion of the anterior portion of the posterior crucial ligament. Other conditions in the joint present evidence of the traumatic origin of this affection.

**Aural Reactions in Aerial Flights.**—P. Lacroix (*Bulletin de l'Académie de médecine*, January 16, 1917) points out, from examination of numerous aviators after flights and from personal experience, that disturbance of the vestibular apparatus during flights, manifested in vertigo, is surprisingly uncommon. Though dizzy on a second story balcony, the author never experienced vertigo in flights, even during spiral evolutions of the aeroplane or rapid descents. The explanation of this is apparently that terrestrial landmarks are, during flight, too distant to excite visual vertigo, while tactile and labyrinthine vertigo are, as a rule, excluded by the relative stability of aeroplanes as now perfected, a tendency to vertigo appearing, in the average subject, only where there are abnormal rolling, pitching, or "scenic railway," movements bordering on the dangerous. No aviators, in Lacroix's experience, became dizzy during flights except two or three who had previously suffered from accidental falls on the head. Auditory disturbances, on the other hand, are practically the rule during flights, such as intermittent tinnitus and deafness, especially at high altitudes and during rapid descents and ascents. These symptoms are at least partly due to the variations in barometric pressure in the different air strata through which the aviator passes, and are relieved by swallowing movements, which are often carried out automatically. Aviators returning from test flights often show on otoscopic examination a more or less marked and uniformly similar reaction of the eardrum, viz., a red zone in front of and behind the handle of the malleus and a congestion, at times very pronounced, of Shrapnell's membrane. After prolonged flights, slight tinnitus and deafness may persist for a few hours or even a day. In subjects already suffering from otic or tubal disease, aggravation of the condition may probably occur. Hence in candidates for an aviator's license a normal condition of the middle and internal ear is a prerequisite.

# Proceedings of National and Local Societies

## THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Special Meeting, Held December 18, 1916.*

The President, DR. THOMAS S. SOUTHWORTH, in the Chair.

*(Concluded from page 478.)*

### **Food Habits of Delicate Children** *(Continued).*

—DR. H. R. M. LANDIS, of Philadelphia, said that some experiments had been made by Doctor Gephart on the dietary of the St. Paul School for Boys. It was found that the boys were taking 4,500 calories per diem, and buying food in the "tuckshop" amounting to about 500 calories. They were athletic boys in a New England school, interested in baseball and other athletic occupations. Doctor Du Bois took records of the resting metabolisms of boys at the age of puberty, and found that they were twenty-five per cent. higher than in the adult under the same conditions. This explains the ravenous appetite of boys. If boys are given ample food, as in St. Paul's School, they take fifty per cent. more than a farmer does at hard work.

Doctor Emerson was studying one of the most important problems of the day in trying to find out the causes of malnutrition in children. We ought to know, and we do not know, how much milk a child ought to have at different ages. We ought to know, and we do not know, how much calcium a child ought to have to promote the proper growth of his bones. We ought to have these facts. It would require a staff of men with a well thought out plan, working for five or six years, to reveal these things. Yet such investigations are not relatively costly. It is here that the Germans have had the proper idea of values. It costs about \$50,000 to run the Nutrition Laboratory of the Carnegie Institution in Boston, and though it is a great sum, it is less than one one thousandth part of one per cent. of what the people pay for food, and in comparison with the value of what could be brought out in these investigations the cost of them is negligible. This is what the American people should be educated up to; they should be able to take the advice of experts, and should learn to accept the opinions of students. In the old-fashioned days one man's opinion was as good as another man's. The result of this idea is chaos in our government. If there could be some acknowledgment of intellectual leadership, if the intellectual people could get together and have the power of the National Guard politically, then something might be done for the higher welfare of the country. And for the welfare of the poor the food problem is the most important problem that confronts us.

Dr. C. G. KERLEY said that Doctor Emerson had brought out the idea of faulty food and faulty or inadequate feeding, and yet the results of his management of the cases presented were accomplished through an entire rearrangement of the child's regimen. There is no food system that will ever make a defective child grow by itself alone. The entire life must be arranged along the lines required for a

growing animal—proper rest, absence of overwork, proper sleep, and proper feeding. The title of the paper perhaps overemphasized the food element. Doctor Kerley said that he felt he must take exception to one statement made by Doctor Emerson, that all children ten per cent. under average weight are delicate. Many children are slim and have little adipose tissue and yet are perfectly well. Doctor Emerson had spoken of defects; it would be interesting to know just what defects he considers have permanent effects on the strength and development of the children. He had also spoken of overtire. A child ought to be tired in order to rest well. Has Doctor Emerson a system for the regulation of exercises? Hardly enough had been said as to what constitutes the daily régime of the child other than food.

Coming to the question of food, while the title of the paper was Faulty Food Habits, only children who had deficient feeding had been referred to. Faulty food habits due to overeating and excessive dieting are just as bad as those including food of too low caloric value. Doctor Kerley said that the majority of children brought to him because of malnutrition were overfed, and an adjustment of food along the lines of the child's requirements was all that was necessary for most satisfactory results.

Doctor LA FÉTRA said that the matter of measured feeding by the estimation of calories might well be emphasized. It is true that food must contain a certain proportion of protein in the proper relation to carbohydrates and fats, and that this cannot be managed unless the caloric value of the food is estimated. Second, a food exhibit should be arranged by which even a child may know the quantities he should eat. Third, the class method of instruction encourages an esprit du corps among the mothers and children. A nurse may talk to the mothers about the proper food to prepare and the palatable preparation of it, but the reform must come from within the child, and, as Doctor Emerson said, after a little while the children learn what they ought to eat, and they will pick out for themselves the amounts they ought to eat, and the things that have the proper food value. Doctor Emerson had mentioned the cases of underweight resulting from overtire and overexercise. That is very common, causing loss of appetite and failure to assimilate. Doctor Emerson makes extensive use of the window tent. Doctor La Fétra said that he himself had used these tents for years and found them very valuable.

Another matter of importance in the malnutrition of schoolchildren is the short time allowed for luncheon. It had always seemed to him that the school hours were arranged rather for the benefit of the teachers than for the pupils. The midday recess allows the child only about half an hour for what physicians say ought to be the heaviest meal of the day. It is a mistake to make these children run to their homes and eat a meal in a hurry and then get back to school. Either the school authorities should be persuaded to change the hours and allow

the children two hours at midday instead of one, or a simple luncheon should be provided which is readily masticated and will allow the children to eat it properly in the limited time—better, the afternoon sessions should be done away with. In communities that can afford it, the afternoon sessions are abolished, but for the majority of children in this country the present arrangement seems to be a necessity. If so, let the least amount of harm be done to our children.

A malnutrition clinic had been started at Bellevue Hospital. Only a beginning had been made, but of thirteen children treated during the last few weeks, all except two had made gratifying gains in weight. The remaining eleven gained twenty-four and a half pounds in thirty treatment weeks. This was accomplished by following out the rational methods indicated by Doctor Emerson.

Dr. THOMAS DARLINGTON said that he had had the privilege of investigating the conditions of the National Guard last summer, eating from fifty kitchens. At the first kitchen potatoes, corn, rice, and macaroni had been served for dinner. Inasmuch as courage as well as good health comes with proper diet, it is most important that the soldiers should be properly fed. He had also noticed that where 100 men had to be fed in half an hour, some of the men at the end of the line did not get anything.

As to the cost, Doctor Darlington said that as a trustee in the City Mission Society, where many poor families are helped, he had another field of observation. For instance, in a family consisting of a widow and four children, the whole source of income from one of them is nine dollars a week. The rent over toward Avenue D or C takes, say, twelve dollars, and that with other fixed charges leaves eighteen dollars for the family of five, or sixty cents a day. Five can be fed on that amount if we know how. We have tried to teach mothers how to feed their children, getting fifty mothers together in a class. For instance oatmeal left from breakfast, mixed with syrup and a cut up banana makes a nourishing and palatable pudding.

Doctor Darlington said that when he first became connected with the steel industry in work of this character he investigated many lunch boxes. One man showed a lunch bucket with a boiled cabbage and nothing else. Another had cake and honey. They said they liked it. Doctor Darlington said that he had seen many foolish people filling up with cabbage or apples at noontime. At night they were very tired, so as soon as they were free they ran to the saloon. This made him think of Solomon's Song: "Feed me with apples and stay me with flagons."

In the Compensation Commission it was found that a great majority of the cases of accidents were due to fatigue rather than overwork. Men were not properly nourished and got tired easily, and when they were tired from lack of proper food they got easily hurt. There is no subject more pertinent or more important than this. In reply to a question as to whether the National Guard was not fed by the Federal Government, Doctor Darlington replied that the government issues a regular ration, but that

this is drawn by the cooks of the various messes, and that they draw what they think the men will like, unless they are educated to make the proper selection. Upon being asked whether this matter was going to be reported, Doctor Darlington said that a report would be published shortly.

Dr. ROBERT T. MORRIS said that no mention had been made of vitamins. It would be interesting to know what bearing they had in connection with relish. Does the child who relishes the vitamins of one cereal liberate more calories than he would liberate from a dish of another cereal which he did not like at all? If not, is part of the second cereal then given over to saprophytes? If it is, does the child suffer from saprophyte toxins? Doctor Morris said that sometimes when traveling in the Far North he had taken butter with him. Plenty of butter with pancakes on a Sunday morning makes a man feel religious. He had given some of this butter to the Esquimaux, and had seen them take buttered pancakes and turn them over and dip them in a cask of seal oil that was so rank that some of the flavor came from the larvæ of bluebottle flies; yet that was their choice of flavor. Did the relish allow them to get more vitamins and calories from the seal oil than they would have obtained from butter alone?

Dr. CHARLES HENDEE SMITH said that Doctor Emerson's work had been mainly to apply private practice methods to dispensary work by introducing the class system. Most doctors have been regulating the lives of their private patients, telling them when to get up, what to eat, and when to go to bed, but the dispensary patients have not had this before. It is only by class methods that this can be accomplished in the dispensary, as it takes too much time to give each patient the individual attention necessary. Doctor Smith said that he had been working along these lines for several years. At the Vanderbilt clinics they had what they called the bad hygiene patients, or those that had bad habits. Doctor Holt each year gave a clinic on bad hygiene. They had also started class methods on enuresis, and treated it in a class way, but this was only a small beginning. Doctor Emerson's thorough and painstaking procedure was of great value, and this method of teaching ought to prove helpful for these children. In the Bellevue clinic, where it is being tried, much enthusiasm was shown by the children, and they gained from a pound and a half to two pounds; but the second week they lost their enthusiasm and also lost weight. Then the third week they were lectured severely again and gained or lost, according to the amount of attention they got from the doctor. He used to tell the students that it takes the doctor's heart blood to help these patients. One has to give them enthusiasm by the expenditure of personal effort.

The great stumbling block this year is the cost of food producing 2,000 calories. He had been spending most of his spare time in trying to find out how much food of the highest caloric value can be had for twenty cents, and what is the best thing for these poor families to buy. In one family, the mother said she could not afford to give the children any milk; she had an income of eight dollars a



week for seven people, and it was discovered that she was spending \$1.80 on tea, coffee, and sugar. She got about 1,600 to 1,800 calories out of the sugar, but the tea and coffee gave her nothing. This question of "portions" has a tremendous importance. The "average serving" means nothing, the "heaping tablespoonful" is very variable, but by measuring by the level tablespoonful one can be quite accurate. The new book by Mrs. Rose, "Feeding the Family," gives food values by the cupful.

Doctor EMERSON, in closing the discussion, said he was much interested in Doctor Landis's statement that the problem of tuberculosis is chiefly one of nutrition; also in his studies of the cost of living in poor families of different nationalities. In the Nutrition Clinic at the Massachusetts General Hospital a list of the cost of the various foods at present prices has been made. Two thousand calories, a day's complete ration, costs in cornmeal, \$.05; oatmeal, \$.06; puffed rice, \$.54; milk, \$.31; stew meat, \$.20; round steak, \$.43; eggs, \$.83; cod steak, \$1.12, etc. Suggestions based on these values have been found helpful because the foods most necessary for the child's growth are among the cheapest.

Doctor Lusk has spoken of the high caloric value of the food required daily by the growing child. In support of this statement Doctor Emerson said that the tables in use expressing the caloric requirements of children as compared with adults are wrong, because the average child ten to fourteen years of age requires more food than the average adult to supply growth and increased activity. A delicate child of seven or eight years will often take nearly 4,000 calories daily. He needs more food than the normal child and will take two or three times as much until he has reached normal weight.

In answer to Doctor Kerley's question whether a child ten per cent. underweight is delicate, Doctor Emerson said that there is a strong tendency for a child to acquire a normal weight, and if he remains constantly ten per cent. underweight there is something fundamentally wrong with him. Such an underweight child may be apparently very well for a number of years, but if some sickness or unusual strain comes to him he has not the resistance that he otherwise would have. Perhaps ten per cent. may be an arbitrary amount but this degree of underweight almost invariably means there is something physically wrong with the child or with his food habits. In answer to Doctor Kerley's question as to what defects interfere with the food habits of these children Doctor Emerson said defects of the nasopharynx are the most important. A history of previous operation for adenoids or tonsils is not sufficient. In a group of fifteen children twenty per cent. required second or third operations.

Doctor Smith says that in private practice these children are adequately taken care of. Doctor Emerson did not agree, saying although he had no wish to criticize the members of the medical profession, very few doctors know what older children eat because their food is not measured. The only way to know what a child eats is to measure the food and keep a record. This problem of the delicate child is not a simple one and cannot be solved by the doctor alone. There are

three distinct elements which should be known: the physical condition, the home life of the child, and the child itself. A thorough knowledge of these often makes a difficult diagnosis easy. Doctor Emerson said that it is not necessary for the physician to spend more than thirty minutes a week with groups of these children treated by the class method.

Doctor Emerson said he wished to lay more stress on the control of these children. It does not matter whether the physician knows what they ought to eat or whether the mother knows; the point is to get them to eat food sufficient to gain. It is not a question of poverty; improper eating is not found any more frequently among the very poor than among those in better circumstances.

## Letters to the Editors

### IS GONORRHEA CURABLE?

SAN FRANCISCO, CAL., February 21, 1917.

To the Editors:

In the issue of the NEW YORK MEDICAL JOURNAL of December 9, 1916, there was a contribution by Dr. George Wyeth entitled "Gonorrhea—A Curable Scourge." To the reader who has given the question of the curability of gonorrhea serious thought and who has carefully considered the evidence conveyed by his experience the absence of any interrogation is perhaps rather startling. The author leads us to believe that every case of gonorrhea can be definitely cured; yet one looks in vain for any innovations or better application of established methods designed to bring about this happy consummation. The use of galvanism to destroy diseased glands is probably the one exception.

In a strict sense gonorrhea may be said to be cured when every gonococcus has been eradicated. But often there are secondary invaders and gross evidence of inflammation persists. How can it then be known that the gonococcus does not remain in the tissues? In this stage of the disease smears will almost certainly show it, especially after treatment. A negative culture, a negative smear, a negative complement deviation test merely justify the assumption that the gonococci have disappeared. They do not establish the fact as a certainty. Has it not been a matter of common clinical experience that cases which, after conscientious treatment, show no demonstrable evidence of disease, occasionally recur and cause us to question and realize the limitations of our methods of determining a cure? It is quite possible to conceive that a sequestered focus of infection may cause neither pus cell nor other pathological evidence to come within searching scrutiny. Yet with such a sequestered focus containing gonococci the case is certainly not cured. Therefore I believe the word "curable" with reference to gonorrhea should be used with some reservation, a reservation not implied in Doctor Wyeth's article.

Curiously enough a statement of Doctor Wyeth's lends weight to my contention. He writes: "Gonorrhea can be aborted in the majority of cases, if seen within twenty-four hours after a purulent discharge has begun, except in primary cases." The statement "except in primary cases" should be emphasized. A treatment which can not abort a first case, but which succeeds with later attacks of the disease, would more correctly be considered suppressive than abortive. Given a persistent infection with active recurrence constituting a secondary attack, the so called abortive treatment merely restores the *status quo* and cure is often more apparent than real. Without wishing to disparage in any way the earnestness of Doctor Wyeth's allegations almost any solution commonly used for urethral injection will do as much.

I believe that it is to be deplored that our methods of treating gonorrhea are still somewhat wanting, not so much in the acute stages as in those persistent chronic forms, notably prostatitis, which so often baffle every resource. I heartily wish that I could agree with Doctor Wyeth in considering beyond every doubt gonorrhea as a curable disease.

MELVILLE SILVERBERG

## LACK OF PSYCHOPHYSICAL COORDINATION.

SPRINGFIELD, MASS., March 3, 1917.

## I. The Indians

From an interesting article read in the editorial notes of a recent issue of the NEW YORK MEDICAL JOURNAL, under the title "Brains as an Asset" many thoughts were aroused as to why the list of our "delinquents and dependents" seems to be lengthening instead of efficient measures being found to prevent such a deplorable condition in the rapidly progressing civilization. First I would offer what seems to be one, if not the fundamental reason why the percentage of "delinquents and dependents" is so enormously on the increase; and from a careful, serious survey, it looks rather appalling to any mind that is interested in the general welfare of the race. When we read from statistics that the percentage of insanity is one in every two hundred and fifty-seven persons, here in what we have been disposed to pride ourselves in calling cultured Massachusetts (from direct means of observation the record does not seem to be overdrawn) the condition is indeed most serious; and in urgent need of improvement, after efficient consideration. The complaint in the state of Massachusetts now seems to be that there is not sufficient room for entertaining and caring for the mentally deficient, for which the state becomes responsible. To any observant mind that has had the privilege of visiting within the walls of some of the prominent state institutions, it is readily understood why the crowding may continue to increase instead of diminish, under efficient care and treatment. In every well equipped modern hospital for handling the physically disabled, there is provided suitable receiving wards for examination and proper wards of assignment for care and treatment. In the said wards all manner of chronic are herded in with every form of acute cases, regardless of the injurious effects that may be produced, one upon the other. How encouraging would seem such an illustration as the following: An educated man, one who had been reared under refining influences, was committed to what we consider the best managed state hospital in Massachusetts, and remained there for thirty odd years. The patient's mind seemed to labor under a very mild delusion, his habits were not at all harmful or even obnoxious to others; the general deportment of the patient always seemed that of a gentleman. However, the conditions surrounding his hospital confinement were such as to retard what might be scientifically considered a progress toward recovery, instead of improving the mental condition. Finally arrangements were made with the patient's family to remove him to his home, principally because of his repeated and urgent requests to be sent home. That patient has been at home now for almost three years; and having seen him frequently I am quite convinced that he is one hundred per cent. better mentally and physically than when seen in the hospital; and what is of considerable importance, the man is happy and contented, without being, even in a slight degree, an annoyance to society. On one occasion an able superintendent of a state hospital was asked a question relative to the diagnosis in the various forms of mental disease as they came to the institution; the reply was: "Oh, we consider them all as simply cases." Many similar illustrations might be given to indicate a very potent reason for the gradual increase instead of diminution in the list of our delinquents and dependents, as viewed from the hospital standpoint.

To go even further back in search for an earlier fundamental reason, it should not be difficult to find the same in our modern methods of social being. Does it not seem rather incompatible with what we refer to as modern progress in Christian civilization to associate with the same an enormous increase of mental degeneracy? Upon the latter point I would suggest, from more or less careful observation, that today, in the midst of our much boasted progress along most every line, there is a most lamentable lack of the very natural element that we term psychophysical coordination. In the schools the children may be put through certain prescribed routine exercises; possibly the code has been acquired from some more progressive school system, the children are allowed to enjoy the recess period and then run home. However, there is not one in one hundred who is properly taught the most essential practice, as Nature requires it, to acquire an harmonious action of the various mentophysical functions. In other

words, the young mind is allowed to develop, after a fashion, one set of faculties while the all important matter of coordination development is sadly neglected. If perception is not quickened in accordance with natural requirements—just as that of the wild Indian or the animal, if the mental, nervous, and muscular systems are not taught, by proper practice, to work in automatic harmony or coordination, how, pray, will there be normal mental and physical development? When we turn back to Nature for a moment and look at the superb development of the wild Indian, even that of the animal of the jungle, we must be at once impressed that Nature's course is all right and that the codes of modern civilization are all wrong.

If you look a little further into this matter of defective coordination, visit even the rural districts, in order to rule out the pernicious influence of modern city life, you are apt to find that the young men on the prosperous farms, if there are any such now, are not coordinated to a higher degree, as a rule, than for the successful stunt of "cow and horse trading, digging potatoes," etc. They read little or nothing and discuss not much besides the potatoes and the "cow business."

In speaking of the state of Kansas going Democratic in the late presidential campaign, an apparently intelligent young farmer of Massachusetts asked: "Did you say that Canada had gone Democratic?" If we are not getting the mental development that dame Nature would require, even out in the wood, where her wild children are taught by a wise instinctive law to prepare for life's demands, how in the name of common sense and justice can we reasonably expect anything better than delinquents and dependents in ever increasing numbers? ROBERT H. MCNAIR, M.D.

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## Book Reviews

*[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]*

*Recollections of an Alienist. Personal and Professional* By ALLAN McLANE HAMILTON, M. D., LL. D., F. R. S. (Edinburgh). With Original Illustrations, Photographs, and Fac-Similes. New York: George H. Doran Company. Pp. 416. (Price \$3.50.)

It is given to few not only to have lived for so many years, but to have kept in touch with men and events in so vital a manner as Doctor Hamilton. His book of recollections, therefore, comes to us filled with visions of his early years, visions which not only make excellent reading, but which serve as landmarks of the times. Early chapters on the medical history of New York, of the old College of Physicians and Surgeons are dealt with in a sympathetic manner, and we can see living before us the bigwigs of the sixties.

We must confess, however, that Doctor Hamilton's earlier visions carry with them more charm than some of those of later years, and in his practical suggestions for the future we find little that is stimulating or profitable. A few statements in the book might be picked out which should not be left unchallenged; for instance, in speaking of the famous case of the lunatic who shot Mayor Gaynor, Doctor Hamilton attempts to support a position which he took on the stand, saying that he was a cunning rogue. Gallagher died, as is well known, in the New Jersey State Hospital for the Insane at Trenton. The testimony given by the experts for the defense, that he had paresis, substantiated as it is by the serological findings, was later shown to be well founded. The macroscopical and microscopical findings of the brain, which were distinctly parietic, were demonstrated and were a matter of record when Doctor Hamilton wrote his book. Jersey justice, which was so highly commended at the time, was a mere farce, so far as the Gallagher case was concerned, and the truth should be made known, even if unfortunately the place for stating it should happen to be in our comment on so useful a volume, from such a distinguished source.



*Le traitement des plaies infectées.* Par A. CARREL et G. DEHELLY. Avec 78 figures dans le texte et 4 planches hors texte. (Collection horizon précis de médecine et de chirurgie de guerre.) Paris: Masson et Cie, 1916. Pp. 177.

This small volume is the first complete presentation made by the authors of the Carrel method of treating wounds, although numerous articles contributed by them to medical journals and to learned societies have presented the main facts which are included in this volume. The method has been the subject of much discussion, and has been tried by many surgeons, both in Europe and in the United States. The results have not been uniformly successful. The authors are of the opinion that the lack of success has been due in such cases to errors in technic. They have, therefore, published in a concise, didactic form, clear and explicit instructions for the preparation and application of Dakin's fluid. The book opens with an explanation of the principles on which the method of treatment is based. The technic, both for the preparation of the fluid and for its application, are given to the minutest detail, and the results obtained in actual practice are set forth as a justification of the method. A number of illustrations are given which enable the reader to follow the method without any further instructions, and to determine for himself whether or not the claims made by the authors as to the advantages of this method of treatment are sustained. The book will be found of great interest, and the new technic of chemotherapy which is proposed has been followed by such remarkable results under the most adverse circumstances that it should be tried out thoroughly by every surgeon.

An error occurs in the twenty-second line of page sixty-one where the directions speak of 200 grammes of chloride of lime. This should be 184 grammes as indicated in the preceding formula. Doctor Carrel informs us that this error arose from the fact that the work was collated from various published articles. The figure 200 would be correct for chloride of lime assaying 23 per cent. of active chlorine, whereas the formula calls for chloride of lime containing 25 per cent. of active chlorine, of which only 184 grammes are required.

An English translation is being prepared by Dr. Fagge, of Guy's Hospital, London, England.

*The Diagnosis and Treatment of Abnormalities of Myocardial Function.* With Special Reference to the Use of Graphic Methods. By T. STUART HART, A. M., M. D., Assistant Professor of Clinical Medicine in the College of Physicians and Surgeons, Columbia University; Visiting Physician to the Presbyterian Hospital of New York. Illustrated with 248 engravings, 240 of which are original. New York: The Rebman Company, 1917. Pp. XVI-320.

This book represents an extremely conscientious and painstaking exposition of the pathological physiology of the heart by a man who has evidently mastered his subject. It will be useful as a book of reference for those who wish to enlarge their knowledge of irregularities of the heart. The book will be of very little practical use in the treatment of heart patients because it is written from the hospital point of view and in the main the patient has been left out. As is perfectly proper, James McKenzie is given credit as the father of modern cardiology, but it is a pity that his successors in adopting his graphic methods have not also adopted his profound interest in the interpretation of subjective symptoms and his desire to personify his patients. Heart patients in hospitals are proverbially not treated, or at least certainly not with the same hopefulness and confidence of achievement that is found in the foreign cure resorts, which the author of this book declares have been greatly overestimated. He also falls into the error of denying the benefits of exercise in general arteriosclerosis with high blood pressure, a class of patients to whom out of door life is of the greatest resource. This error is founded upon the confusion of the atheromatous wrecks of the hospital ward, who have reached their condition through hardship and intoxications, with the arteriosclerotic individuals with high blood pressure encountered in private practice who have reached their condition through physical inertia, overingestion of food, and nervous strain. Again, the matter of diet is passed over with three pages of con-

sideration. One looks in vain for the application of some modern knowledge of dietetics and finds only this paragraph: "The relation of protein intoxication to the degenerative changes of various organs, is a subject pregnant with interesting possibilities, but as yet our knowledge is only a step advanced beyond the sphere of pure speculation. If our therapeutics are to be used with a conviction which is based on a reasonable logic, the application of these hypotheses to the treatment of our patients must await the discovery of further facts which may link together the fragments which at present can only be called suggestive." It is to be hoped that this profound statement at least leads the author in his practice to the limitation of the eating of meat in his chronic heart cases. In other words, the book is written from the point of view of the diagnostician, and is to be recommended to those who wish to improve their powers of diagnosis, and it suggests the interesting speculation as to whether it is possible for the general diagnostician who must not only perfect himself in the difficult matter of the diagnosis of the heart, but also in the diagnosis of every other disease except in the field of a few recognized specialties, can at the same time acquire satisfactorily a system of treatment that will personify his patient and take due account of subjective symptoms. The book is well printed, the style is good, and it is as easy reading as any book on the difficult subject of irregularities of the heart beat, and can be recommended to any one wishing to take up this subject.

*Vaccine Therapy in General Practice.* By G. H. SHERMAN, M. D. Also Quotations from Other Authors. Third Edition. Detroit: G. H. Sherman, M. D., 1916. Pp. 523.

Since Sir A. E. Wright announced the results of his studies in bacterin therapy there has been much argument pro and con. This present edition, the third, of Dr. Sherman's book, although written by an ardent upholder of the theory, gives a very fair presentation of the subject. The first five or six chapters discuss the general principles and applications, while the remainder take up in detail the infections of specific areas. For a general practitioner this book would be most useful and can be recommended highly.

## After Office Hours

A prisoner in Wittenberg gives in the *Atlantic Monthly* for February, an interesting first hand view of prison life in Germany, and of the work of the English surgeons in the prison camps.

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The charm of "A Case for Diplomacy" by Helen Dods in *The Nurse* for March, lies in its flavor of actual personal experience. A clear head, quick sympathy, and the gift of expression combine in the telling of this good story. Incidentally the March number of this magazine is prospectively and most interestingly illustrated.

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Dr. Pearce Bailey, of New York, enters the field of drama with a one act play, "The Confession," which was produced at the annual matinee of the Twelfth Night Club at the Princess Theatre, on Friday, March 16th. The play bears this motto, from Joseph Conrad, "We live at the mercy of malevolent words."

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The *American Reviews* of *Reviews* for February has a picture of that romantic and ill fated figure, Alan Seeger, with a short account of his last moments, and a brave letter he wrote to his mother from somewhere in France, telling her, if he should fall, "you must be proud like a Spartan mother and feel that it is your contribution to the triumph of the cause whose righteousness you feel so keenly." Not long before his death in action he wrote the poem which has been so widely quoted: "I Have a Rendezvous With Death." America is proud of him because he was an American, because of his nobility of soul, and because he has helped to return in some slight measure the debt we owe for Lafayette and other Frenchmen.



## Meetings of Local Medical Societies

**MONDAY, March 16th.**—New York Academy of Medicine (Section in Ophthalmology); Yorkville Medical Society; Medical Association of the Greater City of New York; Elmhurst Clinical Society; Psychiatric Society of Ward's Island.

**TUESDAY, March 20th.**—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Medical Society of the County of Monroe; Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Society of the County of Westchester; Federation of Medical Economic Leagues of New York.

**WEDNESDAY, March 21st.**—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medicolegal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York; Bronx County Medical Society; Dunkirk and Fredonia Medical Society; Buffalo Academy of Medicine (Section in Obstetrics).

**THURSDAY, March 22nd.**—Ex-Interne Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital Graduates' Club, New York; New York Physicians' Association.

**FRIDAY, March 23rd.**—New York Society of German Physicians; New York Clinical Society; Manhattan Medical Society; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

**SATURDAY, March 24th.**—New York Medical and Surgical Society; West End Medical Society; Lenox Medical and Surgical Society.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending March 9, 1917:*

**COBB, J. O., Surgeon.** Ordered to proceed or to detail officers or employees to proceed to such points as may be necessary for carrying on the work within the Sanitary District of the Great Lakes.

**EBERSOLE, R. E., Surgeon.** Granted eighteen days' leave of absence on account of sickness from February 8, 1917.

**PETTUS, W. J., Surgeon.** Directed to report to the chairman of a board convened at the Bureau, Washington, D. C., Wednesday, March 7, 1917, for examination to determine his fitness for promotion to the grade of senior surgeon.

**ROBINSON, D. E., Surgeon.** Granted four days' leave of absence en route to station.

**SAYERS, R. R., Assistant Surgeon.** Granted three days' leave of absence en route to station.

**SPRAGUE, E. K., Surgeon.** Granted one month's leave of absence from March 15, 1917.

**STONER, G. W., Senior Surgeon.** Directed to report to the chairman of a board convened at the Bureau, Washington, D. C., Friday, March 9, 1917, for physical examination.

**SWEET, E. A., Surgeon.** Granted one month and twenty-three days' leave of absence on account of sickness, from December 28, 1916.

**WILSON, J. G., Assistant Surgeon.** Ordered proceed to Montreal, Canada, for special temporary duty during the illness of Surgeon J. B. Stoner.

**WITTE, W. C., Assistant Surgeon.** Directed to deliver an address on rural sanitation at the Chautauqua to be held at Centre Point, Kerr County, Texas, on March 8, 1917.

## Births, Marriages, and Deaths

### Born.

**CONGDON.**—In Schenectady, N. Y., on Sunday, February 25th, to Dr. Arthur Congdon and Mrs. Congdon, a son.  
**PUGH.**—In Utica, N. Y., on Sunday, March 4th, to Dr. Daniel E. Pugh and Mrs. Pugh, a daughter.

### Married.

**BERMAN-COUSINS.**—In New Haven, Conn., on Tuesday, February 27th, Dr. Harry Berman of Hartford, Conn., and Miss Birdie Mildred Cousins.

**KENNEDY-HELBERT.**—In Chicago, Ill., on Wednesday, February 28th, Dr. Clifford E. Kennedy and Miss Sarah B. Helbert.

**O'ROURKE-LANDERS.**—In Philadelphia, Pa., on Saturday, February 24th, Dr. Timothy O'Rourke and Miss Mabel Landers.

**PILLSBURY-CUMMINGS.**—In Portsmouth, N. H., on Saturday, February 3rd, Dr. Nahum Pillsbury, of Biddeford, Me., and Miss Myrtle Geneva Cummings.

**WATTS-STEVENSON.**—In Manchester, N. H., on Monday, March 5th, Dr. A. Costa Watts, of Birmingham, Ala., and Miss Jennie Johnson Stevenson.

**YOUNG-CHAMBERLAIN.**—In Marion, O., on Wednesday, February 21st, Dr. Fillmore Young and Miss Florence M. Chamberlain.

### Died.

**ABBOTT.**—In St. Paul, Minn., on Saturday, February 24th, Dr. Everton J. Abbott, aged sixty-seven years.

**ASHBY.**—In Paris, Tex., on Saturday, February 24th, Dr. David F. Ashby, aged fifty years.

**BLAISDELL.**—In Contoocook, N. H., on Monday, March 5th, Dr. Frank Blaisdell, aged sixty-five years.

**BOYD.**—In Houston, Texas, on Tuesday, February 27th, Dr. James G. Boyd, aged fifty-five years.

**CAMPBELL.**—In Cleveland, O., on Friday, March 2nd, Dr. Oscar B. Campbell, aged sixty-nine years.

**CHERRY.**—In Larchmont, N. Y., on Wednesday, February 28th, Dr. William S. Cherry, of New York, aged forty-five years.

**CLOVER.**—In Knox, Pa., on Saturday, February 24th, Dr. William M. Clover, aged eighty-six years.

**COLEMAN.**—In Goshen, N. Y., on Monday, February 26th, Dr. James C. Coleman, aged seventy-four years.

**DEUEL.**—In Chittanooga, N. Y., Monday, March 5th, Dr. Walter Estus Deuel, aged sixty-five years.

**HUBER.**—In Peoria, Ill., on Tuesday, February 27th, Dr. Joseph E. Huber, aged fifty-five years.

**KELLOGG.**—In Chicago, Ill., on Wednesday, February 28th, Dr. Helen R. Kellogg, aged sixty-nine years.

**MCCORMICK.**—In Cincinnati, O., on Monday, February 26th, Dr. A. Lee McCormick, aged fifty-eight years.

**MILLER.**—In Kansas City, Mo., on Monday, February 26th, Dr. Thomas D. Miller, aged fifty-seven years.

**PARKS.**—In Lancaster, Texas, on Saturday, February 24th, Dr. George T. Parks, aged fifty-five years.

**PATTON.**—In New Kensington, Pa., on Friday, March 2nd, Dr. Elmer G. Patton, aged fifty-six years.

**POTTER.**—In St. Louis, Mo., on Wednesday, February 28th, Dr. Oscar Potter, aged ninety years.

**RAWLES.**—In Dyersburg, Tenn., on Monday, February 26th, Dr. Isaac N. Rawles, aged fifty-nine years.

**SILBAUGH.**—In Chillicothe, O., on Thursday, March 1st, Dr. William H. Silbaugh, aged fifty years.

**SIMONSON.**—In Crisfield, Md., on Saturday, March 3d, Dr. Gordon T. Simonson, aged fifty years.

**TOLAND.**—In Martinsburg, O., on Thursday, February 22d, Dr. Nicholas L. Toland, aged eighty-four years.

**WAINWRIGHT.**—In Manassquan, N. J., on Wednesday, February 21st, Dr. James B. Wainwright, aged

**WALL.**—In Cleveland, O., on Friday, March 2d, Dr. William R. Wall, aged forty-eight years.

**WHITE.**—In Temple, Texas, on Friday, March 2d, Dr. Raleigh R. White, aged forty-five years.

**WILLIFORD.**—In Memphis, Tenn., on Wednesday, February 28th, Dr. Henry Williford, aged sixty-three years.

**WINN.**—In Cuba, Mo., on Wednesday, February 21st, Dr. Chester A. Winn, of Alton, Ill., aged forty-eight years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 12.

NEW YORK, SATURDAY, MARCH 24, 1917.

WHOLE No. 1999.

## Original Communications

### THE BACTERIOLOGY OF INFLUENZA.\*

BY WILLIAM HALLECK PARK, M. D.,  
New York.

The terms "influenza" and "grippe" were originally given to a communicable disease which spread over Europe in 1743, attacking chiefly the respiratory passages. Epidemics of an apparently similar nature continued to appear. The last pandemic began in Europe in 1889 and reached America in 1890. Direct bacteriological examinations of smears of the sputum showed the usual microorganisms met with in acute diseases of the respiratory passages and also abundant small bacilli. These, however, did not develop well on culture media and were not obtained in pure culture until two years later, when Pfeiffer discovered that they required hemoglobin for their development. Later it was found that growth took place without hemoglobin when in symbiosis with certain varieties of bacteria. The presence of these bacilli in pure culture in some cases of bronchopneumonia and otitis media and in enormous numbers in the mucus of many typical cases caused Pfeiffer to consider them the cause of the disease and the confirmatory findings of many others led to its universal recognition as the cause of the pandemics and of the smaller epidemics that continued to occur at intervals in Europe and America and also of endemic cases that had similar symptoms. The names influenza and grippe became restricted to a disease due to a small hemoglobophilic Gram negative bacillus and the similar epidemics of the past were considered as having been incited by this microorganism. The investigations carried on since then have cast doubt on the belief that all the great epidemics must have been due to the influenza bacillus. In fact, we are not absolutely sure that the epidemic of 1890 was due to it. This does not mean that there is any doubt as to the importance of the influenza bacillus in a great many of the inflammations of the respiratory tract as well as of other portions of the body. Recently, small epidemics affecting the respiratory tract have occurred in many countries and in many of these influenza bacilli have not appeared to be the causal organism.

The following findings emphasize this point: Jochmann, 1904, reported an examination of thirty-four cases diagnosed as influenza in which the bacillus was absent in more than half. Seligman in

1911 reported that a localized but rather widespread epidemic in Berlin was not due to the influenza bacillus, but probably to a pneumococcus. The epidemic of so called influenza which swept from the West to the East in this country a year ago was studied bacteriologically in many cities. It was especially widespread during November in Denver. Burdick did not discover influenza bacilli in any of his cases. A streptococcus seemed to be the cause. The epidemic reached Chicago in December. Moody found influenza bacilli in only two out of thirty-one cases. Mathers came to the same conclusion. In New York, Williams, in the Health Department laboratory, examined fifty cases with mild or severe influenza symptoms and found the bacilli in but nine. All the above mentioned observers found either the streptococcus, pneumococcus, or Micrococcus catarrhalis more prevalent than the influenza bacillus. It is very unfortunate that the bacteriologists did not have a knowledge of the prevalence of the influenza bacillus just before the 1889 epidemic and that Pfeiffer did not discover the bacillus at the beginning rather than at the end. All cases occurring in an epidemic must be due to the same organism. The outbreak of influenzalike cases in this country appeared to belong to an epidemic, and yet the bacteriological findings in different cities varied. Bacteriologists know that in infections of the upper respiratory tract the microbe that starts an inflammation is frequently soon crowded out by other organisms, as, for instance, in whooping cough the Bordet's bacillus disappears within a week or two after the onset of symptoms, often leaving the influenza bacillus as the dominant organism. It is also true that the virulent organism is frequently found in small numbers compared to other bacteria, as in septic sore throat, where there may be only five to ten per cent. as many virulent streptococci as other streptococci.

Two possibilities present themselves in every epidemic. One is that an unknown virus, like the filterable virus of Kruse and Foster, or an ordinary microbe of unusual virulence, may pass from person to person in a condition which allows the slightly virulent influenza bacilli and pneumococci to develop, increase in virulence, and spread to other cases. The other possibility is that in some way a microbe of one of these ordinary types may increase in virulence, just as a meningococcus or the microbe of poliomyelitis does. There is no reason to believe

\*Read before the New York Academy of Medicine, March 1, 1917.

that influenza bacilli were any less prevalent before the epidemic of 1889 than they have been since, for there was a pandemic in 1847 and a more localized one in 1875. We know from the finding of the Koch-Weeks bacillus, which is an influenza strain, or one at least of the hemoglobinophilic group, that these bacilli were prevalent before the epidemic in widely separated parts of the earth. The symptoms which were present in the epidemic of 1889 were sudden onset with frequently a chill, headache, muscular pains, and fever which was frequently high. Many began with a coryza and nearly all had a cough. The prostration was considerable. Our supposition is that most of these cases were in part or whole due to the influenza bacilli. The recent epidemic in which in many cases no influenza bacilli were present was characterized by similar but less severe symptoms—a coryza, sore throat, or cough with severe headache, moderate fever, muscular pains, loss of appetite, and prostration.

From time to time during the past twenty years cases diagnosed as influenza and cases of disease in which influenza bacilli are apt to be present as mixed infection, such as tuberculosis and whooping-cough, have been examined. In every year they have been prevalent, but apparently they have lessened somewhat lately, especially in pulmonary tuberculosis. Thus, while Williams fifteen years ago found them present at Saranac Lake in twenty-five per cent. of the cases, Hamblet in 1915 found them in only seven per cent. of the open cases at Wallum Lake, R. I., and Garvin found them in a series of cases at Saranac recently in even a smaller percentage. In young infants the most complete reports are from the work of Doctor Wollstein at the Babies' Hospital. She found that as cold weather began, cases of respiratory trouble commenced to show here and there abundant influenza bacilli. The percentage increased up to midwinter and then it lessened, very few appearing after the middle of May. Holt reports the results as follows:

PERCENTAGE OF CASES HAVING INFLUENZA BACILLUS,  
PNEUMOCOCCUS, AND STREPTOCOCCUS.

	1909-1910	1911	1912	1913	1914
Bacillus influenzae .....	32	32	33	28	42
Pneumococcus .....	62	66	81	80	87
Streptococcus .....	33	37	46	43	29

In the examination of the mucus from large numbers of whooping-cough cases during the past eighteen months Doctor Williams and her assistants in the Health Department found influenza bacilli in over fifty per cent. of the cases. These were present to some extent at all seasons of the year. During the past week we have examined forty-six cases to determine the prevalence of the influenza bacillus in various diseases. Our results were as follows:

Measles ..	10: Influenza present, 8; pneumococci or streptococci, 10
Acute bronchitis	12: Influenza present, 5; pneumococci or streptococci, 10
Pulmonary tuberculosis	13: Influenza present, 6; pneumococci or streptococci, 12
Diphtheria	10: Influenza present, 3; pneumococci or streptococci, 8
Sinusitis	1: Influenza present, 3; pneumococci or streptococci, 8

During the past two months, sputums from fifty patients with lobar pneumonia have been tested and only in one have influenza bacilli been abundant. In this case no pneumococci were present. Many authorities believe that a diagnosis should only be made on culture. Thus Holt in a recent paper states: "By influenza we mean an inflammation due to Pfeiffer's

bacillus." The prevalence of influenza bacilli, in many cases showing no symptoms, makes it difficult to consider all cases having the symptoms of influenza with the presence of influenza bacilli as being due to them. Another difficulty in making the bacteriological diagnosis is that we believe that there may be strains of hemoglobinophilic bacilli which are really quite distinct, even though they resemble each other very closely. Wollstein brought out the difference in virulence in rabbits, the meningitis strains being almost always virulent, while respiratory strains were not. The bacilli found in meningitis, otitis, trachoma, pink eye, and abscesses may or may not be the same as those causing respiratory infections.

315 WEST SEVENTY-SIXTH STREET.

## CLINICAL TYPES OF INFLUENZA.\*

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Before discussing the clinical types of influenza we shall have to come to an agreement as to our conception of that disease and as to some of the bacteriological and epidemiological factors which govern its clinical manifestations. All will agree that the present state of knowledge indicates that influenza is an acute infectious disease which is due to the invasion of the human body by a bacillus discovered by Pfeiffer in 1892 and known as the influenza bacillus or Pfeiffer's bacillus. The evidence for this is not thoroughly established, and it will be necessary possibly to await another pandemic of this disease before many moot experimental and specificity questions can be completely answered. The inquiry will arise whether the recovery of the bacillus of Pfeiffer from the secretions, tissues, or blood is essential to establish the presence of the disease, or whether the clinical manifestations of influenza in the absence of a positive recovery of the organism may be considered sufficient to indicate its presence. If the establishment of the presence of the disease depends upon the recovery of Bacillus influenzae, then few of the cases of influenza will respond to the postulate. This is particularly true of many of the cases which appear in localized epidemics and as sporadic cases and which have almost the identical clinical manifestations which characterize the positive cases. It is possible that one of the biological characteristics of the organism may explain the situation. The primitive methods of cultural processes in vogue when Pfeiffer isolated the organism readily permitted others to substantiate his claims; yet with improved facilities and advanced knowledge in present cultural methods, with more general application of the methods not only to the tissues and secretions but also to the blood, success in the recovery of the organism has been definitely less than in Pfeiffer's time. This might indicate that the organism which produced the pandemic in 1889-1890 was more virile and virulent and would easily grow on ordinary media, and that the organism of the present day is less virile, in other words, is more

\*Read at the New York Academy of Medicine, March 1, 1917.



attenuated and in many instances refuses even the most favorable culture media. This view finds an analogy in the organisms which occasion some of the other infectious diseases, notably in that of typhus fever, in which positive cultures are obtained in almost 100 per cent. of patients suffering with the virulent or epidemic form, while less than fifty per cent. of the cases will give positive results when the mild or endemic form of typhus fever has attacked them. Another explanatory factor may reside in the disposition of *Bacillus influenzae* to grow in symbiosis with other organisms which may quickly overgrow the original invader and expel it eventually altogether, rendering its recovery very difficult if not impossible.

Our main reliance in establishing the presence of influenza must therefore necessarily be placed on clinical manifestations. On this account errors in judgment will arise and doubt will attend diagnosis. Absolute proof in many instances cannot be given. It is fair to assume that when a clinical picture is constantly found with a specific disease, the appearance of that picture would justify concluding that the disease is present. In many instances we shall have to rely upon this uncertain method of reasoning. While in the main the clinical signs of the disease are very constant in some of its sporadic forms, this is not true when the disease appears under pandemic conditions. Under the latter circumstances the clinical manifestation may be so unusual that the disease is not recognized, as in the pandemic in 1889-1890. Thus the primary division of the clinical types of influenza may rest on an epidemiological basis. It would be natural, therefore, to classify the types as pandemic, epidemic, and sporadic or endemic. There is no doubt that all of these forms differ not only in the intensity of the general signs, but even more markedly in the varying extent of the injury which the organism and its toxins individually induce. So great are these differences that one who first sees the mild type as it occurs sporadically is nonplussed when he observes the varied clinical pictures of the disease when it occurs pandemically. Under the latter conditions the disease assumes forms which are multifarious and bizarre.

The pandemic form is in every respect a protean disease whose clinical characteristics vary widely and assume many distinctive group types. The virulent nature of its organism or its toxins respects not a single tissue of the body. The respiratory system, the circulatory system, the digestive, the osseous, the ligamentous, and the hematopoietic systems are individually or in combination subject to the activities of the infectious agent. The pandemic form is noted for its high incidence in communities, almost fifty per cent. of all individuals therein becoming a prey to its ravages. Influenza differs in this respect from all other infectious diseases. It is noted also for the furibund nature of its onset, the extreme prostration which accompanies it, and the intensity of its other clinical manifestations. During the pandemic invasion of the disease all degrees of intensity may be observed from prostration with fatal results within a day, to a mild fever without any special clinical localization of the infection, or perhaps with the mildest signs of a nasopharyngeal catarrh. Between these extremes many variations and combina-

tions of system forms may be seen. More commonly, however, the pandemic form manifests itself in specific localizations, of which the respiratory type, by reason of its most frequent incidence, will deserve first attention. However, there are signs of incidence which are common to all the types and which on that account deserve a passing review. An extensive discussion of the symptomatology of the various types is not within the scope of this paper. Nevertheless, since the recognition of the types depends upon the dominating symptoms and since the severity of the signs and the special localizations vary with the types and forms, it will be of advantage to indicate briefly the differences in the common symptoms of all the types.

Symptoms, particularly those common to the onset of all other infectious diseases, such as malaise, body pains, chill or chilly sensation, fever, and prostration, depend upon the intensity of the infection, its toxic products, and the resistance of the individual. They are as a rule more pronounced in the pandemic, less in the epidemic, and least in the sporadic groups. Still, it is not always the severity of the onset which determines the course of the infection, for there have been many cases in which the future course of the disease has been mild, though the signs of onset were unusually severe, and vice versa. As a rule, however, the disease starts with a chill or at least a chilly sensation and is followed immediately by severe headache, with marked pains in the back and in the extremities and with definite prostration. The prostration is usually severe and out of all proportion to the accompanying or following symptoms. Even that type of the disease which subsequently assumes a mild course of nasopharyngeal or laryngeal catarrh, may be accompanied by an unusual degree of prostration and may immediately or later be followed by signs of myocardial degeneration.

The fever of influenza is itself subject to many variations and shows a wide range in the several types, depending upon the intensity of the infection, its duration, and the localization of the pathological processes. It often rises abruptly at the onset and quickly reaches 103° or 104° F. It may last one or two days and then decline to normal temperature. In very few cases is the rise of temperature gradual. Occasionally the fever lasts several days and no additional clinical signs of infection may be manifest beyond those just mentioned. Hyperpyrexia with temperatures between 104° and 106° F. is not rarely met with.

The temperature may decline abruptly, sometimes in twelve to thirty-six hours, or it may descend gradually over a period of several days. With a return to normal, fever may reappear within twenty-four hours or three or four days later. Not infrequently a fever lasting two weeks, similar to that of typhoid fever in the first two weeks, has been observed, even without other evidences of an influenzal infection. Rarely the fever assumes the characteristics of a quotidian and even of a tertian plasmodium infection, thus making diagnosis more difficult. Should extensive general bronchitis, bronchopneumonia, lobar pneumonia, or exudative pleurisy develop in the course of the disease, the temperature will naturally be modified. In the course of broncho-

pneumonia and lobar pneumonia, which may accompany this infection, the temperature may show marked diurnal excursions extending between  $97^{\circ}$  and  $106^{\circ}$  F., like the fever in a general pyogenic sepsis. In fact, influenzal bronchopneumonia is apt to be accompanied by an excursive fever. It is worth while to note that as a rule the pneumonias of influenza do not show a critical fall in temperature like the usual pneumococcus pneumonias, but a definite tendency to decline by lysis.

Attention is directed also to the atypical onsets of this disease. These variations are more common to the influenza which shows an early involvement of the nervous system, than to the others. The chief atypical forms of incidence are: 1. The infection may be ushered in by unconsciousness which may last for hours and there may be only a slight elevation of temperature. After regaining control of his mental faculties the patient may show a slight or pronounced form of respiratory disease. 2. The infection may begin with a definite psychosis, such as an attack of maniacal excitement or a confusional stupor, either of which may obscure the nature of the original disease. When this condition is replaced by the usual signs of respiratory involvement the diagnosis may be readily made. 3. Onset may show signs of gastrointestinal disturbances, accompanied by frequent vomiting, diarrhea with numerous watery and occasionally hemorrhagic stools, and extensive abdominal tympany with rigidity of the abdominal wall and excessive abdominal pains, signs similar to those of an acute peritonitis. Stormy as this onset may be, the infection may last only two or three days, with slight fever, with or without signs of respiratory involvement, whereupon convalescence may be established.

The variations in duration and termination depend to a great extent upon the intensity of the infection, the local pathological lesions, and the resistance of the individual. While the duration of the disease is usually a week or ten days, many patients will show symptoms for two, three, and even four weeks very similar to the fever of a typhoid infection. The disease may subside after a few days, when there is an apparent return to health, giving way in a few days to a recurrence of the fever, prostration, etc.—the so called "early relapse." Occasionally the relapse may not occur until after a few weeks. This is called a "late relapse." The relapses are probably due to the organisms which have resisted the defensive processes and which regain virulence, renew growth, and overcome the slight immunity produced by the original infection. Possibly some relapses are due to an entirely new infection.

While convalescence is established in most cases within ten days, it may often be delayed for weeks, during which time the patient suffers from physical and mental fatigue, dyspnea, cardiac palpitation on the slightest effort, and marked sleeplessness associated with depression and loss of appetite and strength, all of which may cause the patient more distress, discomfort, and disturbance than the original disease.

#### RESPIRATORY TYPE.

By far the most common and most important expression of an influenzal infection is that in-

volving the respiratory tract. The disease may implicate one, several, or all of the structures, including the accessory sinuses, from the nose and pharynx to its ultimate extension in the alveoli of the lung. Thus its clinical course may be that of a general infection with acute inflammation of any of the sinuses, otitis media with consecutive mastoiditis and infective thrombophlebitis of the lateral sinus, rhinitis, laryngotracheitis, general bronchitis, bronchopneumonia, or lobar pneumonia. These may occur individually or in varying group combinations, even associated with signs of implication of the nervous and gastrointestinal systems. The clinical manifestations of these localizing activities of the influenzal organisms are similar to those due to other infectious bacteria and require no further comment. However, inasmuch as influenzal bronchitis and the pneumonias occurring during the prevalence of a pandemic of influenza differ in many respects from other forms of acute bronchitis, bronchopneumonia, and lobar pneumonia, a more detailed examination of each is in order.

*Influenzal Bronchitis.*—This may be confined to portions of the bronchial trees, or it may involve the entire bronchial system. There seems to be a marked tendency in influenzal bronchitis to involvement of the ultimate bronchioles, producing a form of so called capillary bronchitis which affects scattered groups of the bronchial radicles, rather than to a general diffuse bronchial inflammation. In an attack of this sort, patients commonly present sibilant and sonorous rales, with some diminution in intensity of vesicular breathing. In a day or two this gives place to localized fine crepitant rales over one or more lobes, not uncommonly over the apices, which may persist for days, though at no time can one discover by physical signs any definitely impaired pulmonary resonance, bronchovesicular breathing, or change in voice sounds. The expectoration may not change in character from the original frothy, thin, abundant, or the viscid, greenish, nummular varieties of sputum. When the process is restricted to one or both apices, it may continue for weeks, giving rise to the suspicion of a developing tuberculous process. We shall consider this more minutely under influenzal bronchopneumonia. However, the tendency of influenzal bronchitis to restriction to the bronchial radicles makes it particularly dangerous to infants, to the aged, and extremely so to those suffering from a preexisting pulmonary tuberculosis. The last usually go to pieces rapidly when attacked by influenza, manifesting the clinical picture of a marked excursive fever with hyperpyrexia, the temperature range extending almost daily between  $97^{\circ}$  F. and  $105^{\circ}$  or even  $106^{\circ}$  F. They further show marked weakness, dyspnea, drenching sweats, cyanosis, rapid emaciation, and finally collapse and death.

*Influenzal Pneumonias.*—These present as varied a clinical as they do a pathological picture. There is no doubt that the influenza bacillus is primarily the etiological factor in some cases of pneumonia, because it has been recovered in almost pure culture from the pulmonary exudate in a small proportion of the cases. There is likewise no doubt that many cases of pneumonia are associated with pneumococcus and



streptococcus infections of the lung, whether as primary or secondary invaders cannot be discussed here though distinctly important from the bacteriological point of view. The pathologicoanatomical process of the pure influenzal pneumonia is definitely a catarrhal one, which has a tendency to involve the lung in disseminated patches, more particularly its lower lobes, though not infrequently confined to the upper, particularly to the apices. It develops either as an extension of the bronchial invasion or as a primary alveolar infection. It is true that during epidemics of influenza there is a great increase in the number of cases of lobar pneumonia. Whether these are initiated by the influenza bacillus which is subsequently overgrown by the pneumococcus or whether the former is at all a factor in their development cannot at present be answered with any degree of positiveness. Clinically this lobar pneumonia does not differ much from the type seen in the absence of epidemics of influenza. There are some clinical differences between the types which relate chiefly to the duration of the disease, the course of the fever, and the character of the sputum. The lobar pneumonia which occurs during influenza epidemics is usually of longer duration and is more likely to subside by lysis than by crisis. The sputum is never rusty; it is composed of very thick, tenacious, greenish clumps surrounded by viscid mucus. Expectoration is at times very difficult. The fever shows wide diurnal excursions, presenting thereby a temperature curve very much like that of a pyogenic sepsis. Decline of the fever is commonly by lysis.

There is a type of bronchopneumonia which occurs not infrequently and to which allusion has already been made. It places the physician in the embarrassing position before the patient's friends of being unable to determine whether his patient has a chronic bronchopneumonia or a pulmonary tuberculosis. Sufficient attention has not been called to this group: in fact scanty or no mention of it is made in many of the textbooks and some of the monographs on influenza, and yet the group is sufficiently large to attract the attention of the observant physician. This form may start as a disseminated bronchitis associated with scattered patches of bronchopneumonia, and after a week or ten days its disturbing cough may abate, the sibilant and sonorous rales disappear, the sputum diminish, the fever, which may have presented in its early course a septic type, may show a lower range, and the physical signs of consolidation may vanish, except those over one or both apices. Days may pass and the condition of the patient does not change. On each physical examination there will be found the same dulness over the apex and over a portion of the thorax beneath the clavicle and posteriorly over the supraspinous region; sometimes both apices and upper lobes will show symmetrically the same physical signs, associated with bronchovesicular or rude breathing and a persistent presence of sticky crepitant rales. Fever is constant, sweats develop together with progressive weakness and emaciation, and the cough and expectoration do not disappear. Daily examination of the sputum fails to reveal the presence of tubercle bacilli; in fact the sputum is not infrequently blood tinged or it may be even hemorrhagic. The phy-

sician under these conditions fears that he is confronted with one of the serious complications of influenzal pulmonary infection, tuberculosis of the lungs. Weeks may give place to months; three, even four, months elapse and the physical signs of pulmonary infiltration may still be present, accompanied by the same troublesome cough and fever, with even greater emaciation. Repeated x ray examinations during the course of this process will show darkened shadows over the infiltrated portions of the lung and if the patient has, as often many patients do have, calcified lymph nodes at the pulmonary hilus, the diagnosis of pulmonary tuberculosis may be made by the radiographer, confirming the physician's worst fears. Suddenly a change occurs, the patient's temperature does not reach its former height, his cough improves, the sputum is more easily expectorated, strength returns, the crepitant rales disappear, the breathing becomes vesicular, and the entire picture becomes that of a complete restitution to an apparent normal pulmonary condition. I know of no condition of pulmonary disease which gives rise to more doubt and worry than this type of chronic bronchopneumonia which occurs with influenza. It is very likely that some of these cases are regarded as pulmonary tuberculosis with negative sputum, even by the expert.

Sometimes a patient with a bronchopneumonia does not show the signs of a resolution of the pneumonic process, but gives indications of the development of a peribronchial inflammation with purulent collections in the bronchioles and alveoli, lesions which manifest themselves by an extremely copious fluid, purulent sputum, a septic fever, drenching sweats, rapid emaciation, exhaustion, and finally death. These cases of purulent infiltration, attended by areas of alveolar destruction which cause a very large number of small, disseminated bronchial dilatations—a diffuse, small bronchiectasis—are not necessarily fatal, for occasionally recovery takes place with subsequent signs of fibroid induration of the lungs.

A few of the cases of lobar pneumonia may follow the same course to the development of a diffuse bronchiectasis. This result, however, is more common in the cases with bronchopneumonia. Gangrene and abscess of the lung occasionally develop.

Involvement of the pleura as a primary manifestation of the disease is a rare occurrence. Secondary invasion of the pleura as an extension from the atelectatic areas in the capillary bronchitis cases, or as an extension of the pulmonary inflammation in the cases of pneumonia is more common, though not frequent. The pleural effusion is usually purulent, though occasionally nonpurulent exudate is seen.

#### CARDIAC TYPE.

The susceptibility of the cardiac nerves to the activity of the disease agents accounts perhaps for the rather frequent occurrence of bradycardia. Electrocardiograms have not been to my knowledge available for the elucidation of this disturbance of the cardiac rhythm, so that the question of whether the bradycardia is the result of involvement of the conduction system of the heart or of neural involvement will have to await future investigation. There



seems to be little doubt that the heart muscle itself is subject to the direct influence of the influenzal toxins and that in many instances it shows post mortem a definite degeneration in the heart muscle fibres. This myocardial degeneration accounts in part for the syncopal attacks and for many of the circulatory disturbances such as arterial thrombosis, thrombophlebitis, and the like, which are sometimes observed in the course of an attack of influenza. Death from myocardial degeneration is not uncommon, and it may occur either during the course of the disease or later in the convalescent period.

Primary influenzal endocarditis and pericarditis have been observed, but are very unusual developments. There is a definite form of influenzal endocarditis to which practically no attention has been directed and to which no reference is made in textbooks and the numerous monographs on influenza which have appeared since the great pandemic in 1890 in English, German, or French. Leichenstern's monograph, one of the most comprehensive in any language, contains no reference to it. Cases have been described by Horder, Jehle, Jochmann, and others. This form of endocarditis is essentially subacute or chronic in its course. It is always accompanied by a bacteriemia, the influenza bacillus being found during life in the blood in pure culture, and in the vegetations found on the damaged heart valves after death. Clinically and in other respects it resembles the subacute infective viridans endocarditis. Like it, its attack is directed against heart valves which usually have previously been injured by another infection. Most, if not all, of these cases have been seen in the epidemic and endemic forms of influenza. I have observed four cases of this form of endocarditis. Its clinical picture is that of a bacteriemia, associated with the signs of an endocarditis, in whose course there develop skin petechiae and raised erythematous swellings in the skin which vary from four to eight mm. in diameter and are painful and tender to the touch. I have seen one of these small nodes break down and leave a small ulcerated area in the skin surface. Necrosis of the tender nodules of subacute viridans infective endocarditis does not occur, and therefore such an occurrence in a case of infective endocarditis might serve to differentiate the two varieties. Another point of difference between the two forms of infective endocarditis is the almost invariable involvement of the kidneys in a bacterial inflammation in the viridans infection and its absence in the influenzal infection of the cardiac valves. Red blood cells, while almost constantly present in the urine in the cases of subacute infective viridans endocarditis are absent as a rule in the other form of infection. It is not always possible, I believe, to differentiate the forms by their clinical manifestations alone, for each produces the same type of fever with apyrexial intervals, each produces a marked anemia, each is associated with the clinical signs of visceral infarcts, though mycotic aneurysms have not been reported as occurring as the result of an infection due to the influenzal bacteriemia, as far as I know. Absolute differentiation between the two varieties of infective endocarditis, however, cannot be made except by blood culture. I wish space would permit me to go in detail into the clinical

and pathological aspects of this form of influenzal endocarditis. One feature, however, should not escape remark and that is the prognosis. While I have never seen a recovery from a viridans infection of the heart valves, though a few are reported. I have seen one from an influenzal infection, though my experience is limited to four cases of the latter and to a very large number of the former. Perhaps I should rather say that I have seen recovery in a patient who had an attack of influenza some years after an attack of rheumatic fever which had left him with a definite mitral stenotic lesion.

CASE.—The patient had a heart murmur, a bacteriemia composed of a large number of colonies of the influenzal bacilli, a prolonged remittent type of fever, petechiae in the conjunctiva and the skin over the shoulders and the front of the thorax, erythematous small swellings on his right thenar eminence and one on the dorsal surface of the same forearm, an enlarged palpable spleen, and a marked chlorotic form of anemia. He had no signs of nephritic involvement. The diagnosis of subacute infective influenzal endocarditis was made and a fatal prognosis indicated. The patient's blood became finally bacteria free, his fever entirely disappeared, his strength returned, and all the other clinical signs of his disease vanished. He was still living four years after the cessation of his bacteriemia when he was lost sight of, though when I saw him last he still had the same characters to his heart murmur.

Doubt would arise, of course, as to whether this patient ever had an infective influenzal endocarditis; it may be that he had an old sclerotic mitral lesion which became associated subsequently with a influenzal bacteriemia which did not further involve the damaged valve in a necrotic process at all, and that with the disappearance of the bacteriemia, the entire infectious pathological change was terminated. It is my firm conviction nevertheless that this patient did suffer from infective influenzal endocarditis from which he recovered. When bacterial endocarditis develops in influenza it must be regarded as an exceedingly grave complication.

#### NERVOUS TYPE.

The occasional onset of influenza with the appearance of a psychosis, or even with an attack of coma, has already been mentioned. Nearly all cases show some disturbances of the nervous system, for the most part, however, toxic and functional in character. In the pandemic type of the disease manifestations indicating the presence of grave anatomicopathological lesions of the of the central nervous system have rather too frequently been observed, such as meningitis, encephalitis, and myelitis. These may be the result of the activities of the bacillus itself, though they more commonly follow the introduction of secondary invaders, such as the pneumococcus and streptococcus, either by extension of a local inflammatory process or through the bloodstream. The toxins of influenza have a special predilection for disturbing the function of the peripheral nerves. Polyneuritis is not an uncommon complication of the disease and usually develops late in its course. When present, it does not differ from the other cases of multiple neuritis which occur in the course of some of the other infectious diseases.

*Influenzal Encephalitis.*—This fortunately is one of the rarer attendants of influenza. It may develop as the expression of a direct cerebral infection in

the form of numerous, scattered, miliary, hemorrhagic areas in the brain substance, ultimately producing necrosis resulting in miliary abscesses, or in the form of a diffuse, purulent, destructive lesion resulting secondarily from sinus inflammations and more particularly from local meningeal extensions induced by otitis media and mastoid disease. There is nothing characteristic of either form of abscess development which might serve as a means of differentiating them from other types of encephalitis. They give rise to monoplegias and even di- and hemiplegias, sometimes with apoplectic form symptoms and signs of increased cerebral pressure, all of which are accompanied by a hyperpyrexia. A few of these cases may develop insidiously, showing for a time only the general signs of an infection, intense headache, vertigo, nausea, and vomiting, until localizing symptoms of general convulsions, stupor, and coma with paralysis of one or more muscle groups indicate the presence of a grave cerebral lesion. In the diffuse abscess the pneumococcus and streptococcus are more frequently found.

**Meningitis.**—This localized manifestation of the influenzal infection occurs at all ages, but more particularly in children in whom it is almost invariably attended by fatal results. In these cases *Bacillus influenzae* is readily recovered from the spinal fluid during life and from the meninges after death. Meningitis may also result from a purulent inflammation in the ear, mastoid, nose, or in any of its accessory sinuses. Under such circumstances it is the result of other organisms than the influenza bacillus. It follows the same clinical course as other cases of meningitis, and without a culture of the cerebrospinal fluid the special etiologic agent cannot be determined. One should be on his guard so as not to form a diagnosis of the presence of a meningitis in cases which show delirium, some rigidity of the neck, and the Kernig phenomenon, because some of the very toxic cases of influenza at times may show these signs of meningism or meningeal irritation though no meningitis is present. Meningism occurs in other infectious diseases. The French authors call this type of meningeal irritation of influenza, "*forme pseudomeningitique de la grippe*."

#### GASTROENTERIC TYPE.

While not uncommon in the pandemic appearance of the infection, it occurs only occasionally in the epidemic and rarely in the sporadic. Proof of a gastroenteric localization of infection is lacking. There seems to be little evidence to support the view that the involvement of the gastrointestinal tract is due to bacterial localization in its tissues, because thus far the influenza bacillus has not to my knowledge been isolated from the gastrointestinal secretions, fecal discharges, or tissues of that tract in anyone suffering from this type of the infection. It can be said more positively that in the pandemic and rarely in the epidemic form, the infection in many instances was ushered in by symptoms restricted entirely to the digestive organs. These symptoms may appear in conjunction with those common to involvement of the air passages, or after the subsidence of the gastrointestinal symptoms, signs of respiratory involvement may ensue, or they may have been pres-

ent without any other localizing signs of infection. Of course in the last instance, proof of an influenzal origin is lacking, and we shall have to assume that its existence as a special type of the disease depends upon clinical and epidemiological factors only, surely insufficient evidence for such a deduction.

The common manifestations of an influenzal attack on the digestive tract are toxic rather than inflammatory, nausea and vomiting being dominating symptoms, associated with the great prostration, which is the all important symptom in influenzal infections. Furthermore, hyperemic, inflammatory, and necrotic changes in the stomach and intestines evidenced by incessant and uncontrollable vomiting, frequent watery, diarrheal movements, colicky abdominal pains and tenderness are not uncommon. Even peritonitis has been rarely observed, either independently or as an accompaniment of an ulcerative enteritis, though the peritoneal exudate is most often fibrinous, very seldom purulent. These cases of peritonitis are generally fatal. When necrotic lesions develop in the stomach or intestines, hematemesis or melena are usual accompaniments and in their pyrexial course as well bear a strong resemblance to typhoid fever (typhoid form of influenza). Under the last conditions, suppurative phlebitis with multiple hepatic abscesses has been observed. One noteworthy feature of the gastrointestinal cases is the long period of convalescence which follows the attack; in this period there is a very slow return of weight and strength, considerable anemia remains, attacks of diarrhea persist, with emaciation, loss of appetite, and the like.

#### EPIDEMIC AND ENDEMIC OR SPORADIC GROUP.

While the milder cases of influenzal affections are more common than the severe cases, it is very exceptional to see in local epidemics or among sporadic cases any but the mild forms of the infection. Once in a while, however, the furious, encephalitic, and deeply toxic gastrointestinal types will crop out. The respiratory types are relatively as frequent as they are in the pandemic form, as are also, more specifically, the pneumonias. There is, however, a marked difference in the frequency with which the influenzal organism is found in the epidemic and sporadic groups as compared with the pandemic. I believe that we are justified in concluding that the influenzal organism is found less often as pandemics are replaced by epidemics and the latter by the endemic or sporadic forms of the disease. In the last it is only rarely isolated, except from the blood in the cases of infective influenzal endocarditis and from the spinal fluid in the cases of influenzal meningitis.

48 WEST SEVENTY-SIXTH STREET.

**Treatment of Elephantiasis.**—Walther (*Presse médicale*, January 18, 1917) reports a case of elephantiasis of the right lower extremity in which permanent drainage of the subcutaneous cellular tissues by means of rubber tubes seemed to be productive of good results. The tubes were well borne, one having been in place six months, and a lasting restoration of the lymphatic circulation in the part was affected.



## THE TREATMENT OF INFLUENZA.\*

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In considering the therapy applicable in the treatment of influenza, it must constantly be kept in mind, as has been emphasized by other observers, that while this disease is occasioned possibly by a specific organism, the influenza bacillus, it is nearly always associated with other organisms of almost equal importance or very often of predominant importance. Influenza is, therefore, very distinctly a mixed infection and the Pfeiffer bacillus may play a minor part in many cases. Nevertheless, it is a specific disease directly excited by one or more organisms. Before considering the drugs available, let us look at our problem of therapy. This can be divided into four considerations: 1, the destruction of the organism; 2, the prevention and relief of the toxic symptoms associated with the infection; 3, the generation of an antibody; 4, the prophylaxis and protection of the exposed individuals.

In reviewing the literature on this subject it will be found that a great list of drugs, baths, etc., have been used to control this disease. Among them are quinine, salol, salicylic acid, carbolic acid, arsenic, gelsemium, tannic acid, fresh air, purgatives, calomel, blue mass, colonic irrigations, codliver oil, strychnine, acetanilid, antifebrin, sodium salicylate, phenol salicylate, acetylsalicylic acid, scopolamine, caffeine, benzoin, menthol, Dobell's solution, argyrol, dionin, bromides, nux vomica, hot baths, hot packs, guaiacum, terpin hydrate, camphor, belladonna, Dover's powder, cocaine, morphine, hyoscine, potassium bicarbonate, and many other drugs. From the diversity and magnitude of the above list it would seem that in the treatment of influenza the therapeutics is very inexact and chaotic, and yet a careful study will evince the fact that practically all of the drugs mentioned can be directly applied for the control or relief of one of the subdivisions enumerated in the beginning of this paper, and that, while there are many drugs, they simply express the individual preference of the practitioner to accomplish a definite purpose. Fortunately, they can be coordinated in a positive and definite manner in the treatment of this disease. For proper therapeutic application the following classification of types serves as an excellent basis upon which to work: the catarrhal, the intestinal, the rheumatoid, and the nervous types. In the treatment of all types of influenza we are largely dependent upon the results of clinical experience and observation in the application of our therapy. In the treatment of the catarrhal type, considering as the primary problem the destruction of the organism, it has as the result of long experience been determined that the drugs which are most useful and efficacious are quinine and the salicylates—salol, saliphen, salicylic acid. A careful study of the antigrippe mixtures and capsules, which are commonly used by practitioners, practically determine the purpose of these drugs as basic constituents, and we must depend largely on these substances to destroy the infective

organism. The efficacy of salicylates may be due to the liberation of carbolic acid. The other ingredients contained in the gripe capsules or mixtures are usually incorporated for the control of symptoms, such as phenacetin or some other coal tar preparation as an analgesic. If the catarrhal symptoms are excessive, camphor is added. If the type is severe and the headache intensive, we substitute acetanilid for phenacetin. If accompanied by a cough or respiratory irritation, we prescribe codeine, morphine, or dionin. When acetanilid is prescribed, however, it is advisable to combine with it caffeine citrate as a cardiac stimulant to counteract the depressing action of the coal tar. In other words, starting with the salicylates and quinine as the primary factors, the other ingredient must be introduced to meet the symptoms presented in each individual case. In the enteric form, while still incorporating the basic principles of quinine and the salicylates, it is usually necessary to emphasize the opiates, preferably in the form of deodorized tincture of opium or powdered opium, to control peristalsis. In the rheumatic type, the coal tar derivatives with caffeine should be emphasized in order to relieve the pain. In the cerebral, or nervous, type, while still emphasizing the basic and primary treatment, it is often necessary to prescribe the cerebral sedatives, such as bromide, chloral, etc., to control the excessive symptoms, and in severe cases spinal tapping may be resorted to.

In our efforts to treat and relieve the symptoms of this disease, we often overlook or minimize the fact that many of the complications, sequelæ, and active symptoms are directly dependent upon the presence of a toxin, and it is to this feature that I wish especially to call attention in the treatment of the disease. I do not think that high colonic irrigations, the drinking of large quantities of alkaline waters, and the introduction of large quantities of sodium bicarbonate are utilized sufficiently. There is every indication of the presence of this active toxin. General practitioners have a tendency to adhere to the drug therapy and ignore the treatment of the mucous membranes with silver nitrate, argyrol, etc., while the prospects of destroying the organism are well within possibility.

The generation of an antibody is a matter of great importance in the treatment of influenza and is usually neglected. Under this head I would call attention to forced feeding and the use of arsenic, strychnine, and nux vomica, and possibly the vaccine. The mixed vaccine in the hands of Wright, Allen, and others, seems to have been efficacious. But if the vaccine is used for this purpose, it must necessarily be a mixed vaccine. I do not see where much harm can be done by the use of this plan of treatment, but I do not think it should be advocated as a general treatment in every case of influenza. It would seem reasonable, however, under certain circumstances and in the hands of careful observers, to try the vaccine treatment in the severer forms of influenza.

Prophylaxis in the treatment of this disease is more important than in many of the minor contagious diseases from which we are so carefully protected by the sanitary experts. From my experience

\*Read before the New York Academy of Medicine, March 1, 1917.



I believe that influenza is responsible for more destruction of life than any of the milder epidemics of the contagious diseases. Any effort to isolate the patient or to destroy his secretions and excretions is seldom made. The patient should be urged to use paper napkins or gauze for nasal and respiratory excretions and the destruction by burning of all of these substances should be insisted upon. We should also isolate the patient from the other members of the family and as the intestinal tract undoubtedly contains infective media, the excreta should be disinfected. If more attention were paid to this feature in the treatment of influenza the number of cases in epidemics would decrease by thousands. Among the sources of infection and places to be avoided are crowded street cars, subway trains, moving picture houses, theatres, and churches. I think very much more serious consideration of prophylaxis should be undertaken in these epidemic and semiepidemic outbreaks of influenza.

The treatment of pneumonia and mastoid and sinus involvement, as well as other localized infections, must be dealt with as individual features.

In conclusion, I should like again to emphasize, first, that those who are interested in influenza from the standpoint of the general practitioner should devote more time to the local treatment of the nasal and respiratory mucous membranes in an effort to destroy the organism. I would also plead for a more optimistic attitude toward the results of medication, for I am sure that the careful application of selected drugs will render a service which cannot be denied. Second, I wish to emphasize the necessity for the elimination of the toxin, which is the cause of the neuritis, mental depression, cardiac irregularities, etc., which appear in convalescence, by increasing the use of the alkaline waters, large quantities of bicarbonate of soda, and advocating frequent high colonic irrigations. And, last, prophylaxis for the prevention and control of the spread of this disease should be the primary care of all who are charged with maintaining public health.

155 WEST FIFTY-EIGHTH STREET.

## THE TREATMENT OF TUBERCULOSIS WITH CYANOCUPROL.

### *Second Paper.\**

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In the present communication I wish to report on 118 cases of tuberculosis that have been treated with cyanocuprol during the period from April, 1915, to March, 1916. The cases were divided into three classes: 1, patients who received three or more injections of cyanocuprol—114 cases; 2, those who received two injections but died—three cases; and 3, those whose symptoms subsided after receiving two injections—one case. Some of the cases included in the first class would undoubtedly have improved under continued treatment with cyanocuprol, but this was discontinued at the patients' request. Some

had tuberculosis of more than two organs. The diagnosis was generally established by bacteriological examination, but in some cases it was made from clinical symptoms.

TABLE I.  
RESULTS OF THE TREATMENT WITH CYANOCUPROL.

Diagnosis.	Improved.	Slightly improved.	Stationary.	Slightly worse.	Worse.	Died.	Total No. of cases.
Pulmonary, 1st stage.....	55	1	1	1	1	1	60
Pulmonary, 2nd stage.....	13	10	3	1	1	1	29
Pulmonary, 3rd stage.....	1	3	4	3	1	1	13
Pleurisy.....	4	1	1	1	1	1	9
Peritonitis.....	1	1	1	1	1	1	6
Intestinal.....	1	1	1	1	1	1	6
Laryngeal.....	1	1	1	1	1	1	6
Glandular.....	1	1	2	1	1	1	8
Epididymitis.....	1	1	1	1	1	1	6
Renal.....	1	1	1	1	1	1	6
Cystitis.....	1	1	1	1	1	1	6
Total.....	50	27	25	3	1	12	118
Percentage.....	42.4	22.9	21.2	2.5	0.8	10.2	100

"Improved" indicates patients whose general condition has improved, with complete or nearly complete subsidence of the subjective symptoms. In pulmonary tuberculosis all the cases classified under this head had sputum entirely free from bacilli after the treatment, which was positive in the beginning. "Slightly improved" indicates that the subjective as well as the objective symptoms showed improvement or that the general condition was better, but the sputum is not yet free from bacilli. By "stationary" is meant cases that showed no noteworthy changes in symptoms before or after the treatment, or those that have shown no decisive improvement in all the lesions, some of which were better, but others worse. By "worse" is meant patients whose symptoms became worse.

The results in Table I are less satisfactory than those reported by Koga in his first communication (1). The difference seems to arise from the choice of suitable subjects, for Koga's patients consisted exclusively of the out patients who came to the clinic of the Imperial Institute for Infectious Diseases, and who had been receiving tuberculin treatment, while our patients included cases who were likely to become worse. Ishigami also reports (2) better results than ours, and he emphasized the necessity of suitable cases. We, on the contrary, submitted to treatment all cases except those in the last stage. We also treated some that we thought would die in a month or two. For instance, three out of the twelve deaths, one out of the twenty-five stationary cases, and two out of the twenty-seven slightly improved cases—six in all (Table I)—were considered to be in the last stage. We have also treated cases with malignant progressive tuberculosis. For these reasons, our patients failed to give the results shown by Doctor Koga and Doctor Ishigami.

We have divided our cases into two periods, those treated before and those treated after November, 1915. During the second period the same number of injections was given as in the first, but the doses in the latter were smaller.

In Table II the cases are classified according to the stage of the disease. The proportion of cases in the various stages treated during the two periods is nearly equal, but the patients treated during the second period had the disease in much more active form. During the first period (Table V) twenty-nine of the seventy-one cases treated had normal temperature, and four of the eleven, in whom a rise of temperature had been observed, were also normal; thirty-three cases, therefore, had normal temperatures when the treatment was begun, while fifteen out of forty-seven had normal temperature, one out of the three in whom a rise of temperature was

\* The first paper in this series was published in the *Journal of Experimental Medicine*, August, 1917.

observed, also had normal temperature at the beginning; therefore, sixteen patients who had had normal temperature were treated in the second period. The percentage of patients in regard to temperature is shown in Table II, B.

TABLE II.

Period.	Pulmonary tuberculosis in		
	1st stage.	2nd stage.	3rd stage.
1st .....	15 (26.3%)	36 (63.2%)	6 (10.5%)
2nd .....	10 (25.0%)	24 (60.5%)	5 (12.8%)

Period.	No. of cases.	Cases with normal temperature.		Febrile cases.
		Slightly improved.	Stationary.	
1st .....	71	33 (46.5%)	38 (53.5%)	38 (53.5%)
2nd .....	47	19 (40.6%)	31 (66.6%)	31 (66.6%)

Although more severe cases were treated during the second period than during the first, more cases reacted favorably.

Table III gives the comparative results of cyanocuprol during the two periods.

TABLE III.  
COMPARATIVE RESULTS OBTAINED DURING THE TWO PERIODS.

Diagnosis.	First Period.					Total No. of cases.
	Improved.	Slightly improved.	Stationary.	Worse.	Died.	
Pulmonary, 1st stage .....	16	5	1	..	1	15
Pulmonary, 2nd stage .....	18	7	2	..	1	36
Pulmonary, 3rd stage .....	1	..	..	..	..	1
Pleurisy .....	3	..	1	..	..	4
Peritonitis .....	1	..	..	..	2	3
Intestinal .....	1	..	1	..	2	4
Laryngeal .....	1	..	..	..	1	2
Glandular .....	1	..	..	..	..	1
Total .....	30	13	17	2	8	71
Percentage .....	42.3	18.3	23.9	2.8	11.3	100

Diagnosis.	Second Period.					Total No. of cases.
	Improved.	Slightly improved.	Stationary.	Worse.	Died.	
Pulmonary, 1st stage .....	7	3	..	..	..	10
Pulmonary, 2nd stage .....	9	6	6	1	2	24
Pulmonary, 3rd stage .....	1	..	1	..	1	5
Pleurisy .....	1	..	..	..	..	1
Laryngeal .....	1	..	..	..	1	2
Glandular .....	1	..	1	..	..	2
Epididymitis .....	1	..	..	..	..	1
Renal .....	2	..	..	..	2	4
Cystitis .....	1	..	..	..	..	1
Total .....	20	14	8	1	4	47
Percentage .....	42.6	29.8	17.0	2.1	8.5	100

Table III may be summarized as follows:

Period.	Favorable cases.	Indifferent cases.
First .....	60.6	39.4
Second .....	72.4	27.6

All the cases coming under the heading "improved" and "a little improved" are included in the favorable cases, while the rest are classified among the indifferent cases.

During the first period many patients lost in weight, while in the second period the reverse was the case. This might have been due to the fact that the first period covered the spring and summer months, when loss of weight is generally met with, while the second was in the autumn and winter (Table IV). But we believe that the improvement is due to injecting smaller doses of cyanocuprol, for the large doses during the first period always resulted in a certain degree of emaciation.

Table V shows the effect of the treatment upon the temperature.

Of the fourteen cases that showed a rise of temperature, seven had more than 1° C. of fever. They all died. Two of the four who had an elevation of temperature between 0.5° and 0.1° C. became worse,

while the other two remained the same. In the three whose temperature rose less than 0.5° C., the

TABLE IV.  
EFFECT ON BODY WEIGHT.

Diagnosis.	First Period.				Total No. of cases.
	Increased.	Stationary.	Decreased.	Uncertain.	
Pulmonary, 1st stage .....	8	..	7	..	15
Pulmonary, 2nd stage .....	12	..	23	1	36
Pulmonary, 3rd stage .....	..	..	6	..	6
Pleurisy .....	1	..	3	..	4
Peritonitis .....	..	..	3	..	3
Intestinal .....	..	..	4	..	4
Laryngeal .....	..	1	1	..	2
Glandular .....	..	1	..	..	2
Total .....	21	1	48	1	71

Diagnosis.	Second Period.				Total No. of cases.
	Increased.	Stationary.	Decreased.	Uncertain.	
Pulmonary, 1st stage .....	8	2	..	..	10
Pulmonary, 2nd stage .....	15	1	7	1	24
Pulmonary, 3rd stage .....	3	..	2	..	5
Pleurisy .....	1	..	..	..	1
Laryngeal .....	..	2	..	..	2
Glandular .....	1	..	..	..	1
Epididymitis .....	1	..	..	..	1
Renal .....	1	..	1	..	2
Cystitis .....	..	1	..	..	1
Total .....	30	3	12	2	47

symptoms remained stationary. These were classified among the stationary cases, in spite of the elevation of temperature, as all the other symptoms improved.

The effect upon dull area, râles, and bacilli in the

TABLE V.  
EFFECT ON TEMPERATURE.

Diagnosis.	First Period.				Total No. of cases.
	Normal.	Fall.	Stationary.	Rise.	
Pulmonary, 1st stage .....	10	3	..	1	15
Pulmonary, 2nd stage .....	16	10	7	3	36
Pulmonary, 3rd stage .....	..	1	3	2	6
Pleurisy .....	3	..	..	1	4
Peritonitis .....	1	2	..	..	3
Intestinal .....	1	1	2	4	8
Laryngeal .....	..	..	1	1	2
Glandular .....	..	1	..	1	2
Total .....	29	18	12	11	71

Diagnosis.	Second Period.				Total No. of cases.
	Normal.	Fall.	Stationary.	Rise.	
Pulmonary, 1st stage .....	8	2	..	..	10
Pulmonary, 2nd stage .....	6	0	7	2	24
Pulmonary, 3rd stage .....	..	5	..	..	5
Pleurisy .....	..	1	..	..	1
Renal .....	..	1	1	..	2
Cystitis .....	1	..	..	..	1
Laryngeal .....	1	..	1	2	4
Glandular .....	1	..	..	..	1
Epididymitis .....	1	..	..	..	1
Total .....	15	20	9	3	47

"Normal" indicates that the patient had normal temperature during the entire period of the treatment, or that there was a transient rise after administration of the drug, which immediately fell to normal. "Stationary" cases include those that had continuous temperature of 37.2°-37.3° C.

sputum is shown in Tables VI, VII, and VIII. All the cases with pulmonary tuberculosis are included in these tables, although they were previously classified among other diseases. Thus there are seventy and forty-six pulmonary cases in the first and second periods, respectively.

Bacteriological examination was made of the sputum expectorated when the patient woke in the morning (Table IX). If the examination was negative, the same sputum was treated with antiformin and centrifugized. Care has also been taken to ascertain definitely the source of the sputum, as described by Otani (3). If the sputum proved to come from the larynx, another specimen was made

with that from the lungs. The laryngeal sputum was never treated with antiformin. Thirty and thirteen

TABLE VI.  
EFFECT ON DULL AREA.

Stage.	Absent.	Disappeared.	Diminished.	Stationary.	Increased.	Present.	Total No. of cases.
FIRST PERIOD.							
1st .....	3	4	0	1	1	1	19
2nd .....	..	5	28	10	2	..	45
3rd .....	..	..	5	1	1	..	6
Total .....	3	9	42	13	2	1	70
SECOND PERIOD.							
1st .....	..	4	8	1	..	..	13
2nd .....	..	..	13	1	..	..	27
3rd .....	..	..	5	1	1	..	6
Total .....	..	10	26	9	1	..	46

"Absent" indicates the cases in which no dull area had been observed from the beginning. "Present" means the case in which the dull area appeared during the course of treatment.

TABLE VII.  
EFFECT ON RÂLES.

Stage.	Absent.	Disappeared.	Nearly disappeared.	Diminished.	Stationary.	Increased.	Total No. of cases.
FIRST PERIOD.							
1st .....	7	3	..	2	1	1	19
2nd .....	..	14	..	15	7	6	45
3rd .....	..	..	..	4	2	..	6
Total .....	7	17	..	29	10	7	70
SECOND PERIOD.							
1st .....	4	5	3	1	..	..	13
2nd .....	1	..	6	14	2	2	27
3rd .....	..	..	..	5	1	..	6
Total .....	5	7	9	20	3	2	46

By "absent" is meant the cases in which no râles had been heard from the first. "Nearly disappeared" means the cases in which râles were observed occasionally, or on coughing few râles were sometimes elicited.

TABLE VIII.  
EFFECT ON SPUTUM.

Stage.	Absent.	Disappeared.	Diminished.	Stationary.	Increased.	Uncertain.	Total No. of cases.
FIRST PERIOD.							
1st .....	2	3	1	2	3	2	19
2nd .....	..	3	14	10	1	3	46
3rd .....	..	..	..	3	1	..	6
Total .....	16	5	17	15	12	5	70
SECOND PERIOD.							
1st .....	8	..	2	3	..	..	13
2nd .....	6	3	6	5	7	..	27
3rd .....	..	..	3	3	..	..	6
Total .....	14	..	11	11	7	..	46

"Uncertain" indicates that the record of the patient's sputum is so incompletely entered that no decision can be made. It must also be stated that saliva may occasionally become mixed with the sputum, and these figures are therefore only comparative.

cases out of the seventy and forty-six cases that were treated during the first and second periods, respectively, proved negative from the beginning of the treatment. Therefore, forty and thirty-three cases of the first and the second periods are recorded in the table (Table VIII).

Examination of the sputum must be continued over a long period of time before the question of the disappearance of the bacilli can be definitely determined. In other infectious diseases, as typhoid fever, diphtheria, etc., after the complete subsidence of the symptoms virulent bacilli are often demonstrated in convalescents.

From the results described above, we may, however, conclude that cyanocuprol acts favorably in the treatment of tuberculosis, but the extent to which it is efficacious can be determined only by long continued experience.

Of the 118 cases reported in this paper, nineteen

TABLE IX.  
EFFECT ON BACILLI IN SPUTUM.

Stage.	Disappeared.	Diminished.	Stationary.	Present temporarily.	Appeared during treatment.	Increased.	Total No. of cases.
FIRST PERIOD.							
1st .....	3	1	..	2	..	1	7
2nd .....	..	3	14	3	4	1	27
3rd .....	..	..	5	..	..	1	6
Total .....	3	4	19	5	4	3	40
SECOND PERIOD.							
1st .....	..	..	..	3	..	..	5
2nd .....	..	3	12	4	..	..	22
3rd .....	..	..	4	..	..	..	6
Total .....	..	6	16	7	..	..	33

Each examination was made once a week. By "disappeared" is meant the cases that had been positive in the beginning, but became free of the bacilli after treatment. Out of five cases that were negative at four examinations, another was negative at five, and still another at eight, while the last one was negative at nine examinations. Again, out of the four negative cases, one was negative at six examinations, another at seven, still another at eight, while the last one was negative at twenty examinations. By "diminished" is meant those who showed a decrease in the number of bacilli in the sputum during the course of several examinations. Some of the cases included under this head gave negative results at the last two or three examinations, but as repeated examinations were not made over a sufficient period to be certain that bacilli were no longer present, they have been put in this class. "Stationary" indicates the cases that showed no definite change. By "present temporarily" is meant those cases that gave positive results at two or three examinations during the course of treatment, but were negative before and after these examinations. By "appeared during treatment" is meant the cases that gave positive results after a definite period during the course of treatment, but had been negative until that time. In many of these cases other symptoms were observed. "Increased" means the cases that have averaged an increase in the bacillary contents of the sputum.

were considered to be so serious that all hope of recovery was abandoned at the first examination (Table X). Three more cases of patients who received over eight injections and were considered so seriously ill that they had no chance of recovery are included. Thus we have twenty-two patients, of whom seven died, two became worse, and five remained stationary, while the remaining eight improved considerably. Again, three out of the eight improved patients showed a slight improvement; four were entirely out of danger, while the remaining one recovered from the subjective symptoms; the objective ones also improved considerably, and the bacteriological examination of the sputum was completely negative after twenty weeks. Case xx had pulmonary and laryngeal tuberculosis. Bacteriological examination of the laryngeal sputum was positive at the beginning, and corresponded to No. IV of Gaffky's scale (4). The ulcerations in the larynx were completely healed. In the left lung was a large cavity which showed no conspicuous change, except the decrease of sputum. Table X shows the results of the examination of the most serious cases. We believe that further modification of the method of treatment will yield still better results.

#### STATISTICS UPON THE REACTIONS.

By reactions we mean the temporary increase of one or more symptoms immediately after the injection. If the symptoms last for more than a few



TABLE X.  
RESULTS OF TREATMENT WITH CYANOCUPROL UPON ADVANCED CASES OF PULMONARY TUBERCULOSIS.

Results of Treatment—		Before Treatment—		Temperature,	Dose of Cyanocuprol, c.c.		Case	
No.	Age, yrs.	Form and Stage of Tuberculosis.	General condition	von Pirquet's reaction	(°C.)		No.	
1.	22	Acute active pulmonary; intestinal.	Very poor	Negative	39.0	4, 4, 4, 3.5, 3.5, 3.5, 3.25, 2.5, 2.5.		
2.	22	Acute active pulmonary.	Very poor	Weakly positive	38.5	5, 5, 4.5, 2.5, 2.5.		
3.	17	Pulmonary, 3rd stage; intestinal and laryngeal.	Poor	Slightly positive	37.5	7.25, 7, 6.25, 6.5, 5, 4.5, 2.5.		
4.	22	Pulmonary, 2nd stage; pneumothorax.	Poor	Slightly positive	38.0	7.5, 7.25, 7, 7, 6, 5, 5, 5, 4.5, 4, 3.5, 4, 4, 4, 3.25, 2.5.		
5.	27	Pulmonary, 3rd stage; laryngeal.	Poor	Negative	37.8	7.5, 7.5, 7.5, 7.75, 7.5, 7.25, 7, 6, 6, 5, 4, 4, 3.5, 3.5, 3.5, 2.		
6.	31	Acute active pulmonary; pleural and peritoneal.	Poor	Negative	39.0	3, 2.5.		
7.	47	Peritoneal; pulmonary, 1st stage; pleurisy.	Poor	Negative	39.5	5, 3.5.		
8.	36	Chronic pulmonary, 3rd stage; intestinal.	Poor	Weakly positive	38.2	6.5, 6.5, 6.5, 5.75, 5, 4.		
9.	22	Pulmonary, 2nd stage; intestinal.	Poor	Strongly positive	37.5	7, 7, 6.75, 7, 6, 6.		
10.	23	Pulmonary, 2nd stage; pleurisy.	Very poor	Negative	37.5	5, 5, 4.5, 5, 3, 3.5, 3.5.		
11.	40	Chronic pulmonary, 3rd stage.	Very poor	Slightly positive	37.7	6.5, 7, 7, 6.5.		
12.	62	Chronic pulmonary, 3rd stage.	Moderately poor	Slightly positive	37.3	7.5, 7.5, 7.5, 7.25, 7.75, 7, 7, 7, 6, 6, 6, 6.		
13.	27	Chronic pulmonary, 3rd stage.	Moderately poor	Slightly positive	37.3	7.5, 8, 7.75, 7.5, 7.5, 7.5, 7.25, 7.5, 6.25, 6.75, 6.75.		
14.	35	Chronic pulmonary, 3rd stage.	Poor	Weakly positive	Normal	2.5, 2.5, 2.5, 2.5, 2.5, 2.5.		
15.	26	Active pulmonary, 3rd stage.	Poor	Strongly positive	37.5	5, 5, 4.5, 2.5, 2.5.		
16.	26	Chronic pulmonary, 3rd stage; laryngeal.	Moderately poor	Negative	37.2	5, 4, 4, 3.5, 3.5, 2.5, 2.5, 2.5.		
17.	25	Chronic pulmonary, 3rd stage.	Poor	Negative	37.0	6.5, 5, 5, 5, 5, 5, 5, 5.		
18.	32	Acute active pulmonary.	Poor	Negative	38.0	3.5, 3.5, 3.5, 4, 3, 3, 2.5, 2.5.		
19.	17	Active pulmonary, 3rd stage.	Poor	Negative	38.5	7, 7, 7.25, 7, 7, 6, 6.25, 6, 5.5, 5.5, 5.5.		
20.	31	Chronic pulmonary, 3rd stage; laryngeal.	Moderately poor	Weakly positive	38.0	5.5, 5.5, 5.5, 5.5, 5, 5, 5, 3.5.		
21.	17	Acute active pulmonary.	Poor	Weakly positive	38.0	4, 4, 4, 3.75, 3.75, 3.5, 3.5, 3.5, 3.		
22.	34	Chronic pulmonary, 3rd stage.	Moderately poor	Slightly positive	39.0	6.5, 6, 6.25, 6.25, 6.25, 6.25, 6.25, 6.5, 6.5, 5, 5, 5, 5, 5, 4, 4, 2.5, 2.5, 2.		
						3.5, 2.5.		
Result of Treatment—								
Case No.	General condition	Body weight	Temperature	Râles	Dull area	Sputum	Bacilli in sputum	Result.
1.	Stationary <sup>1</sup>	Decreased	Stationary	Decreased	Decreased	Increased	Stationary	Died
2.	Worse	Decreased	Stationary	Stationary	Stationary	Decreased	Stationary	Died
3.	Worse	Decreased	Higher	Stationary	Stationary	Decreased	Increased	Died
4.	Worse	Decreased	Slightly higher	Decreased	Slightly decreased	Increased	Increased	Died
5.	Worse	Decreased	Lower	Slightly decreased	Increased	Stationary	Decreased	Died
6.	Worse	Decreased	Stationary	Stationary	Decreased	Decreased	Stationary	Died
7.	Worse	Decreased	Stationary	Decreased	Stationary	Subsided	Stationary	Died
8.	Worse	Decreased	Stationary	Decreased	Slightly decreased	Decreased	Stationary	Worse
9.	Stationary	Decreased	Stationary	Decreased	Stationary	Stationary	Present	Stationary
10.	Worse	Decreased	Higher	Decreased	Decreased	Increased	Stationary	Worse
11.	Worse	Decreased	Higher	Decreased	Decreased	Stationary	Increased	Stationary
12.	Stationary	Decreased	Stationary	Stationary	Decreased	Decreased	Stationary	Stationary
13.	Stationary	Decreased	Lower (37.1°)	Slightly decreased	Markedly decreased	Stationary	Stationary	Stationary
14.	Stationary	Increased	Normal	Stationary	Slightly decreased	Slightly increased	Stationary	Stationary
15.	Slightly improved	Decreased	Nearly normal	Slightly decreased	Decreased	Slightly decreased	Stationary	Slightly improved
16.	Improved	Increased	Normal	Decreased	Decreased	Decreased	Decreased	Slightly improved
17.	Slightly improved	Increased	Lower (37.4°)	Markedly decreased	Decreased	Stationary	Markedly decreased	Improved
18.	Improved	Markedly increased	Normal	Markedly decreased	Decreased	Markedly decreased	Decreased	Improved
19.	Improved	Increased	Nearly normal (37.1° rarely)	Markedly decreased	Markedly decreased	Markedly decreased	Decreased	Improved
20.	Stationary	Decreased	Normal	Stationary	Decreased	Markedly decreased	Stationary	Slightly improved
21.	Slightly improved	Decreased	Normal	Decreased	Decreased	Decreased	Stationary	Improved
22.	Improved	Increased	Normal	Decreased	Decreased	Markedly decreased	Disappeared	Very much improved
Case No.	Remarks.						Reference to the statistical tables.	
1.	Abdominal symptoms subsided after five injections, pulmonary symptoms grew worse; died.						Pulmonary, 2nd period, No. II.	
2.	Hemoptysis after third injection; mental symptoms; emaciation; died.						Pulmonary, 1st period, No. III.	
3.	Difficulty in swallowing in consequence of laryngeal pain; emaciation due to diarrhea; died.						Intestinal, 1st period.	
4.	Severe pulmonary hemorrhage two weeks after the last injection; died.						Pulmonary, 2nd period, No. II.	
5.	Enlargement of the vacuoles; emaciation increased; died after treatment was suspended.						Pulmonary, 2nd period, No. III.	
6.	Great emaciation; perforation of intestines; died.						Abdominal, 1st period.	
7.	Peritoneal tuberculosis; no appetite; increased emaciation; died.						Peritoneal, 1st period.	
8.	Mental symptoms developed at the fourth injection; emaciation; palpable inguinal indurations.						Pulmonary, 1st period, No. III.	
9.	Two or three movements daily; diarrhea; emaciation increased.						Intestinal, 1st period.	
10.	Severe anemia and increased emaciation with rise of temperature.						Pulmonary, 1st period, No. II.	
11.	Decrease of râles and dull area; emaciation slightly increased.						Pulmonary, 1st period, No. III.	
12.	Râles subsided two months after suspension of treatment.						Pulmonary, 1st period, No. III.	
13.	Symptoms stationary.						Pulmonary, 1st period, No. III.	
14.	Symptoms stationary.						Pulmonary, 2nd period, No. III.	
15.	Night sweats subsided; marked improvement in general conditions.						Pulmonary, 1st period, No. III.	
16.	Cough subsided; markedly improved.						Under treatment.	
17.	Practically in the last stage; but marked improvement; four bacteriological examinations of sputum; last two injections negative.						Pulmonary, 2nd period, No. III.	
18.	All general symptoms markedly improved.						Under treatment.	
19.	All general symptoms markedly improved.						Under treatment.	
20.	Catarrhal affection of larynx subsided; ulceration healed.						Laryngeal, 2nd period.	
21.	Practically in the last stage; dangerous symptoms subsided; severe night sweats subsided after fourth injection.						Pulmonary, 2nd period, No. III.	
22.	Sputum free of bacilli after fifth injection; all subjective symptoms subsided; back at work.						Pulmonary, 2nd period, No. III.	

<sup>1</sup>By "stationary" is meant that the symptoms remained stationary, or that some improved, but others became worse, and thus no difference was observed either before or after the treatment.

days they are not looked upon as reactions. Some of the cases, therefore, that are classified among the reactions may include those that clinically became worse. It is impossible to distinguish between these cases and those with reactions. The cases of intestinal tuberculosis that produced such symptoms one week after the injection, are classified among the reactions, because the reactions in intestinal tuberculosis usually develop about five or six days after the injection.

TABLE XI.  
THE RATIO OF REACTIONS.

Period.	The ratio of reactions to the number of cases.		The ratio of reactions to the number of injections.		
	Total No. of cases.	Cases with reactions.	Cases without reactions.	No. of injections.	No. of reactions.
1st	71	64 (90.1%)	7 (9.9%)	419	177 (42.2%)
2nd	47	37 (78.7%)	10 (21.3%)	370	139 (37.6%)
Tot.	118	101 (85.6%)	17 (14.4%)	789	316 (40.0%)

The "reactions" in Table XI were recorded as febrile or lesional, and some of the figures have therefore been duplicated.

TABLE XII.  
FEBRILE REACTIONS.

Period.	No. of injections.		Severity of reactions.		
	No. with no reactions.	No. of reactions.	0.0-0.5°	0.5-1.0°	1.0° and above.
1st	419	361 (86.2%)	58 (13.8%)	48 (11.5%)	8 (1.9%)
2nd	370	313 (84.6%)	57 (15.4%)	52 (14.1%)	4 (1.1%)
Tot.	789	674 (85.4%)	115 (14.6%)	100 (12.7%)	12 (1.5%)

Of the total number of cases 13.8 to 15.4 per cent. manifested febrile reactions (Table XII). In many cases the temperature did not go higher than 0.5° C., and in only a few was it higher than 0.5° C. During the first period in 1.9 per cent. of the total number of cases the temperature rose above 0.5° C. The number with fever higher than 1° C. is less than 0.5 per cent. of the total.

TABLE XIII.  
LESIONAL REACTIONS.

Period.	No. of injections.		Degree of the reactions.		
	No. with no reactions.	No. of reactions.	Slight.	Moderate.	Marked.
1st	419	299 (71.4%)	120 (28.6%)	114 (27.2%)	4 (1.0%)
2nd	370	288 (77.8%)	82 (22.2%)	79 (21.4%)	3 (0.8%)
Tot.	789	587 (74.4%)	202 (25.6%)	193 (24.4%)	7 (0.9%)

"Slight" included the cases in which reactions were produced, but they were so slight that no treatment was considered necessary. By "moderate" is meant the cases in which the reaction subsided without treatment, though it had been moderately severe. By "marked" is meant the cases in which the reaction was great.

Twenty-two and two tenths to 28.6 per cent. of the cases showed lesional reactions, but they were all slight, only one being moderately severe (Table XIII). In only two cases out of the 789 injections was a severe lesional reaction produced.

1. One case developed a severe pulmonary hemorrhage—Case I in my previous report (5). This is one of the two cases in which marked lesional reactions were observed (Table XIII).

2. One patient left the hospital during the reaction period and did not take the required rest. He contracted pneumonia and died (Case II of the previous report).

3. On the fifth day after the injection one patient, in the last stage, suffered from severe pain in the larynx. This is Case III of my first paper. It has been excluded from the statistical studies.

4. On the sixth day after the first injection, one patient suffered from symptoms resembling dysentery (Case IV of the first report). This is the second of the two cases in which marked reactions developed.

5. Various ill effects were observed in three cases during and after the injection. They are Cases V and VI of the first report, and a male, twenty-nine years old. The last had pulmonary induration in the right upper lobe; his general condition was good; temperature 37.6° to 37.7° C. He became nervous after admission to the hospital, and could not sleep (homesick?). He received three injections, the doses being 7.5, 6.5, and 5.0 c. c. The dull area, rales, and cough were improved, but his appetite was poor and he lost 3.2 kilos in weight. His temperature at times was 38.6° to 38.7° C. The bacilli in the sputum remained continuously at No. II to IV of Gaffky's scale, and cyanocuprol seemed to have no effect. His mental symptoms increased to such an extent that no further injections were given.

These were the only severe reactions that we encountered during the first period. During the second period no marked lesional reactions were observed, and we believe that with wider experience the ill effects of the drug may be completely removed.

#### THE SIZE OF THE DOSE.

The size of the dose was gradually made smaller in the second period. The majority of cases in the third stage of tuberculosis treated during the second period were treated during the first period and consequently had been given comparatively large doses. The cases of the third stage that began treatment in the second period were given small doses. They are all still under treatment and are not included in the present paper. Children have also been excluded from this report.

TABLE XIV.  
NUMBER OF INJECTIONS AND DOSES.

Period.	Stage.	No. of cases.	No. of injections.	Average No. of injections.	Total amount of cyanocuprol injected.	Average dose.
1st	1	14	60	4.3	418.25	6.97
	2	36	191	5.3	1,365.75	7.13
	3	45	45	7.5	287.75	6.39
2nd	1	10	50	5.0	260.25	5.21
	2	25	227	9.1	1,148.75	5.06
	3	5	68	13.6	328.25	4.83

From Table XIV it is seen that during the second period the number of injections was increased. This is because we had more serious cases during the second period than the first. During the first period, larger doses were given to the cases in the second stage than the first, because the doses were to be determined by various causes, as will be shown later. By administering a smaller dose during the second period, reactions disappeared altogether. The dose that we are employing in the third stage at present is still smaller than that given in this report.

We have shown that during the two periods we treated cases of varying severity (Table II, A). Table II, B, however, shows only the extent of the lesions, and does not indicate the general condition

or the pathological processes as they appear clinically. In spite of the untoward climatic conditions to which the patients had been exposed during the second period, we attained better success (Table III). This may be partly due to the larger number of injections, but is probably due chiefly to the fact that during the second period smaller doses were given.

#### THE METHOD OF DETERMINING THERAPEUTIC DOSES.

Each organ reacts differently to cyanocuprol, and smaller doses must be administered when the more sensitive organs are affected. The affected organs can be arranged in the following order according to their sensitiveness: kidneys, larynx, pleura, peritoneum and intestines, bladder and urethra, lungs, testicles, joints, and other surgical cases. The cerebral and cardiac membranes seem to be more sensitive than the kidneys. In more serious cases, as well as in those that have widely affected areas, smaller doses must be given. The doses depend upon the clinical course of the disease. A smaller dose than usual must be given when the patient has an active form, while a larger one may be given to a stationary case. Smaller doses than usual must also be administered to cases with malnutrition or anemia. If pulmonary hemorrhage, pain in the chest, dyspnea, rapid pulse, frequent coughs, or neurasthenia occur, smaller doses must be given. They must also be

given to patients with high fever. For a chronic case with complications, the size of the dose must be determined by examination of the heart. A small dose must be given in pregnancy.

The age, weight, and constitution should also be considered in the choice of the dose, but the same dose may be administered independently of the size of the patient. To patients over sixty and to infants, an adequate reduction in the size of the dose must be made. Patients at puberty are apt to suffer from an active form of tuberculosis, and consequently great care should be taken. To women somewhat smaller doses should be given than to men. During the winter or when the climate is unsettled, small doses must be given.

The figures in Table XV have been chosen for adult cases on the basis of the precautions given above. They are intended only to show the standard size and should be varied in practical administration. If the case in question should be affected in more than one organ, the size of the dose must be determined by the severer affection or more sensitive lesions.

Tuberculosis of the kidneys is not given in the table; it should be treated with a dose twenty per cent. less than that of laryngeal tuberculosis. Surgical tuberculosis should also be treated with a slightly larger dose than pulmonary tuberculosis.

The method of determining the size of the second and subsequent doses is as follows: The drug reacts differently in different individuals, and its efficacy can, therefore, only be determined with great care. The second and subsequent doses can only be determined by observing the results of the first injection.

1. If a given dose produces a marked reaction or the reaction does not subside after the third day, the dose is too large and a considerable reduction must be made in the size of the next dose.

2. If a suitable dose has been given, the patient will not have any reaction; if a reaction is produced, it will subside completely in a few days, and improvement will be observed to set in within two weeks. In cases of this kind the same dose should be administered at the next injection.

3. The size of the suitable dose of cyanocuprol becomes smaller and smaller, and therefore, unlike other drugs, the dose must never be increased.

4. A very large dose sometimes has no effect. The dose should never be increased, even if no reaction or improvement is observed.

5. If the same dose is given several times in succession, the patient will show no improvement, in spite of the efficacy that set in at the beginning. This

TABLE XV.  
STANDARD SIZES OF DOSE.

Affected organs.	General condition.	Temperature.	Severe symptoms.	Clinical course.	Dose c.c.
Lungs,	Good.	Normal.	None.	Quiescent.	7.0
1st stage.	Good.	Normal.	Present.	Quiescent.	5.0
	Fair.	Below 38° C.	None.	Moderate.	6.0
	Fair.	Above 38° C.	None.	Active.	4.0
Lungs,	Good.	Normal.	None.	Quiescent.	6.0
2nd stage.	Good.	Normal.	Present.	Quiescent.	4.0
	Fair.	Below 38° C.	None.	Moderate.	5.0
	Fair.	Above 38° C.	None.	Active.	4.0
Lungs,	Good.	Normal.	None.	Very active.	3.0
3rd stage.	Good.	Normal.	Present.	Quiescent.	5.0
	Fair.	Below 38° C.	None.	Quiescent.	3.0
	Fair.	Above 38° C.	None.	Moderate.	3.0
	Fair.	Above 38° C.	None.	Active.	2.5
Larynx.	{ Good. Good. Fair. Fair.	Normal.	None.	Quiescent.	5.0
Intestines.		Normal.	Present.	Quiescent.	3.0
Pleura.		Below 38° C.	None.	Moderate.	3.0
Peritoneum.		Above 38° C.	None.	Active.	2.0

is due to the fact that the adequate dose has become less. In such a case a smaller dose will produce better results.

6. If the given dose is considered too small, the size should not be increased, but the same dose should be continued, because the adequate dose will be gradually reduced and the right one will finally be reached.

7. The size of the dose must be decreased immediately if pulmonary hemorrhage, pleurisy, etc., should develop, or if the temperature should rise, the weight be reduced, or the disease should take an active form.

8. If such a reduction in the size of the dose is considered necessary, it must be diminished by ten or twenty per cent. of the former dose. But if pleurisy, peritonitis, or laryngeal tuberculosis develops, still greater decrease is necessary.

9. This decrease is not necessarily made with each injection, but depends upon the reactions and the efficacy of the dose administered.

10. Some cases show great improvement after one injection, all the symptoms subsiding at once, but this lasts only from seven to ten days, and the symptoms then reappear. Temperature, râles, and laryn-

The age, weight, and constitution should also be considered in the choice of the dose, but the same dose may be administered independently of the size of the patient. To patients over sixty and to infants, an adequate reduction in the size of the dose must be made. Patients at puberty are apt to suffer from an active form of tuberculosis, and consequently great care should be taken. To women somewhat smaller doses should be given than to men. During the winter or when the climate is unsettled, small doses must be given.

The figures in Table XV have been chosen for adult cases on the basis of the precautions given above. They are intended only to show the standard size and should be varied in practical administration. If the case in question should be affected in more than one organ, the size of the dose must be determined by the severer affection or more sensitive lesions.

Tuberculosis of the kidneys is not given in the table; it should be treated with a dose twenty per cent. less than that of laryngeal tuberculosis. Sur-



geal pain are the ones that usually subside temporarily. The size of the dose should never be increased; after the same dose has been given several times, improvement begins to set in.

#### CASES NOT INCLUDED IN THE STATISTICS.

We had twenty-nine patients who received only one or two injections until March, 1916, and we have therefore excluded these cases from the statistics. Sixteen of the twenty-nine patients received one injection, and the remaining thirteen two. The treatment was discontinued for the following reasons:

Cause uncertain. Patients did not report again..	12
Changed to other physician.....	2
Died of the serious symptoms from which they had been suffering, only one injection being given .....	2
Injections discontinued because of the appearance of serious symptoms.....	5
Injections discontinued because of uncertain diagnosis .....	3
Injections discontinued at the request of the patient .....	4
Injections discontinued on account of the development of pleurisy, thirteen days after the first injection .....	1

The patients that died as a result of the serious symptoms from which they were suffering were considered hopeless and were treated only at their request. One of them died on the thirteenth day and the other on the sixteenth day after receiving the first injection. One of the cases of uncertain diagnosis had a hemorrhage from below the larynx, the second had a few crackles in the apices (atelectatic), and the third had bronchial symptoms. In all these cases the bacteriological examinations of the sputum and von Pirquet's reaction were negative. The injection was made in hope of determining the diagnosis by lesional reactions that might develop after the injection if they were of tuberculous origin.

#### SUMMARY.

Cyanocuprol has been shown to be effective in cases of tuberculosis of varying degrees of severity. Of twenty-two patients that seemed to be hopeless and had been treated with all known methods, eight showed marked improvement.

The size of the dose seems to be closely related to the symptoms and the reactions. During the first period, when we employed larger doses, less beneficial results were obtained than during the second period, when the size of the dose was considerably decreased.

Cyanocuprol is effective in cases with fever, malnutrition, induration, and catarrhal condition of the lesion. In pulmonary tuberculosis the dull area and râles usually decrease, and the number of bacilli in the sputum is diminished. We have not yet studied a sufficient number of other forms of tuberculosis to permit any conclusions to be drawn.

Injection of cyanocuprol sometimes causes general or lesional reactions in tuberculous patients. Febrile reactions were observed in 14.6 per cent., and lesional in 25.6 per cent., based on the number of injections. These reactions were slight and transient. More severe reactions were produced in only 0.4 per cent. of the cases.

During the first period, in which we had only a limited experience in the use of the drug, seven cases showed unfavorable results; but during the second period there were none.

I wish to express my indebtedness to Professor Kitasato and to Doctor Koga for valuable suggestions.

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## PYORRHEA ALVEOLARIS.

### *Etiology, Pathology, and Treatment.*

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The statement that pyorrhea alveolaris has been caused by *Endameba buccalis* has been shown by recent investigations to be unfounded. It is true that amebas are found in pyorrheal lesions, but they are also found in healthy mouths, even in the mouths of children who are not subject to the disease. As might be expected under these circumstances, emetine has not proved to be the cure all it was heralded, not because it is not an efficient amebicide, but because the ameba against which it was directed sustained no causal relation to pyorrhea.

The role played by pyorrhea in metastatic infections has led to a more careful study of its etiology, pathology, and treatment. A review of the best present day literature on the subject shows that pyorrhea is a disease affecting primarily the investing tissues of the teeth, the gums, gingiva, alveolar process, cementum and pericementum. It may be defined as a progressive resorption of the alveolar process and pericementum with a coincident recession of the gums and the formation of pockets. It always begins at the gingival margins, progressing slowly toward the apex of the root, resulting in the final exfoliation of the teeth, unless arrested by treatment. With the formation of pockets, infection takes place, giving rise to its classic symptom, pus discharge. This symptom is not always present, at least not macroscopically, due possibly to shallow or wide open pockets, as a result of which the discharge is washed away by the saliva as fast as formed, or to an inactive phagocytosis, or both.

Careful comparative examinations have shown that the bacteriology of pyorrhea is qualitatively not unlike that of the normal mouth, though there is, as might be expected, a great quantitative difference. Spirochetes, cocci of every known strain, and Vincent's fusiform bacilli are among those always present in large numbers. There is no evidence that any of these sustain a causal relation to the disease.

The etiology of pyorrhea has been obscured by the fact that in every case there are always several causes. Certain diseases such as diabetes, tuberculosis, syphilis, etc., may act as predisposing causes. Heredity may also act in this way. Of these, in their possible relationship, relatively little is known.

It is possible that they are not large factors in the absence of local exciting causes. Their most probable influence is that of prejudicing prognosis. The local causes are more obvious. Of these perhaps the most potent as a predisposing factor is malnutrition of the investing tissues of the teeth. The modern habit of eating prepared foods entailing little or no exercise of these tissues, together with the fact that they are endorgans, make them peculiarly susceptible to trophic disturbances. Another important factor is occlusion. Teeth may be in normal occlusion in the sense of being straight, and at the same time the stress to which they are subjected in mastication be of such a nature as to produce an actual trauma of their investing tissues. This factor is practically always present in pyorrhea. A very potent exciting cause is gingival irritation. This may be produced by tartar, food debris, uncleanness, ill fitting crowns, fillings, etc.; in a word, failure in intelligent care of the mouth. It is not by any one of these but by a combination of them that pyorrhea is caused.

Treatment consists in a careful examination of each case to ascertain its individual causes. This involves a consideration of possible systemic complications, the correction of occlusion, the removal of gingival irritation, and the establishment and maintenance of a high standard of mouth hygiene, including vigorous brushing of the gums. While the omission of any link in this chain would spell failure, the most important and the most difficult to achieve is the removal of irritants upon the affected roots. This means not only the removal of all calcareous deposits by instrumentation, but the complete removal of the necrotic pericementum thereby permitting the living cells of the cementum to lie in physiological contact with those of the surrounding soft tissues. When this is properly done, reattachment takes place, pockets are obliterated, new bone is deposited about the roots as shown by roentgenograms, the teeth become firm and health is reestablished in these tissues. Only such results can be regarded as a cure.

59 WEST FORTY-SIXTH STREET.

### GASTROMESENTERIC ILEUS.\*

#### *Report of Two Cases with Autopsy Findings.*

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It is quite natural that the symptom complex gastromesenteric ileus, occurring in maladies which seemingly bear no relation to each other, has been given a variety of names in an attempt to designate an exceedingly important and much disputed etiological and pathological process. Thus one can readily understand why such terms as duodenal ileus, duodenal obstruction, arteriomesenteric occlusion, gastromesenteric ileus, acute dilatation of the stomach, postoperative acute dilatation of stomach, etc., have been given to this syndrome from time to time in medical literature.

The two cases which I have to report were autopsied in the Louisville City Hospital by the pathological staff of the University of Louisville.

CASE I.—Mrs. A. S., married, white, age forty-one. Had rheumatic arthritis in right arm and left knee several years ago. Hysterectomy performed, but date not obtainable. Patient was admitted to hospital December 9, 1915, with first degree burns of hands and arms and extensive second degree burns of chest anteriorly and over lower one half of abdomen, as a result of clothes catching fire from stove. Three weeks later wounds of hands and arm were healed those of chest and abdomen were clean and healing rapidly. During the interval of three weeks patient, as a rule, was restless at night and partook sparingly of the soft diet which was ordered for her. She was kept in bed in the dorsal or semireclining position throughout stay in hospital, temperature ranging from 99° to 100° F., pulse from 80 to 120, respirations from 20 to 24. On the twenty-second day of illness patient began to complain of epigastric pains, followed by vomiting of light greenish fluid. She continued vomiting at frequent intervals in a retching manner until death, which occurred on the following day. The stomach was washed out a number of times without relief. Postural treatment was not attempted. During the last two days of illness her temperature was subnormal, pulse about 120. Three days before death the bowels moved twice, but there was obstipation after that date.

Autopsy was held three hours after death and showed a fairly well developed and somewhat emaciated, adult female with extensive raw areas over chest and abdomen, referred to in history. The epigastrium was distinctly bulging with some retraction of the abdomen below. On opening the peritoneal cavity the stomach bulged out of the incision like a balloon. The fundus filled the entire left hypogastrium, pushing the diaphragm up as high as the fourth interspace. The greater curvature extended well below the umbilicus, measuring fifty-six cm. in length. The lesser curvature was V shaped and pushed against the liver, measuring twenty-two cm. in length. The diameter of the stomach in a line drawn parallel with the esophagus was ten cm. The pylorus was likewise markedly distended, measuring ten cm. in circumference. No adhesions. The duodenum was U shaped, tense, and uniformly dilated six cm. in diameter up to the root of the mesentery. The stomach contained a large amount of gas and about 500 c.c. of milky fluid, whereas the duodenum contained little or no gas, but was filled with a milky fluid; patient had been given milk several hours before death. The walls of the stomach and the duodenum were thin, their mucous membranes being entirely negative.

Beyond the root of the mesentery the small intestines were collapsed and owing to a long mesentery extended well over brim of the pelvis, occupying the space of uterus, tubes and ovaries, which had been removed at a previous operation. There were no adhesions between intestines and parietal peritoneum. The mesentery was thin and partially closed—closed fan shaped. Cecum was nonmobile and not distended.

Beyond disturbing the relations of the abdominal viscera, the pressure of the stomach on the last portion of duodenum was relieved by turning up the transverse colon over the chest wall. The jejunum remained collapsed. The jejunum continued to remain collapsed even after moderate pressure had been made simultaneously on anterior and posterior surfaces of stomach. After the stretch of the root of the mesentery was relieved, stomach lying in position, the jejunum continued to remain collapsed, but when slight pressure was made upon anterior surface of stomach the jejunum would fill rapidly. The contents of the jejunum were stripped into duodenum and held there by traction on the root of mesentery. When the stomach was put in place and the stretch of the mesentery relieved, the jejunum began to fill up, but would cease to fill when slight traction was made upon the mesentery. The heart, lungs, spleen, and kidney were practically negative. There was no apparent deformity of the spinal column.

I wish to thank most cordially Dr. John W. Price, Jr., for the privilege of reporting this case.

CASE II.—G. S., male, colored, age eighty-six. Admitted to Louisville City Hospital January 23, 1916, with a history

\*Read before the Mississippi Valley Medical Association, Indianapolis, Ind., October 12, 1916.



of slipping and falling, striking left side of body and being unable to arise, owing to inability to use left lower extremity. Family and personal history as gathered from chart was negative. On examination a few hours after accident the left lower extremity gave cardinal signs of intracapsular fracture of left femur. Patient was propped in bed in a semireclining position and given soft diet. For the following three days patient did as well as could be expected. At noon on the fourth day he was found dead in bed. The nurse stated that she had given him milk and on returning thirty minutes later found that he was dead.

Autopsy seven hours after death showed the body to be that of a fairly well developed and markedly emaciated adult colored male. Several abrasions were found over left leg and hip. On opening abdomen the stomach was found to be strikingly dilated, extending four cm. below the umbilicus. The fundus was enormously extended, pushing the diaphragm up to fourth interspace. The greater curvature measured 45.5 cm. The lesser curvature was kinked, measuring 20.5 cm. Width of the stomach along a line drawn parallel with esophagus was ten cm. The pylorus was dilated up to five cm. in diameter. The duodenum was U shaped, tense, and uniformly dilated 6.5 cm. in diameter up to root of mesentery. There were dense, fibrous adhesions between first portion of duodenum and gallbladder. The stomach and duodenum contained gas, grayish yellow, fluid material and a few small grayish white curds. Beyond the root of the mesentery the small intestines were collapsed. The mesentery was taut, measuring seventeen cm. in length, and owing to the redundancy of the mesentery the greater portion of small intestines occupied the pelvis. There were no adhesions between small intestines and parietal peritoneum. There was no ptosis or dilatation of colon. Cecum nonmobile and not distended. Similar experiments were carried out with stomach, duodenum, and mesentery as in Case 1 with identical results.

Aside from the gastrointestinal tract the other systems of the body revealed exceedingly interesting pathological findings. The lungs showed typical tuberculosis. The trachea and the right and left bronchi were filled with a grayish white, soft, friable, curdlike material. On removing this curdlike material it was seen to conform identically with the size and shape of trachea and bronchi. The ribs would bend and break with the slightest effort. The broken ends showed the bone to be a mere shell, less than one mm. in thickness, surrounding light red, pulpaceous material. This pulpaceous material was held in a network of pinkish gray trabeculae which gave to the cavity of the bone a typical honeycomb appearance. There was found an intracapsular fracture of the neck of left femur. The compact bone of the neck was thin and easily broken. The bones of middle and anterior cranial fossae were brittle and broke with a crackling sound similar to the crushing of eggshells. Microscopic diagnosis of this condition was osteomalacia. The genitourinary system showed a chronic infectious prostatitis, chronic cystitis, and chronic pyelonephritis. The circulatory system showed a chronic valvulitis and chronic aortitis. The gallbladder contained a large number of stones and thick, tarry bile. The brain showed no gross lesion.

The immediate cause of death in this case was asphyxiating asphyxia, brought about, no doubt, by compression of duodenum by root of mesentery with subsequent dilatation of stomach and duodenum, followed by vomiting and the aspiration of the vomitus, which was composed of milk taken a few minutes previously.

The cases herein reported of acute dilatation of the stomach and duodenum represent clinically to the internist a class of patients particularly prone to this symptom complex. These patients are weakened, anemic, emaciated, past middle life, and bedridden through accidental happenings. The weakened condition was brought about in the first case by the constant absorption of toxic agents produced by the extensive burns of the skin; the weakened condition of the second case was due to the long and continued absorption of toxin produced both in the respiratory and genitourinary tracts. Each patient

was placed in a reclining position, and this, coupled with relaxation of the abdominal and pelvic walls, as a result of wasting of the respective muscles, and absence of pelvic organs, as in Case 1, would add materially to the gravitation of the small intestines into the pelvis. Vomiting, retching in character for the terminal twenty-four hours, was a constant feature in the first case. Though there were no external evidences of vomiting in the second case, nevertheless, the autopsy findings point conclusively to antemortem vomiting by the aspiration of the vomitus into the bronchial radicals. The autopsy findings showed that the two cases had in common a marked dilatation of stomach and duodenum up to the point where the root of the mesentery passes over the horizontal segment of the duodenum and the collapse of the intestine beyond this point; likewise a long and tensely drawn, cordlike mesentery with ptosis of the intestine over the brim of the pelvis was found in each case.

The facts of the two cases are before us. The question now presents itself: What is the etiology and modus operandi of this condition? Many theories of more or less ingenious hypothesis have been suggested and many factors described in the production of acute dilatation of the stomach and duodenum. Carion and Hallion (1) have shown that sectioning of the vagus or of the cord above the middle dorsal roots in dogs leads to dilatation of the stomach, demonstrating that an injury or inflammation of these nerves or their centres may be a cause of this condition. Conner (2) collected from the literature four cases in which the acute dilatation developed after cerebral and cord injury and five cases in the course of pneumonia. Braun and Seidel (3) found that conscious dogs after inflation of the stomach would promptly empty the organ by belching and vomiting, but when deeply anesthetized belching and vomiting ceased, even though the pressure was increased to the point of rupture of the stomach. They therefore conclude from their experiments that the anemia or narcosis or possibly both caused a disturbance of the vomiting reflex, thus allowing the stomach to overdistend before relieving itself.

Richardson (4), Mayoral (5), and Luckett have recently reported cases of acute dilatation of the stomach occurring during operation. Mayoral advances the hypothesis that it is due to paralysis of the stomach centre in the brain, owing to the anesthetic being pushed too far. Conner (2) in analyzing 102 cases found that forty-one per cent. followed operations with a general anesthetic. The anesthetic given in a majority of the cases was chloroform, the symptoms of this condition occurring, as a rule, within the first twenty-four hours. It is important to remember in connection herewith that the operative form of acute dilatation can follow any type of operation upon any part of the body. Conner was unable to find a single case following gastric operation.

Bassler (6) is of the opinion that the condition is due largely to the amount of the anesthetic given according to the general and local condition of the patient and that surgical technic is of very little etiological importance. Box and Wallace (7) con-



clude from their clinical experience and experimental work carried out on cadavers that in acute dilatation of the stomach two factors come into play. There is, first, a paralytic condition of the viscus which leads to distension, and then at a certain stage the distended stomach actually produces obstruction by pressing on the duodenum in front and to the left of the spinal column. Kemp (8), Bassler (9), and others speak of this mechanism as frequently occurring.

Many hold that there is in the beginning paralysis of the stomach walls, the bowels being secondarily pushed downward out of the abdominal space by the dilated stomach and obstruction of the duodenum resulting from traction of the mesentery over its horizontal segment. Rakitauskys (10) in 1863 was the first to suggest that the acute dilatation of the stomach and duodenum was due to the constricting action of the mesenteric artery which, owing to the downward dragging of the intestines, presses upon and obstructs the third portion of the duodenum. Albrecht, after performing numerous experiments, likewise championed this explanation and in 1899 reported two such cases with autopsy findings. P. Miller draws particular attention to such a mechanism.

Conner (2) in his experiment on the cadaver showed that in some cases a weight of 500 grams (the approximate weight of the small intestines when empty) attached to the mesentery, produced an obstruction which required ten to forty-eight mm. of mercury to overcome. C. Weinbrenner, as quoted by Brooks (10) believes that the third portion of the duodenum, owing to its fixation to the spinal column, is incapable of yielding to pressure, and in traction on the mesentery may be so compressed against the spinal column that its lumen is interrupted. In Weinbrenner's case a tampon was placed behind the uterus to stop hemorrhage after annexa operation. As a result, a loop of intestine was so fixed between the uterus and promontory that traction was made upon the mesentery. Within a short time gastric distension became enormous. The case was desperate, death being imminent within a few hours. As a last resort, when the patient was placed in a genupectoral position, vomiting ceased at once. After about a minute much flatus was spontaneously expelled through the anus. Within an hour the patient was replaced on the back, the abdomen being flat and soft.

Conner (2) cites a case reported by Bäumler of acute dilatation in which cure was affected by postural treatment. The patient was a male adult, of thirty-six years, admitted for long standing sciatica; he had occupied a recumbent position for a long time. Within premonitory symptoms the patient began to vomit and continued to do so for two days. The vomitus showed no free hydrochloric acid, but gave reaction for lactic acid and bile. It also showed the presence of a diastatic ferment. Physical examination showed the stomach to be dilated to within two fingers' breadth of the symphysis. Postural treatment was instituted in the form of abdominal and knee elbow position. There was no further vomiting, and the next day the stomach extended only to the umbilicus. Steady improvement and cure resulted.

Bloodgood (11), operating upon twenty cases for resection of the colon, observed in five instances great dilatation of the duodenum. In all of these cases he found the pathological condition at operation to be almost uniform. He states that the most impressive feature is a hugely dilated cecum situated in the pelvis. The mesentery of that portion of the ileum near the cecum is short and one can demonstrate at the operation that the pull of the mesentery of the small intestine will cause more or less constriction of the duodenum. He adds that the cecum cannot produce such tension on the mesentery of the small intestine unless the last portion of ileum near the cecum has an unusually short mesentery. To support his observation he reports that the patients are relieved by resection of right colon and cecum.

T. Ordway (12) reports the following post-mortem findings in an advanced phthisical patient. "The mesenteric attachment which crosses the last part of the duodenum is tense. It presses the duodenum against the spinal column and this produces complete obstruction. Above this obstruction the duodenum is markedly dilated and continuous with the stomach. Below this point both small and large intestines are collapsed and apparently empty."

Laffer (13) found only twenty-seven cases in 120 autopsies of acute dilatation of the stomach reported in the literature where the dilatation was of the gastromesenteric ileus type. Out of the sixty-nine autopsies of acute dilatation of the stomach reviewed by Conner fifty-five per cent. showed the duodenum to be dilated in part or in whole and 27.5 per cent. of these showed the dilated duodenum to end at a point directly behind the root of mesentery. Judging, then, from the cases that are overlooked at autopsy, together with those that recover, in which there is a good reason to believe that this same condition existed, Conner (2) is of the opinion that one third to one half of all the cases of acute gastrectasia are mesenteric obstruction.

In defense of the view that a purely mechanical obstruction of the duodenum by the root of the mesentery and the superior mesenteric vessels does occur are the facts that conditions of collapsed and emptied intestines accompanied by a moderately long mesentery are common findings in a large number of reported autopsies, as well as in the cases herein reported, and that beneficial results are obtained by lavaging the stomach, hypodermoclysis, and the postural method of treatment. Some assert that there is lack of pathological findings in the serosa adjacent to the constricting band of the mesentery. They contend that there is a lack of the "serous exudate or gangrenous changes that accompanies obstruction, which is commonly found in other parts of the gastrointestinal tract resulting from constricting bands. From a pathological point of view we know that exudative and gangrenous changes in the intestine following obstruction are the end results of strangulation and not due merely to simple obstruction of the lumen of the viscera. It is not necessary in this condition to have a strangulation in order to produce the pathological condition and symptom complex. Hartwell and Hoguet (14) have established this fact

by showing experimentally that complete obstruction without strangulation of the lower duodenum in healthy dogs, either by means of clamps or amputation, if untreated, causes death within a few days; whereas, if a quantity of normal saline solution slightly in excess of the total loss of water in the urine and vomitus be given daily in the form of hypodermoclysis, the dogs promptly return to the condition of simple starvation. On the other hand, they found that if strangulation complicates obstruction the above fact in regard to saline treatment does not hold true.

From the autopsy reports and from the experiments carried out upon the cadaver, certain conditions are essential or favorable for the production of mesenteric obstruction. That is to say, we must have a fulcrum and tension sufficiently manifest to overcome the onward peristaltic wave in the duodenum. Anatomically, the duodenum crosses the abdominal aorta within the angle formed by the aorta and mesenteric artery. Thus an accentuation anteriorly of the underlying vertebrae, as in mild or extreme cases of lordosis—five of such cases have been reported—or hemorrhage behind the terminal portion of the duodenum, as was found in Philipe's case, or even the decubitus position in emaciated patients, will tend to exaggerate the duodenum as a fulcrum and render the viscera more liable to serious compression. Then, too, there must be conditions favorable for tension to be exerted upon the mesentery. Certain requirements are necessary. First, a dorsal decubitus or a semireclining position. Second, a long, partially closed, fan shaped mesentery with empty intestine; that is to say, a mesentery of cordlike arrangement just long enough to allow the intestine to hand over the brim and yet not rest upon the floor of the pelvis, and, as Bloodgood (11) has pointed out, a dilated mobile cecum with a short mesentery of the ileum near the cecum. In addition to the empty and collapsed intestine, Conner believes another condition which disturbs the normal equilibrium of the intraabdominal pressure is that a lax and flabby abdominal wall favors the descent of the gut into the pelvis. He cites a case of Schmorl, whose symptoms followed immediately upon a violent paroxysm of laughing and one from Kundrat in which the symptoms appeared in a convalescent typhoid who had left his bed for the first time.

The strength of the muscular contractions (peristalsis) is a factor that undoubtedly plays an important role in the *modus operandi* of acute dilatation of the stomach and duodenum. Clinical evidences show that in addition to mechanical obstruction we may have slight or grave functional disturbance of the stomach brought about by injuries to its nervous apparatus in the form of toxins or toxic substances circulating in the blood, vascular system, or some ill defined trauma to the brain or cord. Whether the disturbing factor is in the musculature *per se* or in the autonomic system supplying the parts it matters not. The weakened condition remains the same insofar as the mesenteric constriction is concerned. Linke (4) is of the opinion that unless the musculature of the stomach has been weakened in some way, compression of the duodenum alone can never cause acute gastric dilatation.

The hypothesis held by a number of writers that the condition is one of primary acute paralysis of the stomach is not borne out by Bloodgood's (15) case of acute dilatation of the stomach and duodenum, in which three and one half days after the onset of symptoms distinct peristaltic waves could be seen during colicky pains passing from left to right in the region of the stomach.

The mechanism championed by Box and Wallace, to the effect that there is first a paralytic dilatation of the stomach and at a certain stage compression of the third portion of the duodenum by the distended stomach, explains a minority of cases reported in the literature, judging from the clinical results obtained after the constant use of the stomach tube. On the other hand, if acute dilatation was primary, why should postural treatment clear up the clinical symptom so magically? It remains to be said that this mechanism can occur only in advanced toxicemic conditions, early postoperative cases, and cerebral or cord injuries in which there is a central paralysis or an inflammation of the nerves supplying the stomach. Even then, mesenteric constriction of the duodenum may be a factor that could only be ruled out in advanced cases by negative surgical or post mortem findings.

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705 SOUTH THIRD STREET.

## THE CONSERVATIVE TREATMENT OF DISEASES OF THE NASAL SINUSES.\*

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The title, *Conservative Treatment of the Sinuses*, is somewhat misleading, for there are certain severe conditions of the sinuses where a prompt and thorough radical operation would be the most conservative treatment possible. Therefore, let us consider the term as applying to nonsurgical treatment of the sinuses themselves. When we consider that even extensive operations on the sinuses do not always give completely successful results it is encouraging to know that there are measures that frequently give entire satisfaction without surgical operation on the sinuses.

In carrying out these measures a thorough, careful examination and an accurate diagnosis are of the first importance. Certainly a maxillary sinus suppuration caused by the root of a decayed tooth or a molar abscess extending into the sinus, does not call

\*Read before the College of Physicians of Philadelphia, December 20, 1916.



for a sinus operation, but rather for removal of the tooth and appropriate treatment. A sinus suppuration, even with necrotic bone, caused by syphilis, requires medical rather than surgical interference. Sinusitis associated with exanthemata or even influenza call first for improvement of the general condition and conservative treatment of the sinusitis. In sinusitis caused by the mineral poisons, phosphorus, etc., the removal of the patient from exposure to the mineral poisoning is necessary. A subacute or chronic catarrhal sinusitis should not be mistaken for an empyema. A maxillary sinus suppuration caused by pus descending from a frontal sinus should be handled by treatment directed to the frontal sinus rather than by extensive operation on the maxillary sinus. A thorough, careful, and accurate diagnosis is therefore a most essential feature of a conservative treatment. Any attempt to treat a sinus inflammation and suppuration without surgical operation on the sinus must be based on well established medical and surgical principles, and these are: 1, drainage and ventilation must be established; 2, pus must be evacuated; 3, the underlying causes must be removed.

Let us consider first the establishment of drainage and ventilation. We find in many cases that drainage from the sinuses is interfered with and prevented by intranasal causes. The principal intranasal causes are deflections of the nasal septum, enlarged turbinals, nasal polyps, and a turgescence of the nasal mucosa. A deflected nasal septum may completely or partially block the outlets to the nasal sinuses, so as to cause complete or partial obstruction to drainage from the sinus involved. In such a case the removal of the septum obstruction is clearly indicated rather than a sinus operation. A greatly deflected nasal septum also gradually causes atrophic and septic changes in the unobstructed nostril, leading to sinus involvement. Here again a straightening of the septum is the proper method to be pursued. Nasal polyps may so retain pus in the sinus that all efforts to relieve the condition fail until the polyps are removed, and drainage established. An inflammatory turgescence condition of the turbinals and nasal mucosa frequently accompanies a sinus discharge. This swollen condition interferes with the drainage from the sinuses and must be relieved. This condition of the turbinals and nasal mucosa is perhaps the most frequent cause of obstruction to drainage from the normal outlets of the sinus. In treating it we can obtain temporary relief and drainage from the local application of drugs that contract the nasal tissues. Among such drugs, cocaine and adrenalin are preeminent. Another method of considerable importance is the use of absorbent cotton plugs saturated with solutions of the nonirritative silver preparations, the solutions being preferably made in glycerin. These plugs, after a weak cocaineization of the nose, are placed between the swollen turbinals and the outlets of the sinuses; they excite a copious mucous discharge from the nose without irritation and greatly reduce the congestion, thus giving a better drainage from the sinuses. At times a partial or complete turbinectomy is necessary to secure drainage. Hot water applications placed over the face and forehead also help to re-

lieve the nasal and sinus congestion, and often give relief from pain. At times cold applications are more beneficial than hot ones. The internal use of certain of the coal tar products seems to have a beneficial action on the inflammation of the sinuses and often is of great service in relieving pain. Another helpful measure that frequently aids in opening the normal outlets of the sinuses is the forcible injection of thin streams of heated air across or against the normal outlets. This has a very penetrating power and can be forced into small interstices, thus frequently opening the obstructed normal outlets to the cells and sinuses, which then usually remain open; thus drainage is aided.

Retained pus must be evacuated. This can at times be done successfully by syringing the sinuses through their normal outlets with various fluids and injecting various medicaments. An accessory ostium may greatly facilitate this procedure. When the normal openings of the sinuses are inaccessible we can, particularly in the case of involvement of the maxillary sinus, use a trocar and cannula and thus inject the fluids into the sinus, removing the retained pus. This may be followed by injections of medicaments having a beneficial effect upon the mucosa. Again, position of the skull will help to remove pus from some of the sinuses. A patient with a suppurating maxillary sinus will aid drainage by lying down with the affected side uppermost. Also, when blowing the nose, the pus may be more easily removed by bending forward and turning the affected side upward. Another valuable method to secure evacuation of pus from the sinuses is the use of suction apparatus. The nasal chambers should first be treated by cocaine and adrenalin and then the evacuation of pus aided by the suction apparatus. Compression may also be used alternately with suction; this gives in some cases excellent results.

We must remember that a sinus suppuration is at least a local septic process and it must be treated as such. Frequently we find the patient suffering from general conditions, associated with, or due to, local sepsis. More or less anemia is usually present. Extension of the infection to the chest, causing bronchial conditions, more or less chronic, is frequent. Digestive disturbances are often associated with the sinus disease. The many disturbances affecting the eyes and vision have been the cause of much medical discussion. Pain in the head in various locations, according to which sinus is affected, is a symptom requiring careful diagnosis and treatment. We are also becoming more aware that kidney complications, obscure nervous conditions, and affections of parts far removed from the local focus of infection in the sinuses are frequently present.

A conservative treatment must therefore include these various associated and secondary conditions, and this demands a close association of the specialist with the general practitioner. Such intelligent co-operation, especially when given early in the case, will save many a patient from serious ill health and subsequent operations. Anemia calls for tonics and general building up of the patient. Indigestion must be relieved and the diet corrected. Kidney complications demand careful treatment. In short, any associated condition interfering with the health of



the patient must be carefully diagnosed and treated. Excellent results are sometimes secured by a sojourn of the patient in the country or seashore. An ocean trip is particularly beneficial when the patient leaves our winter climate for a mild southern one. The general improvement in health from the change and the pure air inhaled, associated with a cleansing treatment of the nasal chambers to aid drainage and ventilation, frequently cause a discharge from a sinus to cease. Pure, preferably outdoor, air with freedom from dust is essential. The dry climate of our great Western plateau, particularly in its southern portion, if associated with proper tonics and food and outdoor air free from dust, may also be of great benefit.

In recent years we have had more and more experience with the use of vaccines, not only to combat the local infections in the sinuses, but also to relieve various associated general conditions. Much has been written, with varying conclusions, about the results obtained from the vaccines. It still seems to be a matter of individual experience and decision. Personally, I have had experience with the use of vaccines in a great number of cases, and in a fair percentage the results were satisfactory, the sinus discharge becoming thinner and better results being obtained from the local treatment. In my opinion, the vaccines should not be given indiscriminately, but should be used in connection with careful local examination, diagnosis, and treatment. In some cases the vaccines apparently had no effect, and a certain percentage of the patients seemed to have an exaggeration of their distress. The results obtained, however, seem to me to warrant the continuation of the use of vaccines in certain cases.

#### CONCLUSIONS.

If drainage is established from the sinus into the nasal chambers, if the evacuation of pus be aided, and if the underlying general and local conditions be properly treated, a considerable percentage of nasal sinus suppurations may be successfully relieved without surgical operations on the sinuses.

1929 CHESTNUT STREET.

### FOLLICULITIS URETHRALIS.

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*Definition.*—The term folliculitis urethralis is used to designate those cases of chronic or subacute urethritis in which the glands of Littre and the crypts or lacunæ of Morgagni are the seat of a pathological process. For the sake of simplicity, both glands and lacunæ are grouped under the single term of follicle. The pathological process is the same whether it occurs in a crypt or a gland. Cases of folliculitis fall into two main groups: 1, inflammatory type—subacute form and chronic form; 2, chronic congestive type. The inflammatory type is either specific (gonorrhœal), or nonspecific.

*Etiology.*—The inflammatory type of folliculitis follows bacterial invasion. In the specific form gonococci are to be found. In the nonspecific form staphylococci or micrococci catarrhales are the infecting agents. The chronic congestive type is not

associated with infection. These cases occur in individuals who have been assiduous masturbators or men who have had frequent and long continued sexual excitement without natural gratification. This superstimulation of the glands is followed by chronic congestion. These cases are often designated as instances of true urethrorrhea.

*Pathology.*—In the subacute type (inflammatory) the pathological lesions are confined almost entirely to the follicles themselves. These bodies are enlarged, there is increased circumfollicular vascularization, the ducts are pouting and congested, and present a mucopurulent discharge in the orifices. Examination of this discharge will reveal the presence of bacteria, depending upon the type of infection.

In the chronic inflammatory type, the follicles are more prominent, follicular and perifollicular thickening is marked and round cell infiltration is present in various stages, depending upon the age and severity of the affection. Very often the involvement of the follicles is but one phase of a generalized process of urethral infiltration. The ducts are usually patent, with a thin, glary mucus. Very often the ducts become stenosed and the follicle undergoes cystic degeneration.

In the chronic congestive type the follicles are rather prominent, vascularization is increased, and the ducts are patent. If the process has existed for any length of time, round cell infiltration takes place. The ducts present a thin, mucoid discharge.

*Symptoms.*—In the subacute inflammatory type one encounters the history of frequent relapses, usually without exposure to reinfection. The patients are often under treatment for several months and report that cessation of treatment for only a few days is always followed by a recurrence of the discharge with pain on urination. Examination of the discharge shows the presence of the bacteria which have caused the initial infection.

In the chronic inflammatory type there are no symptoms which are definitely characteristic of involvement of the follicles. One encounters the usual symptom complex of a chronic urethral disturbance, i. e., morning drop, frequency of urination, pain in some part of the tract, shreds in the urine, etc. It is only upon examination that one discovers that the folliculitis is a phase of the general pathological syndrome.

In the chronic congestive type the patient notices a mucus drop at the meatus. This drop is also noticed after erections. The urine is often hazy from mucus and may contain shreds.

*Diagnosis.*—The diagnosis presents no very great difficulty. The history, together with the systematic examination of the entire tract, will usually disclose the condition of the follicles and their role in the pathological process. Normally the ducts of the follicles are invisible, even when a lens system urethroscope is used. When diseased, however, they may be recognized through a simple urethroscopic tube without magnification.

In the recent or subacute inflammatory type one usually finds but two or three follicles involved and these are most often situated in the first three inches of the urethra. The lacuna magna, located in the

fossa navicularis, is often the most important site of infection. The follicles appear slightly puffy and congested, with a small amount of glary mucus or pus exuding from the ducts.

In the chronic inflammatory type the follicles are more numerous and rather distinct, and the ducts are prominent and everted, with increased circumfollicular vascularization. External palpation over a steel sound or even the urethroscopic tube often gives the impression of a row of beads. This is due to the perifollicular infiltration.

In the chronic congestive type one usually finds but two or three follicles involved. The mouths of the ducts are patent, contain a thin mucoid material, and show signs of congestion immediately surrounding them.

*Treatment.*—The *sine qua non* of success lies in the absolute destruction of the follicles with their contained organisms. The role played by these follicles in the prolongation of pathological processes in the anterior urethra has been recognized for many years. The treatment, however, has been most unsatisfactory. This has been due to a misconception as to the principles of correct therapy and a disregard for the pathological processes themselves.

Speaking of the treatment of chronic urethral affections, in a recent communication the author says (1): "The treatment should with few exceptions aim to cause a mild hyperemia in the parts. Such hyperemia is attended by a mild leucocytosis. The phagocytes attack the bacteria and render them inert; the increased flow of blood to the parts aids in the resorption of round cell infiltration, which accompanies chronic inflammatory processes. Thus are strictures and infiltrates softened, glandular enlargements reduced, and erosions and ulcerations encouraged to heal." With such a viewpoint as to the potentialities of treatment, one can expect general satisfaction and good results.

When, as is usually the case, a chronic folliculitis exists in conjunction with other pathological lesions in the urethra, the patient must be placed under a systematic course of treatment. Dilatation practised with the intention of causing a mild hyperemia will exert a beneficial influence on the follicles, just as it will ameliorate infiltrates, strictures, and erosions.

When the folliculitis persists and gives rise to indication for further treatment, massage of the follicles over a steel sound will aid in the recuperative processes. The largest, straight steel sound, which can be comfortably introduced into the urethra, is used. The penis is put on the stretch so as to obliterate all folds. The fingers locate the follicles and gentle massage over them is instituted. Following the withdrawal of the sound, the urethra is washed with a warm permanganate solution, and following this one of the silver protein or colloidal iodine preparations injected and retained for a few minutes. Such massage must not be too vigorous, should not be repeated too frequently, and should never be practised in the subacute type.

Luis (2) describes several instruments which have been recommended for the treatment of folliculitis. The intraurethral masseurs of Janet (2) and Stordeur (2) apply the massage to the entire an-

terior urethral mucosa. Dreuw (2) has introduced a vibrator which applies massage to the urethral mucosa by means of a current of water which circulates through the instrument. Stordeur (2) has also devised an intraurethral aspirator which by means of suction is supposed to empty the follicles of their infectious material. Cambell (3) has recently recommended a suction bougie which is somewhat similar in principle to that just mentioned. Lewis and Mark (4) recommend the slitting open of the follicles through the urethroscopic tube. Personally I feel that with the exception of the massage of the follicles over the steel sound these methods are not desirable.

When, in spite of all treatment, the follicles persist, recourse must be had to more radical measures. Destruction of the follicles must be accomplished in order to rid the patient of the source of the trouble. To this end, electrolysis of the follicles has been practised for many years, Oberlander, Kollmann, and Janet (5) having advocated the measure. That this method has not become popular is due, perhaps, to several reasons. In the first place, galvanism, even when applied by means of a fine needle pointed electrode, causes scar tissue formation. Second, when using a needle pointed electrode, there is nothing to prevent penetration through the floor of the follicle or through the walls of the duct. Further, unless the current is applied directly to the entire follicle and its duct and the entire follicle destroyed, the work is necessarily incomplete. If only the duct has been destroyed, the glandular structures are allowed to remain and continue as a source of irritation. Often the follicles, in such instances, undergo cystic degeneration.

In 1912, Greenberg (6) introduced an air dilating type of urethroscope and, as one of the accessories, a fulguration needle which was to be used with the Oudin current. I employed this electrode with the Oudin current with some satisfaction, but the method was open to the same objections mentioned above in regard to the galvanic needle. At my request, the manufacturers of this instrument soldered a small silver bead over the needle point. With this type of electrode it is possible to penetrate to the base of the follicle without danger of perforation.

In 1915, Swinburne (7) published his article on the fulguration of follicles. He used the old Buerger cystourethroscope with ordinary fulguration wire. His statement as to the difficulties attendant upon the application of the method is heartily endorsed.

To Ballenger and Elder (8) belong the credit for the elaboration of a ball pointed electrode which is suitable for use with the D'Arsonval current. This instrument fulfills all the needs and overcomes most of the difficulties incident to this method. True it is that the method is cumbersome and requires a great deal of manual dexterity on the part of the operator, but this is a matter which is remedied by practice.

The technic of fulguration is similar to that of ordinary urethroscopy, plus the insertion of the electrode into the follicle and the application of the cur-



rent. The urethroscope is inserted as far as the bulbomembranous junction, the various attachments made, and the light turned on. The roof, lateral walls, and floor are closely examined as the instrument is slowly drawn forward. When an infected follicle appears in the field, the electrode is pushed forward, inserted into the duct and then advanced until one experiences a definite feeling of resistance. The current is then turned on and continued for about one second. Usually two or three one second periods are necessary to accomplish the desired result. Following the application of the current, the mucous membrane becomes slightly puffy and then somewhat blanched. The electrode is withdrawn from the follicle and the entire urethroscope drawn forward. When the next follicle appears in view, the procedure as described above is repeated. Unless too many follicles are involved they may all be treated at one sitting.

The effect of the D'Arsonval current is to cause a sloughing of the mucous membrane which corresponds to the urethral roof of the follicle. The treatment is attended by very little pain or discomfort. For a few days the patient may report an increased discharge. Irrigations with mild solutions or the injection of one of the silver protein preparations will usually control this discharge. It is not usually necessary to repeat the fulguration, although when it is indicated one need not hesitate to do so. I usually wait about one week before performing a second fulguration. Often I find it of benefit to make a direct application of silver nitrate, one to ten per cent., to the base of fulgurated area.

A few case reports are appended as illustrating the results I have obtained with this most valuable method.

CASE I.—J. L., single, twenty-seven, clerk. Patient was referred by Dr. S. M. Rothberg. The patient had contracted an acute gonorrheal urethritis about three months previously. Argyrol injections and permanganate irrigations were instituted, and in three weeks the urine was clear and the discharge had ceased. Cessation of treatment for a few days was followed by reappearance of the discharge. Treatment was resumed and symptoms promptly controlled. Within one week treatment was suspended and again the acute symptoms made their reappearance. This process was repeated at least four times before I saw the patient. I irrigated his anterior urethra with permanganate solution and performed an urethroscopy. Two inflamed follicles were found in the first two inches of the urethra, and the lacuna magna was seen to be in a similar condition. These were fulgurated according to the manner described above. For two days the patient had an increased discharge. This was controlled in that time by mild permanganate irrigations.

Within one week the urine was clear and there were no shreds in the urine. Drinking of beer and indulgence in intercourse were not productive of any reaction. The patient was seen one month later and examination showed the bases of the fulgurated areas to be clean, the urine clear and sparkling and containing no shreds.

CASE II.—L. T., single, thirty, engineer. Patient appeared at this office complaining of the presence of a persistent morning drop, frequency of urination, and occasional pain on urination. First urethral infection dated back two years. Examination showed that he had a chronic anteroposterior urethritis with folliculitis and parenchymatous prostatitis. He was placed under systematic treatment, which consisted of dilatation of the anterior and posterior urethra, massage of the prostate, and occasional massage of the follicles over a steel sound. In about ten weeks the prostate was very

much reduced in size, the morning drop was scanty, and a few shreds were found in the urine. Urethroscopy showed that there were still three follicles chronically inflamed, the first examination having revealed five follicles as being affected. The general appearance of the mucosa was satisfactory, the lustre and elasticity being practically normal. The follicles were fulgurated in the usual manner. The local reaction was practically absent. Permanganate irrigations were given for five days and then the urethra examined. The bases of the fulgurated areas were quite congested. Silver nitrate, five per cent., was applied. One week later examination showed these areas to be very much improved. Silver nitrate, one per cent., was applied. The urine one week later was clear and contained but two fine filmy shreds, and the patient reported that the morning drop had entirely disappeared. Alcohol taken the same evening that the prostate was vigorously massaged, was not productive of any reaction. Patient discharged.

CASE III.—J. G., twenty-eight, single, waiter. Gave history of three attacks of gonorrhea, covering a period of five years. Examination showed a stricture, 22 F., one inch from the meatus, prostate enlarged, boggy, and tense. Urine, five glass test, 1, hazy, with shreds; 2, control; 3, clear; 4, hazy with comma shreds; 5, after massage of prostate, hazy with large clumps of mucus. Gradual and systematic dilatation of the urethra was alternated with prostatic massage. In about eight weeks the urethra admitted a steel sound, 30 F., without difficulty, while the prostate had receded almost to normal size. The morning drop was still persistent and the first urine of the day showed a mucus haze and many shreds. Urethroscopy showed three follicles about one quarter inch apart and located about one inch anterior to the bulb. These were fulgurated. Within three days the reaction was controlled by the permanganate irrigations. The patient reported that the morning drop was becoming very scanty. Ten days later there were no signs of the morning drop and the urine was clear with a few shreds. The bases of the fulgurated areas were touched with silver nitrate, five per cent. One week later the same areas were touched with silver nitrate, two per cent. One week later the patient reported with clear urine, a few filmy shreds, and the statement that the morning drop "was no more." Alcohol and prostatic massage provoked no reaction.

CASE IV.—H. J. R. thirty-two, married, manager. Five years previous the patient contracted a nonspecific urethritis which lasted but a few days. Since then has noticed a clear mucoid drop at the meatus every morning and always following an erection. Examination showed the prostate to be normal, calibre of the urethra satisfactory, lustre and elasticity of the mucosa normal. In the first three inches of the urethra, two follicles were found, the ducts puffy and increased circumfollicular vascularization. These were fulgurated in the usual manner. Examination one week later showed that one of the follicles required further treatment. One week after the second fulguration the patient presented himself with clear urine and reported that he had been unable to find any morning drop. The bases of the fulgurated areas were clean and healthy in appearance.

CASE V.—H. N., thirty-five, single, wood turner. Patient referred by Dr. J. Gubner. Venereal history denied. The patient was rejected by an insurance company on grounds which we could not ascertain. Urine examination showed the presence of mucus, no albumin, sugar, or casts. The patient complained of the presence of a mucous discharge at the meatus. Seldom had intercourse, although he had frequent and long continued sexual excitement without gratification. Examination showed the prostate to be enlarged and boggy. Urethroscopy after meatotomy showed granulomatous excrescences, one from the crest of the verumontanum and one from the right lateral wall; roof and left lateral wall—posterior urethra—contained several cysts; verumontanum itself very much enlarged. In the anterior urethra were found three follicles, enlarged, orifices gaping, with mucus exuding from them and increased vascularization. The posterior and anterior urethrae were systematically dilated and the prostate massaged with marked improvement in the subjective symptoms. The granulomata were fulgurated. At a second sitting the fol-



icles were fulgurated. Reaction very slight. One week later the patient reported that he had not noticed the usual morning drop of which he had originally complained.

#### CONCLUSIONS.

1. Fulguration gives brilliant results in the treatment of subacute inflammatory folliculitis.

2. Chronic inflammatory folliculitis is to be treated in conjunction with other lesions which may be present in the tract. Dilatation of the urethra and massage of the follicles are indicated as the first choice in the treatment.

3. Fulguration of the follicles is to be employed after these methods have been carried out.

4. The D'Arsonval current is superior to the Oudin current for this work.

5. The entire follicle with its duct must be destroyed in order to secure the maximum amount of satisfaction.

6. The Ballenger-Elder electrode overcomes most of the difficulties which were formerly encountered when using the needle pointed type of electrode.

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119 EAST TENTH STREET.

#### LOCAL VACCINE.

By J. A. PRATT, M. D., F. A. C. S.,  
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Six years ago I used my first autogenous vaccine, which preceded by some months my use of the stock varieties. In the early treatment of chronic discharging ear, the results were not satisfactory, although the discharge nearly ceased. At this time I was treating an old gentleman, who had a chronic discharging ear of some years' standing. I persuaded him to let me use this autogenous vaccine, and was surprised to find after about three weeks that the discharge had ceased and had not returned five years later. Soon after using vaccines I discovered that results were not as good in acute cases, although the reaction was greater, as they were in the chronic cases, or after the acute stage had passed.

In treating head and chest infections by series of vaccines, a great majority of the patients claimed immunity from colds, for from one to two years. I have a number of patients in whom this immunity has been maintained for the past five years by giving one or two injections in the fall and spring.

A number of years ago I started using the autogenous vaccines I had on hand in combination with the stock varieties on all my patients with greatly improved results. I called this my local vaccine, and in using this autogenous vaccine I had the prevailing germs of the local infection I was treating. By having an extra quantity of all autogenous vaccines made, I always have a local vaccine that can be used at once on any new patient.

Recently in a series of acute suppurating otitis media cases, the discharges from the ears of a colored servant girl and a railroad engineer living in opposite sides of our city were examined and the pathological laboratory sent back a report of pure culture of *Staphylococcus albus*, which shows the local character of these conditions.

I am sure if men who are using vaccines would try this method of local vaccine, their results would be better.

232 COULTER BLOCK.

**Treatment of Papillomata of Bladder by High Frequency Currents.**—Einar Key (*Nordiskt Medicinskt Arkiv*, October 10, 1916) reports six patients with vesical papillomata treated by high frequency currents, bipolar method, an intravesical electrode and a large flat electrode over the symphysis. Five of the patients treated had had recurrences after suprapubic operation, one only being a primary papilloma, the size of a hazelnut, removed in seventy seconds, with no recurrence up to date, a period of two and one half years. Three papillomata recurring three years after operation were successfully destroyed, no recurrence having been noted in three years. One patient had two suprapubic operations with recurrence after each, the papillomata then being removed twice with Marion's operation cystoscope, resorcin lavage being used thereafter twice weekly. Later small recurring growths in a situation difficult to reach were treated by high frequency currents, the bladder now remaining free from papillomata for the last ten months. In another case the cystoscope revealed many papillomata which were treated with radium, five small tubes of five cgm. each being introduced through the Luy's cystoscope *à vision directe* and left in for twenty hours. This was repeated three times with some diminution in the size of the growths at first, but later with no effect, much urinary tenesmus resulting from the treatment; a stricture was attributed to the treatment. In 1913 high frequency currents were used to remove several growths, but under great difficulties, partly because of the patient's sensitiveness to pain, even under novocaine-adrenalin, and partly because bleeding obscured the field. Several papillomata were destroyed by galvanocautery, but in 1914 there was a return of urinary tenesmus and blood in the urine and diathermic treatment was again used to remove several growths that had recurred at three different times during the year. Since then, a period of four months, urine remains clear and urination normal. For these later recurrences the Löwenstein apparatus was used and the author believes that with this instrument all of the papillomata could have been reached with high frequency currents, thus avoiding operation. The author believes that this method constitutes an important advance in the treatment of benign papillomata. The salient points of advantage are that the growths can be more radically attacked and the danger of hemorrhage is less. It also has the advantage over other endovesical operations that it can be carried out by anyone who is trained in cystoscopy.

# Dietetics, Alimentation, and Metabolism

## Food and Food Preparation, in Health and Disease

### CHEMISTRY AND CLINICAL DIAGNOSIS.\*

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(Concluded from page 459.)

One of the main functions of the kidney is to provide for the elimination of the end products of catabolism. Diminished functional activity results in an accumulation of these substances in the blood, and the measure of such retention is the basis of another class of kidney functional tests. Of chief interest has been the determination of the total nitrogen present in the blood in the form of these incoagulable or nonprotein substances, principally urea, uric acid, and creatinin, collectively designated as the total nonprotein nitrogen, "NPN," or the estimation of some one of these substances alone. Total nonprotein nitrogen values in excess of forty mg. per 100 c. c. are conclusive evidence of a pathological retention (16) and, in general, the higher the value the greater the prospect of uremia. Personally, I consider a progressively increasing nonprotein nitrogen upon a moderate protein diet as a much surer sign of impending uremia than the lowered phthalein output which usually accompanies it (17). However, as between patients in uremia, we have found here in the General Hospital that the prospect of a fatal termination does not bear a direct relationship to the degree of retention as indicated by the nonprotein nitrogen value (17). In cases with nonprotein nitrogen values lower than forty mg. per 100 c. c., the prognosis is less specific. The value of twenty-two to twenty-six mg. found for absolutely normal individuals (18) is usually exceeded by patients in general whether nephritic or not, and values lower than thirty-six to forty mg. cannot be regarded as *per se* of pathological import (19). Moreover, this concentration is dependent upon a number of factors, particularly the diet (20) and the water intake (21), so that upon the very low protein intake now so generally prescribed for nephritics, values lower than forty mg. per 100 c. c. may exist even when uremia is imminent. A similar degree of variability with conditions has been found as regards the individual substances which collectively make up the total nonprotein nitrogen. This is especially so in the case of urea, which normally furnishes from forty to sixty per cent. of the total nonprotein nitrogen and, in retention, a considerably higher percentage (22). However, distinct prognostic advantages have been claimed for the content of uric acid (23) and creatinin (24), especially in advanced cases.

In order to avoid the uncertainties arising from these normal variations in the total nonprotein and urea content of the blood, a very successful attempt has been made to correlate the urea concentration of the blood with the rate of its elimination. According to the observations of Ambard (25), which

have been confirmed by McLean (22) and others, the rate of excretion in normal individuals is a direct mathematical function of the concentration in the blood. These laws have been expressed in the mathematical form known as Ambard's coefficient, the value of which McLean (22) has fixed as 0.08 for normal individuals. An increase in the value of the coefficient indicates impairment of the kidney function. This test has been growing in popularity and significance with the increasing number of published reports concerning it; within the last month Lewis (26) and Smith (27) have summarized the results in several hundred cases of various kinds. The conclusions based upon these results may be stated as follows: Ambard's Laws are correct in principle and under routine conditions are remarkably accurate; the coefficient is independent of the blood urea concentration, being governed only by the condition of the renal function; it shows an increase long before there is any evidence of nitrogen retention in the blood; all cases of chronic nephritis with hypertension give an abnormally high coefficient, though in a majority of such cases the blood urea is within normal limits; there is a marked agreement in most cases between the phthalein output and the Ambard coefficient, but the latter is regarded as of greater prognostic value, especially when repeated at suitable intervals.

Finally, there should be considered the observations following a renal test diet as proposed by Hedinger and Schlayer (28) and elaborated by Mosenthal (29). Diminished function is here indicated by: 1, a tendency to fixation in volumes and specific gravities of the specimens passed at two hour intervals during the day, in marked contrast to the wide variations shown by a kidney of normal flexibility of function; 2, by the delayed excretion of water, nitrogen, and sodium chloride, one or all, for a twenty-four hour period during which the intake of these is regulated by a standard diet; 3, by night polyuria and low concentration of nitrogen in the night specimen. Mosenthal has reported results in a series of different types and his results have been confirmed by Desha, McElroy, and Fontaine (17) in a series of cases, thirty-five of which have been published. For details of interpretation the original papers must be consulted, but the facts warrant the general summary that the data thus obtained are of much clinical significance.

In some quarters there has been a tendency to harp upon the statement that the functional tests do not enable us to forecast the anatomical changes found at autopsy. I think that, for the most part, this statement is quite correct at the present time; I cannot say how it will be when there shall have come to autopsy a considerable number of cases upon which the more important of the modern tests have been made at various stages of the disease. In the nature of the case, such data must be slow of accumulation. But it is at least a safe prediction



that the internist will be able to forecast the anatomical changes from the functional tests by the time the pathologists learn to reconstruct the clinical history from the results of necropsy.

If the functional tests can demonstrate the extent to which the remaining normal tissue is functioning; if they can furnish a fair estimate of the patient's expectancy and the basis for the selection of the dietetic and other conditions which, with a minimum of inconvenience to the patient, will maintain or prolong that expectancy; if by them uremia may be foreseen and often avoided; and if through them an insight may be gained as to the propriety of some business or mode of life calling for certain exercises and exposures, or as to the probable results of unilateral nephrectomy, or the shock of operation, anesthetic, and aftertreatment incident to any other serious surgical intervention; if the functional tests can accomplish these things—and I believe that the evidence to that end is convincing—it does not seem a matter for serious concern that the terms interstitial, vascular, glomerular, and so forth be left to the labels in our pathological museums.

It would be an easy matter to exhaust both your patience and my voice in taking up other conditions in this way. The study of the uric acid of the blood in gout and arthritis; the estimation of the blood derived urobilin of the intestinal juice as the only positive evidence of excessive erythrocyte destruction in suspected pernicious anemia; the recognition and estimation of creatin in the urine of adult males as an index of rapid tissue degeneration; the cholesterol content of the blood in its relation to gallstones; all of these and many others offer tempting fields for discussion, but must be passed over for some more general considerations which demand attention.

Granting that under certain conditions the data of the chemical laboratory may be of very positive diagnostic value, one must ask how its worth in any particular case may be estimated. In the first place, like all other examinations, chemical tests must be made with a due sense of the appropriate conditions. A stethoscope is capable of giving information, but hardly so if used through an Arctic overcoat; a gastric analysis following a Christmas dinner would probably be just as enlightening. If there is one thing certainly more futile than these, it is the attempt to draw conclusions from the specific gravity or quantitative analysis of a specimen of urine voided at random. Except for a very few special purposes, the twenty-four hour specimen, carefully preserved, is an absolute prerequisite to results of any significance. Again, a laboratory report to be worth while must presuppose reliable methods. Just as in any other line one must guard against results based upon methods born, as it were, before full term and published by fond fathers without that full control of conditions which would have served to define their limitations. But difficulties of this nature are minimized by the frequent editions of such reliable critical summaries as those of Hawk (30) and Webster (31). A third essential condition is the correct interpretation of results. This implies a point of view abreast of the current literature and some understanding of the basal problems of physical chem-

istry as applied to physiology and pathology. But this knowledge alone will not avail to give the poise which prevents the loss of the general picture in inspection of the detail, or avoids the error of forgetting that the conditions are dynamic and predicating a degree of finality not warranted by the facts. For this there is required that *sine qua non* of successful diagnosis in general—an innate sense of balance and proportion.

This summary would be incomplete without some answer to the natural inquiry, How is the practitioner to secure these chemical data? A natural question enough, because, in the nature of the case, it is evident that any considerable amount of such laboratory work is incompatible with seeing patients. The most obvious disposition of the occasional specimen is the commercial laboratory. This is not so bad when there is available one which gives enough attention to medical work to warrant the expectation that methods are kept up to date and the analysts sufficiently practised in their use. And it may offer distinct advantages if such medicochemical work is made a specialty upon which expert advice as regards interpretation may likewise be obtained. But such service must necessarily be expensive and may result in annoying delays.

An alternative of increasing popularity is the establishment of the physician's private chemical laboratory or its inclusion within one already maintained for other purposes. From the preparation of a detailed list of the apparatus and chemicals required, I find that two hundred dollars added to the equipment of a bacteriological pathological laboratory will provide the necessities for all determinations apt to be called for; a much smaller sum will suffice for certain selected ones of chief importance in special lines of work. The operating cost is negligible, bar salaries. But here we touch the weak spot of this system, the problem of obtaining and retaining a competent laboratory man at a cost which will not be prohibitive. There may be had at reasonable salaries chemists who are competent to do reliable analytical work, but in comparatively few cases will the volume of strictly chemical work required by one physician justify the employment of a man for this purpose only. In general, the laboratory man must also look after the micropathological, serological, and other work; and of these the strict chemist will be ignorant, as likewise of the clinical bearing of his medical work. Recourse is then practically limited to men with medical training. The type of chemical instruction now included in the regular medical curriculum provides an adequate basis for the comparatively brief though intensive special course in clinical chemistry which will prepare such men very well for the positions in question. Still, there are disadvantages; among which stand out the sacrifice in experimental efficiency which accompanies the infrequent performance of special work; the lack of familiarity with the chemical and clinical literature which is to be expected in the inexperienced; and, more immediately practical, the fact that few medical graduates undertake such work with the expectation of continuing in it after a good opportunity for active practice arises. But the number of positions of this kind requiring to be filled



is increasing and I have not hesitated to advise some of my students, more especially young women, to seriously consider fitting themselves especially for just such work. The practical certainty of a fair living tends to balance the rather uncertain chance for fame and wealth which may arise from active practice; and this point of view will probably become more prevalent when the profession gets out of its head and vocabulary the necessity for classing such persons under that species of head janitor, the "technician."

The private chemical laboratory is therefore practicable. But this arrangement, even when supplemented, if need be, by the regular consulting service of a trained biological chemist, must be regarded as only a necessary makeshift pending the perfection of the one and only satisfactory solution of the problem. I refer to the development of adequate hospital laboratories. A private hospital of two hundred beds can well afford to provide, and a charity hospital of the same size cannot long afford not to provide, a suitable chemical laboratory with general and special equipment, library, metabolism ward, animal quarters, and laboratory assistants proportionate to its size, all under the direction of a medicochemical expert. That is what the larger hospitals have already done (32) and it is what all must come to, not only for the direct end of serving their patients on a twentieth century basis, but for another very practical reason. Within a year or two at most, medical graduates will cease to be plentiful; and these will elect to serve as interns only in those institutions equipped to give them good experience in all lines of work. The inference is clear and, I think, demands more than casual consideration at the hands of those responsible for hospital policy.

Such a hospital laboratory will represent the ultimate in efficiency and economy; for after all the main cost item in obtaining reliable laboratory results is the rental on the gray cells of some properly trained brain; that rate can be made reasonable only under conditions admitting the full time employment of such brain upon problems which cannot be handled by subordinates. Such a laboratory would provide for every physician prompt and reliable reports upon the tests ordered by him; but it should do much more than that, by serving as a clearing house for information in regard to the interpretation of data, the promulgation of new methods, and practical suggestions on the best laboratory methods of attacking clinical problems. In other words, it must become a specialty which will afford the general practitioner access to laboratory information however often or seldom needed without requiring of him the burden of keeping up with the innumerable details. That idea has become familiar as regards such generally recognized specialties as eye, ear, genitourinary, and so forth, and there seems to be nothing against its extension in the direction indicated. To realize it, we need, above all, large hospitals. Personally, I cannot view with any satisfaction the growth of numerous institutions, each too small to enter upon this work upon a scale which will insure success. I fear that their very existence will serve to defer

the day when we may look for the municipal general hospital of the right type—the great institution, complete in all its details, in which charity shall be adequate but entirely secondary to the private wards, in which the great mass of selfrespecting taxpayers can secure at reasonable expense that type of scientific control and treatment which is now available only at great cost to the wealthy, or thrust gratis upon the vagrant.

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**Diabetes in Childhood.**—H. Kleinschmidt (*Medizinische Klinik*, December 3, 1916) calls attention to the fact that this form of diabetes may be mild or moderate as well as severe, the latter being the type usually met with on account of the failure to recognize the condition early in its course. In juvenile diabetes there is also a marked tendency toward the development of acidosis, which must be combated by the free administration of alkalis to the point of keeping the urine constantly alkaline. The greatest difficulty is encountered in the proper regulation of the diet in cases of diabetes in early life on account of the high caloric requirements of the growing child. One should begin by prescribing a diet containing two grams of protein for older children or three grams for younger ones for each kilogram of body weight, given in the form of meat, eggs, and cheese; an abundance of vegetables and fruit; 100 grams of bread, potato, or oatmeal; and fat, mainly in the form of butter, to make up the caloric requirement. With this as the basic diet one can then easily determine the carbohydrate tolerance by gradual reduction in that portion of the ration. If it is necessary to exclude bread or potato entirely one should give some form of diabetic bread as a substitute. The fulfillment of these restrictions will depend largely upon the obedience of the child and in refractory children it will not infrequently be almost impossible outside of a hospital. After getting the patient sugar free the carbohydrates may be restored gradually until the point of acquired tolerance is reached. In young children it is often pos-

sible to restore almost normal tolerance by proper dieting, but even under such conditions the child remains a latent diabetic and can easily be thrown back into his original condition by intercurrent diseases of almost any form and must, therefore, be sedulously protected from such an accident, since the subsequent restoration of tolerance is increasingly difficult with each setback. In the severe types it is often impossible to gain complete freedom from glycosuria through simple gradual reduction in the carbohydrate intake, and in such cases absolute rest in bed must be combined with the strictest dietetic regulation possible with the further introduction of frequent "green days" and the most rigid limitation of the protein intake to that in the yolks of eggs. The "oatmeal cure" can often be used in combination with these restrictions to advantage. All drug therapy, except the administration of alkalis for the control of acidosis, is wholly unavailing in diabetes in children.

#### Certain Restrictions in Dysenteric Cases.—

B. Ullmann (*Medizinische Klinik*, November 19, 1916), in the course of studies of the sago like globules which occur in certain stages of dysenteric diarrheas, brings out the fact that these granules are composed of small masses of cellulose from the potato which have not undergone digestion. Other materials may also be found, and such masses act as local irritants to the intestinal mucosa, keeping up the dysenteric condition. As a result of this observation he advises the elimination of potato in all forms and of meat in any form but that scraped with a dull spoon. In the place of the potato such carbohydrates as the various gruels, including those made from sago and rice, white bread, and zwieback may be given, these containing very little cellulose and being largely digested in the upper portions of the alimentary canal. The connective tissue in meat prepared in any way other than scraped with a spoon also remains undigested and causes irritation of the large intestine. The practice of administering charcoal in such cases is irrational, as the fine, hard, sharp grains can only serve to keep up the intestinal irritation and prevent the healing of the intestinal lesions. Further, on account of the property which charcoal has of absorbing the ferments, it adds to the trouble, or at least delays the healing processes, by decreasing the completeness of digestion which should take place in the upper portions of the intestine and permits the passage into the colon of an excess of partially digested, irritant material.

#### Home Made Bread Substitutes for Diabetics.—

R. T. Williamson (*British Medical Journal*, December 23, 1916) states that satisfactory substitutes for the expensive diabetic breadstuffs can be prepared in the home according to the following formulas, which he has tested:

1. Biogene and gluten cakes. Biogene, 3 tablespoonfuls; gluten, 2 tablespoonfuls; baking powder,  $\frac{1}{2}$  teaspoonful; one egg, well beaten, and small pinch of salt. Mix well, add baking powder last, drop into six tins, and bake twenty minutes. The cakes may be cut in two and cream spread between if desired. Biogene is a soluble casein containing a small proportion of phosphates.

2. Biogene and coconut cakes. Mix one quarter ounce yeast with four tablespoonfuls lukewarm water; add one and one half tablespoonfuls desiccated coconut powder; mix; allow to ferment in warm place for one hour. Beat one egg with a little warm water and add with six tablespoonfuls of biogene to the above mixture; mix and bake twenty to twenty-five minutes. The tins should not be greased.

3. Gluten and coconut cakes. Prepare according to the preceding recipe, substituting three tablespoonfuls of gluten for the biogene. These cakes should be toasted, buttered, and eaten hot.

4. Coconut, casein, and gluten cakes. Mix two and one half ounces coconut powder with one quarter ounce German yeast; cover with warm water, mix and ferment as above. Then add two ounces of casein, one half ounce of biogene, one ounce gluten flour, two beaten eggs, and a pinch of salt; mix, and bake twenty-five minutes.

5. Coconut cakes. Make a paste with one half ounce of German yeast, eight ounces of coconut powder, and two tablespoonfuls of lukewarm water. Ferment one hour; add one egg beaten in two tablespoonfuls of milk and a pinch of salt; mix and bake in greased tins twenty to thirty minutes.

6. Almond cakes. Prepare as in No. 5, substituting almond flour for coconut powder.

Cakes two, five, and six are free from starch and contain practically no sugar; one, three, and four contain a very small amount of starch owing to the presence of five or six per cent. gluten flour.

#### Eczema in Infants and Young Children.—

Charles Gilmore Kerley (*New York State Journal of Medicine*, November, 1916) states that among the many causes of eczema the commonest dietetic ones are butter fat, orange juice, milk sugar, cane sugar, and eggs. In cases with breast fed infants the mother's milk should be examined and if high fat is found attempts should be made to lower it by dieting, or some of the child's intake should be reduced by giving him from one to three ounces of cereal water before each nursing. It is possible to cure most of such cases by weaning and the prescription of a suitable artificial diet, but such a step is not to be advised except in rare cases. In artificially fed infants much more can be accomplished, for the diet can be studied and regulated to eliminate wholly or largely the offending constituents. Such a modification is almost always associated at first with a loss of weight and the mother should be warned of this fact beforehand. In such cases the diet should consist of skimmed milk and evaporated skimmed milk, cooked with a starch such as rice or wheat. Olive oil may be added to increase the caloric value of the food given. Beginning with the seventh month stewed carrots, squash, and mashed potato may be added to the diet. In older children similar lines of treatment should be followed and much use should be made of skimmed milk in puddings, etc., of bread stuffs, cereals except oatmeal, chicken, and all vegetables. Ordinary meats should be given but sparingly. In conjunction with the dietetic management of the case use may be made of the usual local remedies, such as salicylic acid and tar, and means should be taken to prevent scratching.



# Editorial Notes and Comments

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## NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

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Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transporta-  
tion through the mail as second class matter.

Cable Address, Medjour, New York.

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NEW YORK, SATURDAY, MARCH 24, 1917.

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### ARMY SANITATION.

The principles governing army sanitation are the same as those in civil life. Conditions to be dealt with in war, however, are on a wider scale and more intensified. Consequently more heroic measures must be pursued, and to some extent, even sanitation must depend upon the exigencies of the military situation. It is obvious though that as it is to the best interests of the general in command, from the military standpoint, to have his soldiers in the best of health, he throws as few obstacles as possible in the way of the sanitary department. The progress which has been made in army sanitation has been exemplified in the most striking manner during the present European War. It may be stated without reserve, that if methods for the establishment and promotion of effective hygienic measures had not been successfully carried out, epidemics of disease would have swept through the armies, on all the fronts, and the results would have been disastrous. Had the same ratio of deaths from disease to deaths from wounds been maintained in this war which prevailed in the wars prior to 1870 the German army would have been practically wiped out.

Perhaps the two most salient points with regard to proper camp and base hospital hygiene are the sterilization of water and the abolition of flies. Thorough sterilization of drinking water is an absolute necessity, but the realization of this object has always been attended with a great deal of difficulty. It appears that now the problem has been, at least, partially solved. The simple and effective mode of sterilizing water in vogue among the British forces in France, and elsewhere, has had much to do with the comparative immunity from disease which has distinguished their campaigns so far. Sterilization by means of bleaching powder is referred to. This method of rendering water free from infection and pollution has answered the purpose most admirably wherever it has been tried and has been undoubtedly a great aid in conserving the health of soldiers. This method was used with signal success by the United States troops on the Mexican border service.

The extent to which disease is transmitted or conveyed by insects is not fully recognized by the medical profession, although knowledge in this direction has greatly increased. Flies as carriers of infection in times of peace have long borne an evil reputation, and in times of war their potentialities for harm are naturally vastly augmented. In the Spanish-American War and in the Boer War, the evidence tending to show that flies played a great part in the spread of typhoid fever was convincing. In fact, it is now considered that one of the most important duties of an army sanitary department is to protect soldiers from flies. In order to keep down the number of flies in the vicinity of camps and hospitals, the prevention of their breeding is the first and most essential step. Copeman, pointed out (*Lancet*, 1916, I, 1182), that the surest means of bringing this about was the method of "close packing" of manure on a prepared site, the high temperature resulting from the fermentation of the compacted heap serving to kill any eggs or larvæ that may be present. If this is done and every precaution taken to prevent flies from obtaining access to human excreta or food, the problem of the fly as a conveyer of disease or pollution will for the time be solved. However, while protection of food and excreta and prevention from breeding are the most essential measures, destruction of flies is also called for, especially as a camp is more or less certain to have within a short distance breeding facilities not under military control. The axioms to be borne in mind when dealing with flies, are protection of food and excreta, prevention from breeding, and destruction when necessary.



## WHOLESALE WASSERMANN'S.

The Wassermann reaction has undoubtedly come to stay as a diagnostic method. In many hospitals it is being made as much a matter of routine procedure as uranalysis. This is especially true of hospitals for the insane on account of the fact that so many mental diseases are due to syphilis and also that syphilitic and metasyphilitic psychoses may simulate the so called functional mental disorders so closely as to make diagnoses difficult.

The most obvious disadvantage of the Wassermann reaction is its somewhat difficult technic. The average medical graduate who enters a hospital as intern is usually qualified to do uranalysis, Widal tests, and examinations for gonococci and tubercle bacilli, but he must be especially trained to perform the Wassermann test. Thus many of the large hospitals only have one member of the staff capable of performing this test and when he is incapacitated through illness or from other causes frequently Wassermanns are not done until he returns to duty and then he finds himself facing an accumulation of work, making him long for some method by which a great many of these tests could be done in a short time. Furthermore, in the population of large hospitals for the insane, there are often several thousand inmates who were admitted in the years before the Wassermann reaction was known. It being desirable to know whether or not they have syphilis, the laboratory technician of such hospitals finds himself burdened, during the time not occupied with his routine work, with the task of obtaining Wassermann reactions on all these patients. Here again he wishes for some wholesale method.

As a result the demand has arisen for a method by which this reaction may be carried out in large quantities accurately and without too much time and labor. These requirements seem to have been met by two British physicians, Doctors Fildes and McIntosh who in the *Lancet* for October 28th describe their method. Space will not permit giving the details of the technic, which is that described in the thirty-sixth volume of *Brain*, page 193. The writers emphasize the care which should be used in labeling properly and permanently the specimens of blood. Every day the sheep's blood corpuscles are washed, the guineapigs are killed and serum prepared, fresh saline solution is made up and the complement and the antigen control are standardized. The various reagents used are made up by a table which they give, according to the number of specimens of serum there are to be examined, the figures given being from thirty to 150. The test proper is done in a little less than two hours, which includes one hour which the tubes spend in

the air incubator. The writers read this reaction as + + + +, or complete inhibition; + + +, nearly complete; +, +, +, partial inhibition, and 0, no inhibition. Four and three plus mean syphilis, double and single are doubtful; if the patient is known to have had syphilis they assume more importance. Zero, of course, means no syphilis. The great majority of cases fortunately give either four plus or zero.

The great advantage of a method which will enable the laboratory man to do 150 Wassermanns almost as easily as he can ten are so obvious as scarcely to require indicating. Wherever large groups of persons are under medical care this method will find its application. Let us suppose for example that this country does become involved in war. Volunteers will throng to the colors and it will be necessary to know what physical condition they are in and whether or not they are likely to break down under the strain of severe campaigning. The knowledge of the presence of syphilis will at least enable the military surgeon to foresee the possibility of paresis or cerebral lues or of any of the other protean forms which that disease may take. Any system which facilitates the wholesale weeding out of the unfit is likely to prove a blessing to this or any other country whose existence may depend upon the health of the armies, for, as many military experts have said, more campaigns have been lost by disease than by strategical blunders.

## BRAIN VERSUS BELLY.

Throughout the history of medicine the intestinal tract has borne the lion's share of blame for the ills of mankind. The tendency to attribute them here has blossomed out in modern extravagant theories. Autointoxication is the chief of the mouth filling phrases which obscures definitions and facts and so apparently affords great satisfaction as an all inclusive explanation.

Study of human lore of all times and places reveals the importance attached by the human mind to this system of the body, an emphasis which partakes of the same vagueness as its pseudoscientific application in the autointoxication theory, and which has in it much of the mystic and mythical. This still leads to a suspicion of this portion of the human body and maintains ignorance of its actual functioning even in the medical profession. It creates such a reaction that certain authorities look forward to the excision of portions of the tract as a removal of the source of most human weakness and decay.

Knowledge therefore must become more definite. Have we in the alimentary tract an extensive men-

ace to health? Is every other part of the organism at the mercy of its powerful toxic influence, the central nervous system no less than any other, and befogged, benumbed, and seriously disturbed by it? Or is this a willing servant performing a definite service in the body economy and only disturbed when it must respond to a misdirection which the organism puts upon it? Its overvaluation and its undervaluation both lead to such disturbance.

They even prove that brain, the master servant in the household of the body, is more dominant over this inferior system than subject to its toxic influences. There did arise in the geologically remote past, as Gaskell has shown, a decisive moment in the process of evolution when Nature had to push her developing forms in one direction or the other. An antagonism had arisen as to the dominance between the nervous system and the alimentary system, which up to this point, that is, in the crustacean invertebrates, had been lying together. Brain triumphed, however, by the enclosure of the old alimentary tract in the central nervous system to form the neural cavity, and a new digestive apparatus had to be formed.

This started the vertebrate upward development, which could only come about through the evolution and progressive establishment of the complexity of the central nervous system. The establishment of the new digestive system showed, moreover, two things. It was vitally necessary to continue such a functioning system, but at the same time it was separate, pursuing its activity in its own direction, and therefore of far less potency of influence upon brain and other organs than has been supposed.

This distinctiveness is made manifest in some recent work on intestinal obstruction (Dragstedt, Moorhead, and Burcky: Intestinal Obstruction, *Journal of Experimental Medicine*, xxv, No. 3, March, 1917), in which the authors have made a careful experimental study of obstruction with a view to determining the actual toxic action exerted upon the organism by the obstructed portion of the intestine. They succeeded in confirming previous conclusions that the toxic substances produced in the intestines do not have access to the blood, since "it is the function of the cells [of the mucosa] to change the substances in the lumen of the intestine to substances which can enter the blood stream without harm to the organism."

Bacterial proliferation and necrosis of the obstructed loop produce a greatly exaggerated toxicity which proves fatal. The experiments, therefore, conclusively confirm something much more important than the overthrow of certain other unjustified theories, which the experimenters had in mind.

They show that it is necessary to reach the extreme necrotic and gangrenous condition of the completely obstructed loop, before a toxemia can be produced sufficient to overcome the neutralizing protective action which has been provided in the intestinal mucosa.

The clear cut conclusions of these direct experiments teach us to let the intestinal apparatus alone. Long ago its definite place was set and there it will perform its task under the control of the nervous system. There is no excuse for attributing to it the burden of all bodily and mental ills. It was developed through slow ages for its task, it built up its own slow defense against interference from without, or against meddling on its own behalf with the rest of the body.

Do not let us encourage our patients to feel that the sun will no longer rise and set if the bowels fail to move today or even the next day. Give the bowels more credit for an evolved ability to attend to their own affairs. The dignitaries who paraphrased the psalms for one of our most conservative church hymnals still used within our early memory, saw the value of the intestinal function and sang, "Blest be the man whose bowels move," but they saw further the untrammelled attitude free from these anxiety producing interpretations of modern medicine, "and melt with pity for the poor." Let us honor the intestinal tract and grant it its rightful place in a freely developing life which is too actively and usefully engaged to do other than "Fear God and keep its bowels open."

#### EXIT "BACILLUS EPILEPTICUS."

In a letter to the editor of the *Journal of the American Medical Association*, Dr. C. A. L. Reed, of Cincinnati, gives the *coupe de grâce* to "Bacillus epilepticus," one of his own children. In a long, involved and skilfully hidden retreat he withdraws his first line of trenches and digs himself into that oldest of medical bugaboos, the long suffering intestine. Here safely screened behind the most antique of medical superstitions, pretentious claims are made that "toxemia of intestinal origin" is the cause for epilepsy, and the removal of the gut the remedy.

What this holocaust of guts already amounts to in Cincinnati we are unable to estimate. Hundreds, yes, even thousands, of mutilated human beings are manfully making the best of a bad bargain, and the end is not in sight. In the early seventies and eighties ovarian sacrifice was offered to save the female epileptic. Would that the ghosts of these mutilated women might arise to protest against this new rite which is now prescribed as the means of salvation

for epileptics of both sexes! When shall the bended reeds of superstitious worship of the belly be broken and medicine come to its own as ministering to the whole man?

### NEW LIGHT ON THE FATE OF PHTHALEIN.

Probably one of the greatest fascinations of scientific investigation in the domains of physiology and pharmacology is that even the investigator cannot predict where the pursuit is going to lead. One is occasionally rewarded by the discovery of some new and important fact which may ultimately prove of fundamental value. Such good fortune may have come to Edward C. Kendall (*Journal A. M. A.*, February 3, 1917) as an unforeseen development of an entirely different problem than the one here discussed. In the course of studies on the physiological action of the thyroid gland it became desirable to employ phenolsulphonephthalein as an indicator of the reaction which was to be anticipated from the various other substances which were to be injected. Wide differences in the excretion of this dye were observed, which seemed to be dependent upon the type of metabolism, but such differences were not constant and it was thought that in some cases the dye might have been fixed in the tissues. Careful examination of tissues in such cases proved, however, that the dye had not been fixed but had been destroyed.

Further investigation of the matter showed that the dye was extremely resistant to oxidation or reduction, but was more readily destroyed by the latter than by the former process. Nascent hydrogen, or a reducing agent of equal potency, was found to be necessary, however, to accomplish such reduction. Such a reduction did occur in the animal body in some of the cases and experiments soon showed that fresh, excised muscle and intestine, ground to a mash, destroyed a large part of any added phenolsulphonephthalein, while a similar preparation of the liver destroyed it all. The pancreas, spleen, lung, and kidney, on the other hand, destroyed almost none of the dye. The destruction of the dye by liver mash could also be reduced by the free passage of oxygen through the mixture, or by decay of the liver cells.

It was finally determined that the reducing action of the tissues followed the laws governing enzyme action. The substance causing the action was readily destroyed by heat and greatly influenced by minute amounts of acids or alkalis and by the presence of sugars, etc. It was capable of acting both in the presence and absence of oxygen, but its effects were diminished in the presence of an ade-

quate supply of the latter. It was suggested from these observations, and others, that possibly the first step in metabolism is a reduction with the liberation of hydrogen, which reacts with hemoglobin. If, therefore, the supply of oxygen from the hemoglobin was adequate for the reducing action of the cells, that would account for the lack of destruction of phenolsulphonephthalein by protecting it from attack, while the converse would also be true. This hypothesis was tested in various ways and it was actually found that the destruction of the dye in the living animal could be greatly increased by any measure which reduced the adequate oxygenation of the blood. Further, an increase in the hydrogen ion concentration of the tissues seemed to enhance the action of the enzyme.

Other important points were brought out, but the two most striking ones were that phenolsulphonephthalein excretion seems to be an index of the rate of destruction and of the supply of oxygen in the body, rather than of the mere function of the kidney as an excretory organ. And, second, the presence of such a powerful reducing substance in the body suggests that in certain cases of uremia abnormal compounds may be produced by its action and may play a part in the causation of the symptoms.

Whatever Kendall's observations may ultimately lead to, they are certainly of sufficient interest to warrant the immediate attention of others who are interested in the solution of the more abstruse problems of human physiology. If they are confirmed they portend the development of radically new conceptions of many physiological problems more or less directly bearing upon the subject of metabolism and disease.

### News Items

**American Association for the Advancement of Science.**—The second annual meeting of the Pacific Division of the American Association for the Advancement of Science will be held in the Leland Stanford Junior University, California, April 4th to 7th, under the presidency of Dr. J. C. Branner, president emeritus of the university.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, March 26th, Section in General Medicine, College of Physicians, North Branch of the County Medical Society; Tuesday, March 27th, West Philadelphia Medical Association, Physicians Motor Club (smoker), Academy of Stomatology; Wednesday, March 28th, County Medical Society; Friday, March 30th, Medical Club (directors), Kensington Branch of the County Medical Society.

**Medical Alumni Hold Class Reunion.**—The class of 1892 of the Medical Department of the University of the State of New York will hold a reunion and banquet at the Hotel McAlpin Wednesday evening, April 11th. The committee in charge is composed of Dr. John F. Hagerly, of Newark, N. J., Dr. J. Emmet Tower, of New York, and Dr. Robert E. Coughlin, of Brooklyn, all of whom were members of the class committee twenty-five years ago.



**New Building for Boston Lying-In Hospital.**—Plans have been prepared for a new maternity hospital, to be erected on Longwood avenue, Boston, near the Harvard Medical School. The trustees of the hospital purchased the site about three years ago, and it is expected that the work of construction will be begun next month. The new building will cost about \$400,000 and will have twice the capacity of the old building in McLean street.

**To Perpetuate Coroners.**—In 1915 a law was enacted by the legislature of the State of New York abolishing the office of coroner and proposing to substitute trained medical examiners to investigate the causes of death. This bill was to go into effect on January 1, 1918. Recently a bill has been introduced into the Senate by Mr. Gilchrist and into the Assembly by Mr. Duff, both of Kings County, providing for elective coroners under the misleading title of medical examiners. The bill is being vigorously opposed by medical men generally.

**Massachusetts General Hospital Needy.**—The trustees of the Massachusetts General Hospital report for the year 1916 a deficit in the current expense account of about \$202,000, or, omitting the \$53,000 paid for taxes, then the deficit is \$149,000. The benefit of the outpatient consultation clinic to the public is emphasized. The project of having a building for the care of patients who can pay a high price for treatment has so far progressed that a "pay ward," so called, will be ready during the present year. Among the needs, besides money for endowment, is a hospital for the care of people of moderate means. A building for children in connection with the general hospital is recommended.

**Tennessee State Medical Association.**—The eighty-fifth annual meeting of this association will be held in Nashville, April 3d, 4th and 5th, under the presidency of Dr. C. N. Cowen, of Nashville. Other officers of the association are: Vice-president for West Tennessee, Dr. J. L. McGehee, Memphis; vice-president for East Tennessee, Dr. C. J. Carmichael, Knoxville; vice-president for Middle Tennessee, Dr. J. T. Moore, Algood; treasurer, Dr. J. F. Gallagher, Nashville; secretary, Dr. Olin West, Nashville; board of directors, Drs. J. F. Gallagher, H. T. Brooks and C. S. Broyles. The local committee of arrangements is composed of Doctor Gallagher, chairman; Dr. Perry Bromberg, Dr. R. A. Barr, Dr. Duncan Eve, Jr., and Dr. R. A. Fort.

**Harvard to Investigate Canned Foods.**—The National Canners' Association has donated the sum of \$20,000 annually for a period of three years to Harvard University to be expended in an investigation of food poisoning, or so called ptomaine poisoning, with special reference to canned goods. The studies will be carried out in the medical school, under the direction of Dr. M. J. Rosenau, professor of preventive medicine and hygiene, under the supervision of the national research council of the National Academy of Sciences. The advisory committee of the council consists of Dr. John J. Abel, of Johns Hopkins University; Dr. Reid Hunt, of Harvard University; Dr. H. Gideon Wells, of the University of Chicago; Dr. Eugene Ople, of Washington University; Dr. Lafayette Mendel, of Yale University, and Dr. Frederick T. Novy, of the University of Michigan.

**The New Beth Israel Hospital.**—If the plans announced by the hospital committee are carried out, the new building, which is to be erected at Livingston Place and East Seventeenth street, New York, will contain one of the best equipped hospitals in the United States. A committee has been appointed to make a study of the most modern hospital equipment. New departments established include one for the relief and prevention of heart disease, and another for the aftercare of infantile paralysis victims, the latter in conjunction with the Henry Street Settlement, which has assigned two trained workers to look after the patients at the clinic and afterward at home. An enlarged maternity ward and a bacteriological and pathological laboratory are other improvements. A fund to be known as the Rice Convalescent Fund has been established by Mrs. Isaac L. Rice. In the report of the work of the last year it was stated that of the 93,237 patients who received treatment, nearly all were cared for free, and new appliances during the year's expenses up to \$123,815.93. Nearly 2,000 patients were rejected because of lack of room.

**Rear Admiral Grayson.**—The nomination of Passed Assistant Surgeon Cary T. Grayson, U. S. N., to be a medical director of the Navy with the rank of rear admiral was confirmed on March 15th by the special session of the U. S. Senate. The division was on strictly party lines, all the Democrats voting for confirmation and the Republicans opposing it. The confirmation has been fought since January 18th, and has been more severely criticised than any other nomination made of late years by a President. The promotion jumps Doctor Grayson over the heads of 127 officers in the medical department of the Navy.

**Missouri Valley and Southwest A. M. A. Special.**—Arrangements are being perfected for a special through train to the meeting of the American Medical Association in New York City, June 4 to 8, 1917. This train will be run under the auspices of the Medical Societies of the Missouri Valley and Southwest, from Fort Worth, Dallas, Oklahoma City, Wichita, Topeka, Kansas City, St. Joseph, Omaha, Des Moines and other points, via Chicago and Washington, with stopovers going and returning. First class service via the Santa Fe, Northwestern and Pennsylvania railways. Low summer rates will be in effect. For further information and Pullman reservations, address Dr. Charles Wood Fassett, Secretary Medical Society of the Missouri Valley, Kansas City, Missouri.

**Medical Society of the County of New York.**—A stated meeting of this society will be held Monday evening, March 26th, in Hosack Hall, New York Academy of Medicine. The following program has been arranged for the scientific session: Announcement, by the Auxiliary Medical Committee for National Defense of New York; Detection and Repair of Incompetencies of Ileocecal Valve, by Dr. Lewis Gregory Cole, which will be illustrated by lantern slides and discussed by Dr. William Van Valzah Hayes, Dr. Charles H. Peck, Dr. J. P. Hoguet, and Dr. H. Austin Cossitt; Treatment of Flat Feet, by Dr. Robert Edward Soule, which will be illustrated with lantern slides and discussed by Dr. Charles Ogilvy; Sterility and Its Cervicoplastic Treatment, by Dr. Arnold Sturmudorf, which will be illustrated by lantern slides and discussed by Dr. Howard C. Taylor, Dr. J. Riddle Goffe, Dr. George Gray Ward, and Dr. Hermann J. Boldt. The April meeting of the society will be held on Friday, April 20th, instead of the fourth Monday as usual.

**Instruction in Military Medicine.**—A systematic course of instruction in military medicine has been inaugurated at the medical schools of Harvard University, Tufts College, and Boston University, Boston, and of Cornell University in New York. The courses are open to members of the Medical Reserve Corps and to the physicians and nurses of the American Red Cross. All physicians and upper class students of medicine, and nurses will be welcome. These lectures will cover such subjects as army organization, sanitary units and lines of aid, recruiting and systems of training, military importance of marching, camp sanitation, with a consideration of wastes and other disposal; water supply, food supply and preparation, tent and camp sites, etc.; military surgery, work on lines of aid, bringing out especially the difference in principle and application between civil and military surgery; military medicine, with a discussion of preventable diseases. There will be three lectures on tropical medicine. The lecturers will be members of the Medical Corps of the United States Army.

**Personal.**—Surgeon General William C. Braisted, United States Navy, has been reappointed as chief of the Bureau of Medicine and Surgery with the rank of rear admiral.

Dr. Edward W. Ryan, formerly head of the American Hospital in Belgrade, has recently sailed for Salonika, Greece, on the invitation of the Serbian government, to reorganize the sanitary relief work north of that port.

Dr. J. Christopher O'Day, of Portland, Oregon, who is leaving for Honolulu, where he will make his home in the future, was tendered a banquet at the Portland Hotel, Wednesday evening, March 7th, by the members of the City and County Medical Society.

Dr. Thomas H. Haines, professor of nervous and mental diseases at the Ohio State University, has been granted leave of absence for five months to make a State survey of mental defectives in Kentucky.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

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Although in recent months a tendency toward recession in the prices of many drugs from the high marks reached early in 1916 has been noticeable, the cost of the various remedies still remains in many instances so high as to impose not only a distinct hardship on patients of moderate means and the practitioner solicitous of safeguarding their interests, but also an unexpected strain on the financial resources of hospitals and dispensaries in which free remedial treatment is given. A cursory inquiry into the situation seems to indicate that unnecessary expense is constantly being incurred through failure to utilize to the full extent the resources which the U. S. Pharmacopœia actually affords, in particular as regards substitution of the less for the more expensive drugs. Brief consideration of some of the possibilities which present themselves in this and related directions appears, therefore, in order.

Beginning with the narcotics and hypnotics, we find opium and its alkaloidal derivatives now selling at an advance of approximately fifty per cent. over 1914 prices. In the case of these essential agents, it would seem that little can be done to reduce expenses. Yet certain opportunities suggest themselves. Thus, where a hypnotic effect is desired, advantage could sometimes be taken, where many cases are under treatment, of the potentiation which has been shown to occur when morphine and the less expensive agent, chloral hydrate, are simultaneously administered, less than a half dose of each of these drugs being under these circumstances required to produce the hypnotic effect which a whole dose of either remedy would exert if given alone. Likewise effective in reducing drug outlay in suitable cases, e. g., where pain is to be relieved and sleep secured in the absence of any tendency to weak heart action, is the substitution of acetanilid for a portion or all of the morphine otherwise to be given, remembering that in some inflammatory and organic pains the latter is a more efficient remedy. Possibly cannabis, now maintained at a definite degree of potency by the physiological standardization requirement of the new Pharmacopœia, may in some cases be successfully substituted for opium for analgesic and narcotic purposes, though at best it is a somewhat uncertain remedy. It is less than one fourth as costly as opium, dose for dose.

Codeine, though it has not advanced in price quite as markedly as morphine in the last three years, remains more expensive than morphine, weight for weight. In view of the much larger dose required to produce an equal effect, codeine would be distinctly inferior to morphine from the expense standpoint were it not for the fact that it possesses the advantage, in its special province of relieving cough,

of acting without producing the unpleasant side effects of morphine, such as constipation, digestive disturbance, and headache. The dose of morphine required for this purpose, however, being in many instances small, these side effects are not apt to be pronounced, and the substitution of codeine for morphine, even in the relief of cough, seems unnecessarily expensive. Both these agents are, perhaps, surpassed by diacetylmorphine (heroin), which, while about one third more costly than morphine or codeine, weight for weight, is said to depress the cough reflex in doses somewhat less than those required in the case of morphine, and has the additional advantage of largely avoiding the unpleasant side effects of the latter, though more toxic in larger doses (Harnack). The difference in dose and expense between diacetylmorphine and morphine is, of course, much less than that between codeine and morphine. As Sollmann states, as little as 1/32 grain of morphine may be sufficient to lessen the cough reflex.

The relative inexpensiveness of the entire drug, opium, as compared to its alkaloidal derivatives is particularly to be borne in mind, the effect on the cough reflex being obtainable with less than one fifth the expense entailed in the case of morphine, in spite of the fact that certain of the minor alkaloids in opium act in direct antagonism to the contained morphine on the respiratory centres. The more marked constipating action of opium is a disadvantage in the use of the entire drug, but the difference in this respect is doubtless relatively insignificant except in cases of such severity as to require large doses. Opium has, moreover, been held superior to morphine in these cases on the ground that it induces less nausea and depression of breathing and acts more persistently than the alkaloid.

In bronchial asthma morphine probably cannot well be replaced by diacetylmorphine, for according to Higgins and Means (1915) as little as 1/12 grain of the latter is capable of causing bronchoconstriction—an effect opposite to that required for the relief of this condition. In dyspnea in general, morphine acts better than any of its congeners, as it reduces the sensitiveness of the respiratory centre to carbon dioxide more than they do. In obstinate excessive peristalsis and diarrhea, on the other hand, opium is in most instances superior to the various alkaloids from both the therapeutic and expensive standpoints. In the minority of these cases in which substitution of morphine for opium seems desirable because of its more rapid action and greater anodyne power, advantage may, perhaps, be taken of the observation of Takahashi (1914) that in colocynth diarrhea potentiation occurs when morphine and codeine are combined, the resulting effect being so marked that, in using a mixture of these alkaloids in equal parts, the dose of morphine can be reduced to one fourth that ordinarily required.

In all the above mentioned uses of opium and its



derivative alkaloids the customary precautions to obviate habit formation are, of course, to be given due consideration. In this respect codeine is by far the safest remedy of the group; but in many of the milder cases an effort should be made to substitute other sedative drugs for the members of the opium series.

(To be continued.)

#### Specific Treatment of Lobar Pneumonia.—

Rufus I. Cole (*Pennsylvania Medical Journal*, February, 1917) says that soon after an injection of serum in the Group I cases there is an improvement in the patient's condition. The blood culture usually becomes negative but the local lesion does not immediately resolve, nor does the crisis begin sooner. The dose given is eighty c. c., repeated every twelve hours until a reduction in temperature takes place. In order to guard against the administration to patients who are sensitive to these injections, all pneumonia patients should be given one half c. c. of horse serum subcutaneously. Chemotherapeutically a preparation of quinine called ethylhydrocuprein has been found to be very effective. It is 150 times as strong as quinine itself and in the test tube, even in dilutions of one to 5,000,000, has the power of killing pneumococci. It is manufactured under the trade name of optochin. This agent seems to be effective against all types of pneumococci. The only disadvantage in the use of this drug is that there is little latitude between the curative dose and the toxic dose. After the pneumococci are exposed to concentrations not sufficient to kill them they soon become resistant to the drug and require a much larger dose to kill them. The initial dose should be 0.5 gram and should be followed by smaller doses every two hours. The dose should be regulated so that the patient receives 0.024 gram per kilogram of body weight during the twenty-four hours. After the administration of the drug is stopped the bactericidal power of the blood falls quickly. The untoward symptoms resulting from its administration affect particularly the eye and the ear. It is a better plan to combine serum and optochin treatment than to rely on either agent alone.

**The Treatment of Pneumonia by Other than Specific Methods.**—M. Howard Fussell (*Pennsylvania Medical Journal*, February, 1917) describes six essentials in the treatment: 1, early recognition of the case; 2, absolute rest; 3, abundance of fresh air; 4, proper amount of good food; 5, constant watchfulness; 6, administration of proper drugs at proper times. The rest should be absolute, both physical and mental. The air should be unheated and it is best to have the patient in a room with two windows opposite each other, so that a cross draft may be formed. The temperature of the room should be that of the outside air. The food should be of a character which will not undergo fermentation in the bowel. Coal tar products should never be used to reduce the temperature. To combat delirium give plenty of liquids and fresh air. Potassium bromide, grains twenty, every two or three hours is of great value. If the patient is addicted to alcohol it should be administered. When violently de-

lirious, give either morphine alone, or in combination with hyoscyne, by hypodermic injection. A low blood pressure is significant of a severe toxic state. In the treatment of the toxemia of pneumonia, which is evidenced by low muttering delirium, a rapid pulse, and a low leucocyte count, the patient must be given all the fresh air possible, and the circulation must be supported by strychnine and caffeine. An abundance of water should be given by mouth, per rectum, under the skin, or directly into the veins. These patients are best treated with large doses of alcohol. To overcome abdominal distention eserine should be given hypodermically. Purgatives and turpentine stupes are also of value. For dilatation of the stomach, lavage is best. For the pleurisy which usually accompanies pneumonia, use ice bags locally and strapping of the chest. If empyema develops, the pus must be evacuated. In cases of pneumonia with an organic heart lesion, digitalis is the most useful single drug. It should be given in the form of the tincture, ten minims three times a day. In severe cases, where there is toxemia, strychnine grain 1/30 every four hours hypodermically is indicated. Caffeine should be given in the form of caffeine sodium benzoate. Camphor may be used in an emergency. Nitroglycerin is to be used when the right heart is overdilated and laboring against increased peripheral pressure.

**Treatment of Pneumonia in Children.**—Louis Fischer (*Medical Adviser*, February, 1917) advises the use of castor oil or an emetic to get rid of purulent bronchial secretions which are not expectorated in infancy, but swallowed. Fischer makes it a rule in his hospital service that his pneumonia cases receive a teaspoonful of castor oil every morning. In young infants after poulticing for twenty-four hours he orders for an infant one year old one thirtieth of a grain of apomorphine hypodermically to be repeated in one hour if no emesis occurs. For a child five years old one twenty-fourth of a grain may be given, and care must be taken to give the emetic half an hour before a feeding is due. Apomorphine must be prescribed in a fresh solution prepared from the powder, as the tablets quickly deteriorate. Sulphate of copper may be used by mouth in a dose of one grain in water repeated in one hour if ineffectual. In bronchopneumonia cough is relieved and viscid secretions loosened by steam inhalations with twenty drops of beechwood creosote to the pint of boiling water, or the same quantity of pine needle oil either alone or combined with an equal quantity of compound tincture of benzoin. If there still is cyanosis and dyspnea a warm flaxseed poultice with ten to twenty per cent. of mustard should be applied to the affected area of the chest until there is local hyperemia. The poultices are to be renewed every hour and in suitable cases dry cupping may be tried. In lobar pneumonia diaphoresis may be produced by the administration of one drop of tincture of aconite added to thirty drops of liquor ammonii acetatis every two hours until free perspiration results. Tub baths are indicated with a temperature of 105° F. or over, while lower temperatures are better controlled by tepid packs at 85° F. Rectal or colonic flushing with one or two pints of cool water at 80° F. is a



good means of reducing fever. As an expectorant one dram of glycerin every two or three hours may be given, while troublesome cough may be allayed by one twentieth to one tenth of a grain of codeine or one half grain of Dover's powder every three hours. Nutrition is the most important part of the treatment and the food must be well diluted and the intervals between feedings should be lengthened. Food may consist of milk, soup, broth, strained gruel, or milk soured with lactic acid bacilli. Sleep must not be disturbed to give medication, and syrups in medicines should not be given in fever. The urine should be examined daily and scanty secretion should call for two to five grains of diuretin every three or four hours, or sweet spirit of nitre in ten to fifteen minim doses, or other remedial agents given, as potassium citrate or bicarbonate, caffeine citrate, or digitalis either in the infusion or as digitoxin. Whiskey and strychnine give good results in cardiac weakness; water in sufficient quantity must be given to encourage elimination, and antipyretics, being heart depressants, are not to be used at all.

**Intraspinal Treatment of Neurosyphilis.**—Wilard C. Stoner (*Journal A.M.A.*, February 24, 1917) concludes from an experience of seventy-two cases, representing the several different forms and stages of this form of syphilis, that Ogilvie's modification of the Swift-Ellis method gives the most satisfactory results yet obtained and with the minimum discomfort to the patient. By this method at least half of the patients have no discomfort at all and most of the remainder have only trivial symptoms of transitory character. In the series here recorded the average number of spinal injections to a patient was four and the maximum twelve. The spinal fluid leucocyte count was made normal in forty per cent., the spinal Wassermann negative in nearly twelve per cent., the globulin negative in twenty per cent., spinal fluid made entirely normal in ten per cent., spinal fluid improved in nearly thirty-seven per cent., unimproved in thirteen per cent., and sixty-six per cent. of the patients were improved in one or more symptoms. It was found that clinical improvement did not necessarily parallel laboratory improvement. Paresis did not show satisfactory results from the treatment and the method did not seem of value in cases in which marked changes in the deeper nervous structures had already taken place, as was to be expected.

**Notes on Cerebrospinal Fever.**—Sheffield Neave (*Lancet*, February 10, 1917) cites some of his experiences from an outbreak of seventy-three cases in an area within a radius of about twenty miles. He points out that the disease varies widely in a given epidemic, both at different periods and in different localities, even in adjacent ones, and that such sources of variability render the estimation of the value of a given line of treatment extremely difficult. One method which did prove beneficial was the practice of lumbar puncture, daily at first and every two days later, with the withdrawal of fluid until the amount which could be obtained was reduced to twenty mls. In some cases no fluid would flow and for these the slow injection of small amounts of saline by gravity, using

very low pressure, followed by immediate removal of the fluid, often would wash out thick, inspissated pus and after being repeated several times would permit the flow of very turbid spinal fluid. Intrathecal injections of half per cent. solution of phenol in saline, which were allowed to run out again, were tried without showing any definite improvement. Several makes of antiserum were tried intrathecally, but again without demonstrable benefit. Antimony tartrate, in two per cent. solution, was tried intravenously in six cases. In four of them it seemed to have a striking, immediate effect, causing the temperature to subside at once in two and aborting the disease in two others, both of which were fulminant cases. In the remaining two it had no effect. The initial dose was 1.5 mls, which was gradually increased to a maximum of six mls.

**Treatment of Scabies and Other Skin Affections.**—H. G. Adamson (*Lancet*, February 10, 1917) recommends the following as a very rapid and effective method of curing scabies. For three successive days a hot bath of half an hour's duration, combined with vigorous scrubbing with green soap, is taken and followed by an inunction by the patient of his whole body with sulphur ointment. After each inunction he puts on an old sleeping suit, gloves, and socks and goes to bed where he remains until the next bath. Under no circumstances should the treatment be continued beyond the three days, at the end of which time the majority of patients will be cured, though some itching may remain. This is best controlled by sopping the following lotion on the affected parts night and morning:

℞ Liquoris picis carbonis (B. P.).....	4.0
Aque .....	600.0

Popular urticaria is best treated by a lotion of ordinary vinegar, and eczema responds to the avoidance of all baths and the application of the following:

℞ Zinci oxidi .....	30.0
Amyli .....	30.0
Petrolati q. s. ad.....	300.0

Impetigo contagiosa can be cured promptly if the patient be made to mop off all crusts with cotton and hot water, apply a 1 to 6,000 solution of bichloride of mercury for a few minutes and then follow with an application of the following ointment:

℞ Hydrargyri ammoniati .....	0.6
Petrolati .....	30.0

Ringworm will usually respond to the application of the following ointment:

℞ Acidi benzoici .....	.....
Acidi salicylici, .....	āā 1.0
Olei cocanucis, .....	12.0
Petrolati, q. s. ad, .....	30.0

If it does not the parts should be thoroughly rubbed with tincture of iodine followed by a solution of 0.6 gram of silver nitrate in thirty mls of sweet spirit of nitre and the application of the preceding ointment. Finally, psoriasis can often be controlled by the application of an ointment of the following composition:

℞ Hydrargyri ammoniati .....	4.0
Liquoris picis carbonis (B. P.).....	15.0
Unguenti paraffini (B. P.).....	180.0

**Treatment of Pernicious Anemia with Salvarsan.**—Rudolf Lämpe (*Medizinische Klinik*, November 19, 1916) cites the conflicting views regarding the value of salvarsan in pernicious anemia and records his own experiences in three very severe cases. In all of them the administration of small doses of salvarsan was followed by restoration of the blood picture almost to normal, although two of the cases recurred later, one with a fatal outcome. The salvarsan was given intravenously.

**Treatment of Asthma by Pituitrin and Adrenalin Injections.**—Ernest Zueblin (*Medical Record*, March 3, 1917) states that from his experience in two severe cases of asthma he is much impressed with the prospects of the treatment of this condition by the combined hypodermic administration of pituitrin and adrenalin. Good results are obtained by the administration of one c. c. of pituitrin together with from ten to fifteen minims of one in 1,000 adrenalin solution. The diastolic blood pressure gradually declines and the pulse pressure correspondingly increases. Great relief of dyspnea is obtained.

**Treatment of Erysipelas with Iodine.**—Wilhelm Keppler (*Medizinische Klinik*, December 31, 1916) advocates strongly the local application of a ten per cent. tincture of iodine to the inflamed area and for several inches beyond it in all directions for the prompt control of erysipelas. He has used this remedy, thoroughly applied, in a very large number of cases and has found it far superior to any other which has been suggested. In many cases the temperature fell to normal and the constitutional symptoms began to subside within a comparatively few hours. The application must be most thorough, and where there are folds to be treated it is best to pour some of the iodine into them and spread it about with a cotton swab. In some cases a second application of tincture of iodine may be required, but in the majority one application will effectively check the progress of the disease.

**Blood Transfusion in Pernicious Anemia.**—A. Archibald (*St. Paul Medical Journal*, February 1917) reports of twenty-six cases treated by transfusion at the Mayo Clinic. Forty-six transfusions were performed in the series, a single transfusion proving sufficient in only eleven patients. A majority of the cases showed marked debility and anemia before the treatment, the average hemoglobin percentage in the series being thirty. The interval between transfusions was usually one week. As a rule, 500 c. c. of blood were transfused, though one patient receiving only fifty c. c. during a crisis showed a rise of hemoglobin from twenty-four to sixty-four per cent. in twenty-three days. Sixty-nine per cent. of the entire series received marked immediate benefit from the procedure. Among fourteen unfavorable cases deemed unsuitable for splenectomy similar improvement was noted in fifty per cent. Up to the sixth decade, the age of the patient had no bearing on the results; of five patients between sixty and seventy but one showed definite improvement. Patients with a history of remissions, even though ill for several years, seemed most benefited by transfusion. Those without re-

missions often failed to respond. Recent, acute cases were usually little influenced. Results following transfusion from relatives were not superior to those in the cases of unrelated donors. But one patient had a severe reaction; mild fever and a severe chill lasting forty minutes followed transfusions from the wife and from a friend; no benefit resulted. Eleven patients had mild fever for a day or two. Such reactions did not prove necessarily indicative of benefit from the procedure. Eighteen of the twenty-six cases showed a marked rise in hemoglobin and twelve of these a marked increase in the erythrocytes. In nine of the eighteen the leucocytes were increased in number, but in no instance was the differential count influenced. General improvement usually paralleled that in the hemoglobin. Distressing numbness, burning, and tingling of the hands and feet were relieved by the treatment. When no benefit follows a transfusion, a different donor should be tried.

**Treatment of Achylia Gastrica.**—William MacLennan (*Glasgow Medical Journal*, January, 1917) is convinced that achylia is not sufficiently recognized as a causative factor in many apparently obscure gastrointestinal derangements. In achylia gastrica nervosa and in only partial achylia, good results from treatment may be expected. Fresh air, gentle exercise, and avoidance of fatigue and overexcitement are essential measures. If there is loss of weight, rest in bed and general massage with olive oil are of great value. After massage, physical culture at home, e. g., Müller's exercises, should be carried on persistently. In the diet, large quantities of fats and oils are to be avoided, though small doses of codliver oil emulsion or of malt and oil are sometimes well borne and improve general tone. If signs of gastric fermentation exist, gentle lavage twice weekly with saline solution at 70° F. is very useful. Hot compresses, the Aix massage douche, and alternate hot and cold douches over the stomach are all of value. Medicinally, bitters, though sometimes useful, alone are insufficient, hydrochloric acid being the chief remedy. In partial achylia, the gastric contents should be tested at intervals to avoid artificial hyperchlorhydria. The carbohydrates should be taken in the intervals—three hours after each meal—and as far as possible, eaten quite dry, to promote mastication, fluid being ingested later. A useful form of artificial digestive is:

R Acid hydrochlorici diluti, ..... 3i-ii;  
Glyceriti pepsini (N. F.), ..... 3iiss;  
Fluidextracti condurango, ..... 3i;  
Aque chloroformi, q. s. ad, ..... 3vi.  
M. et sig.: Two teaspoonfuls in water thrice daily, after food.

If there is fermentation, a small dose of resorcinol may be added. Where motor insufficiency exists, as in achylia with gastroptosis, the following combination is effective.

R Strychninae, ..... gr. 1/24;  
Phyostigminae salicylatis, ..... gr. 1/60;  
Quininae hydrochloridi, ..... gr. i.  
Extracti euonymi ana ..... gr. 1/4  
Gingerinae .....  
Fiat pilula no. i. Mitte tales no. lx.  
Sig.: One pill thrice daily after food.



**Treatment of Nasal Diphtheria.**—Kurt Ochsenius (*Münchener medizinische Wochenschrift*, December 26, 1916) recommends the use of antitoxin in all cases that are at all suspicious. The danger of anaphylaxis has been reduced to a minimum, and he points out that all cases that show a tendency to membrane formation with the presence of bacilli should be regarded as diphtheria and treated with serum.

**Operative Treatment of Cryptorchidism.**—Edward L. Keyes, Jr., and David W. MacKenzie (*Journal A. M. A.*, February 3, 1917) describe in detail a comparatively simple operation for bringing the misplaced testicle into its normal position at the bottom of the scrotal sac and insuring its retention there. The operation has given eighty-eight per cent. of good results and no mortality.

**Treatment of Diabetes Where Work Increases Glycemia and Acidosis.**—M. B. Leviton (*Illinois Medical Journal*, January, 1917) advises in such cases that fats be restricted, that the "alkaline reserve" of the body and blood plasma be kept up, that the liver be encouraged to store more glycogen and less fat. The chief value of rest in diabetes may be largely due to restraint of cutaneous and other tissue fat mobilization.

**Pituitary Extract for Induction of Labor.**—Fred L. Adair (*Interstate Medical Journal*, December, 1916) from a review of the literature and from his own experience in twelve cases concludes that, while not infallible, pituitary extract is of service in inducing labor. When the membranes are ruptured it often initiates uterine contractions and in placenta prævia may save intrauterine manipulations. It is of value in starting labor at term or in overdue cases.

**Nerve Suture.**—A. Frouin (*Presse médicale*, January 8, 1917) reports researches on immediate suture of nerves after complete section. Instead of catgut sutures, commonly employed, he used fine silk and the finest obtainable needles. In this way it was found possible to suture the perineurium without any injury to the axis cylinder fibres. With catgut destruction of a considerable number of the latter fibres is unavoidable. In seventeen animals in which a sciatic nerve was cut and immediately sutured, motor function was always quickly recovered. In two weeks the animals were easily able to walk on the sole of the foot on the affected side.

**Use of Cephalin in Surgical Hemostasis.**—H. L. Cecil (*Journal A. M. A.*, February 24, 1917) has found this hemostatic and coagulant material of great value in the control of deep bleeding after operations such as prostatectomy or Young's median bar excision. For the former purpose he employs gauze impregnated with cephalin and sterilized at 120° C. in the autoclave. The gauze is prepared by saturation with a five per cent. ethereal solution of the cephalin. For the control of bleeding after the Young operation in the urethra cephalin coated, gum coude catheters are the most satisfactory. These are prepared by slowly dropping upon them, while slowly rotated, a saturated solution of cephalin in ether until a coat of the material one to two millimetres thick is obtained. The catheters are then sterilized inside of glass tubes in the autoclave.

**A Most Efficient Anaphrodisiac.**—William J. Robinson (*Medical Record*, January 27, 1917) highly recommends magnesium sulphate in doses of from twenty to forty grams in water once or twice a day as a most efficient anaphrodisiac which has none of the objectionable features of the commonly used bromide and nitrate of potash.

**Mechanical Derangement of the Knee Joint.**—Melvin S. Henderson (*Journal A. M. A.*, February 3, 1917) brings out, in the course of a discussion on the treatment of several forms of mechanical derangement of the knee, the fact that prompt and adequate reduction and immobilization in plaster will usually be followed by complete recovery in cases of damaged semilunar cartilage. The leg should be put up with the knee in complete extension and should thus be immobilized for at least six weeks. Such treatment is applicable only in cases of fresh injury, open surgical removal of a portion of the cartilage being necessary in cases with recurrent locking.

**The Merits and Demerits of Present Day Glaucoma Operations.**—B. P. Banaji (*Indian Medical Gazette*, December, 1916) advocates a modification of Elliott's operation in which the disc at the corneoscleral margin, after being cut with the trephine, is left in place with a hinge, usually at the corneal aspect. The periphery of the iris near the wound is buttonholed and the pillars properly replaced. The results as regards tension are as satisfactory as when the disc is removed. He thinks it probable that the presence of the disc with its loose connections may act as a safeguard against late infection. If the disc is too freely cut it is absorbed after a couple of months.

**Use of Pure Carbolic Acid in Selected Cases of Chronic Middle Ear Suppuration.**—G. W. Walker (*California State Journal of Medicine*, February, 1917) reports a number of cases of chronic suppuration of the middle ear which he has treated successfully by filling the suppurating cavity with melted crystals of carbolic acid, and washing it out with absolute alcohol after a couple of minutes. This was done after such surgical treatment of the nose and throat as might be indicated had been performed, and in several cases it appeared as though the necessity of a radical mastoid operation had been successfully avoided. He asserts that the hearing is always made better and never diminished, when this method of treatment has a successful issue. Should it fail, the radical operation still can be performed. When pure carbolic acid is introduced into the middle ear there is first a burning pain for about fifteen seconds; this disappears and does not reappear for a few minutes, and as the alcohol used within two minutes checks the action of the carbolic acid, the afterburning is not severe. Care must be exercised that any surplus of carbolic acid is not allowed to run down the neck. A large pledget of cotton saturated with alcohol, held just beneath the external ear, will catch any overflow, and any carbolic acid in the external canal can be neutralized at once, instead of waiting the two minutes for the effect in the middle ear, by simply mopping out the canal with a pledget of cotton wet with alcohol. No violent reaction has ever been produced in his cases.



# Miscellany from Home and Foreign Journals

**Apparent Spontaneous Paralysis of the Ulnar Nerve.**—J. A. Sicard and P. Gastaud (*Bulletin et mémoires de la Société médicale des hôpitaux de Paris*, November 9, 1916) have observed five cases of this condition, not as yet mentioned in textbooks. The paralysis was associated with enlargement of the trunk of the ulnar nerve in the segment in contact with the olecranon, and occurred without previous wound or traumatism to account for it. In a primary stage lasting two or three weeks these patients had pain radiating from the elbow up the arm and down the forearm. This was followed by a stage of paresis, numbness, and tingling in the hand, especially in the last two fingers; then by a third stage characterized by atrophy and disturbed electrical reactions. The condition progressed slowly, one case having been under observation about fourteen months. In two instances slight spontaneous improvement took place. The prognosis of the condition is favorable. Its cause is held to be a compression of the nerve in its course over the olecranon, due to attacks of sclerosing periarticular inflammation of rheumatic origin. A careful search for other causes proved fruitless. These cases may be held related to those of musculospiral paralysis due to compression of the nerve in the corresponding groove, and belong to a group of cases to which the authors apply the term *neurodocitis*, or impairment of a nerve through inflammation at a point where it passes through a narrow bony or fibroosseous canal.

**Clinical Value of Ambard's Coefficient of Urea Excretion.**—D. Sclater Lewis (*Archives of Internal Medicine*, January, 1917) asserts, after a study of the Ambard coefficient in a large series of subjects, including 162 cases of nephritis, that this coefficient has considerable prognostic value, provided repeated determinations of it are made. Coefficient values below 0.06 or above 0.09 are usually to be regarded as abnormal. Values above 0.2 occur only in severe cases, and if persistently above 0.3 indicate maximum renal impairment. A value above 0.2 is, however, graver in vascular than in chronic diffuse nephritis. The coefficient increases long before there is any evidence of nitrogen retention in the blood, and is very useful for following changes in renal function and measuring the rate of progress of the disease. There is marked uniformity of the results of the phenolsulphonaphthalein test and the coefficient in all stages of nephritis; likewise, in the later stages, of the nonprotein nitrogen of the blood and the coefficient. The latter is absolutely independent of the blood urea concentration, being governed by the condition of renal function. The coefficient is depressed in fever, hyperthyroidism, hypertension with early changes in the renal arterioles, and early chronic diffuse nephritis; this depression results from increased renal activity due to irritation. On the other hand, the coefficient is raised in myxedema and in myocardial insufficiency. He describes in detail the method of ascertaining the coefficient.

**Spinal Puncture in Cardiovascular Diseases.**—Leon Bloch (*Journal A.M.A.*, March 3, 1917) points out that syphilis is a not infrequent contributory cause of cardiovascular disease and that it may be present without recognition by the ordinary means. In seventeen out of thirty cases examined by the author spinal fluid Wassermann tests were positive while the blood tests were negative. These included four cases of aortic aneurysm, one of abdominal aneurysm, three of aortic insufficiency, eight of myocarditis, and one of angina pectoris. In five other cases positive evidence of syphilis was obtained from the examination of the spinal fluid, although this gave negative reactions to the Wassermann test. The evidence in these cases was provided by cell counts and by Nonne and Noguchi tests. From these findings the importance of spinal fluid examination in cardiovascular conditions of doubtful etiology is evident.

**The Advantages of Conservative Surgery in Operations for Diverticulitis of the Descending and Pelvic Colon.**—John W. Keefe (*Boston Medical and Surgical Journal*, February 22, 1917) says that our knowledge of the origin of intestinal diverticula is meagre, and but little unanimity of opinion exists relative to the etiological role played by the several factors mentioned as causes, and yet that the symptoms are so definite and characteristic that failure to recognize the condition arises more from a lack of knowledge of it and a failure adequately to realize its importance, than from any inherent difficulty in the diagnosis. Inasmuch as the location of the region involved and the period of life at which the condition occurs are identical with those of malignant growths, the differential diagnosis between these two conditions becomes difficult and is of paramount importance. Other conditions to be excluded are left sided appendicitis and tuberculous and syphilitic growths. X ray examinations afford a most valuable aid in making this diagnosis, and are of especial value in differentiating between diverticulitis and carcinoma. Grave, and not infrequently fatal, complications arise as the result of infection through intestinal diverticula, among which are named chronic extramucosal inflammation that frequently results in tumor formation and the simulation of carcinoma; peritonitis resulting from the perforation of a diverticulum; abscess formation; intestinal obstruction due to adhesions of the inflammatory mass to contiguous structures; fistulas and fistulous tracts, particularly between the intestine and the urinary bladder; chronic mesenteritis; metastatic suppuration in the liver; malignant changes resulting in carcinoma. In deciding on the type of operation to be performed in a case of diverticulitis, the one fundamental principle which should guide the surgeon to the exclusion of all others, should be that of conservatism. He should strive to preserve life by such procedures as draining an abscess, performing a colostomy, or adopting, in suitable cases, the two stage operation. Extensive resections in the presence of infection are apt to prove fatal.

**An Epidemic of Acute Myelitis.**—G. Etienne (*Bulletin de l'Académie de médecine*, January 30, 1917) states that, since the beginning of the war he has met with twelve cases of acute myelitis of the epidemic Heine-Medin type. Ten of these occurred in a single, compact, epidemic group. The symptomatology was rather diffuse, comprising motor disturbances with complete paralysis or paresis, spasticity, and sensory manifestations. The disturbances were thus much less systematized than is usual in the poliomyelitis of infantile paralysis, and the symptomatology remained essentially spinal, though exhibiting even in the single epidemic a marked neurological polymorphism. The types of conditions manifested included diffuse myelitis, fatal ascending myelitis of the Landry type, and transverse myelitis, and varied greatly in intensity. The ten cases forming the epidemic all occurred within a month. Nine belonged to the same military division, and six of these to two regiments of the same brigade, serving alternately in the same trenches. When the division in question was replaced by another, no new cases arose; nor did any more arise in the first division after its departure. During the epidemic many cases of cerebrospinal meningitis were encountered in some adjoining regiments. In one case, a nasopharyngeal infection is known to have preceded the acute myelitis. Attention is called to the advisability, in military practice, of being on the lookout for "fruste" cases of myelitis, in view of the value of early serum treatment, which was shown in one of the cases reported.

**Bile Cultures in the Diagnosis of Typhoid Fever.**—Marcel Labbé and Georges Canat (*Paris médical*, January 20, 1917) applied Einhorn's method of duodenal catheterization in a series of cases of typhoid and paratyphoid, for diagnostic purposes. A rubber tube three millimetres in diameter was used, reinforced at its distal end with a piece of glass tubing. After the tube had been allowed to remain for three hours, a sample of the fluids in the intestine was withdrawn by aspiration. While fluid could be obtained through the tube in only half the cases, the pathogenic organisms were frequently detected in it. The fluid withdrawn consisted in the majority of cases of practically pure bile; in the remainder, of bile mixed with gastric juice or, occasionally, of gastric juice alone. The pathogenic bacteria were sometimes in admixture with colon bacilli. Among thirteen cases examined at the height of the febrile period, six gave positive results, one yielding the typhoid bacillus, three the paratyphoid organism B, and two the paratyphoid A. Of two cases examined in the ambiphotic stage, one yielded the B paratyphoid, and of three cases examined during a relapse, two showed the same organism. Among eighteen cases examined after defervescence—from the first to the twenty-third day of convalescence—six gave positive findings. In the thirty-five cases of bile examinations, fecal examination on the same day was conducted in nineteen. Whereas organisms had been obtained from the bile in fifteen cases, they were isolated from the stools only in seven instances. There was little parallelism in the various cases between the results of bile and stool examinations, possibly because the

bacilli in the bile are only periodically discharged into the intestine. The bile examinations are of diagnostic value because blood cultures, even when instituted early, give positive results in hardly more than fifty or sixty per cent. of cases; because cultures from the stools are often negative, and because the agglutination test is sometimes positive only at a late period in the disease and has recently diminished in value through the multiple prophylactic inoculations administered. In several cases with negative blood and stool cultures, or even a negative agglutination test, the authors were led to the proper diagnosis by this means; in a number of other cases, on the other hand, negative results from all the tests, including bile culture, led to rejection of a diagnosis of typhoid or paratyphoid.

**Blood Pressure Changes from Heat and Cold Applied to the Abdomen.**—Frederick S. Hammett, E. W. Tice, and E. Larson (*Journal A. M. A.*, February 24, 1917) conducted a series of experiments on cats in which either heat or cold representing a difference of 25° C. above or below the body temperature was applied either to the outside or to the interior of the abdomen while the blood pressure of the animal was being constantly recorded. Each application lasted only fifteen minutes. When applied externally cold produced little or no effect, while heat caused a material elevation in the blood pressure which was maintained throughout its application. When applied within the abdomen both heat and cold produced a marked fall in the blood pressure. The results of these observations should be taken into consideration by those surgeons who are in the habit of applying hot or cold packs to the interior of the abdomen and also in connection with the possibility of utilizing the external application of heat to combat shock.

**The Abderhalden Reaction in Mental Diseases.**—Henry A. Cotton, E. P. Corson White, and W. W. Stevenson (*Journal of Nervous and Mental Disease*, February, 1917) present the results of the Abderhalden tests in 289 cases, including various psychoses and some normal individuals. The substances used were the pituitary, thymus, thyroid, pancreas, adrenal, and sex glands, (ovary and testicle), but not brain tissue. The blood of the patients to be tested was always taken before breakfast, to avoid any dietary influences, and the tests were made within three hours. They conclude that the Abderhalden reaction gives certain definite and uniform results, which are practically negative except in dementia præcox and epilepsy. In dementia præcox eighty-one per cent. of the cases showed a positive reaction to sex gland, and three out of fifty-five gave a positive reaction to thyroid and sex glands; two of these were of the catatonic type. Differential count of the blood shows rather characteristic conditions in dementia præcox, high red blood cells, low white cells, high lymphocyte count, and low polymorphonuclear. Our present knowledge of the incidence of tuberculosis in dementia præcox justifies the hypothesis that probably the former stands in some etiological relation to the latter. In epilepsy practically all cases gave a positive reaction to adrenal gland. The value of these reactions is to lay a foundation for treatment based on the facts deduced.



**Effect of Pyrexia on Agglutinins.**—G. Selby Wilson (*Lancet*, February 17, 1917) calls attention to the discordant results obtained by several workers who have approached this problem and reports his own results obtained from a series of nearly 100 cases in men inoculated within twenty months of the time of testing. Contrary to others, Wilson employed both macroscopic and microscopic methods for all serums. He found that the average agglutinin titre of men who had suffered from a febrile attack was somewhat lower than that of those who had not so suffered. There was no appreciable difference in the effect of long or short febrile attacks. The two methods of testing showed wide divergences in results, but the general indications of both were the same in direction. The number of cases was too small to warrant any definite conclusions.

**Localization Methods in the Kidney Region.**—F. Hernaman Johnson (*Archives of Radiology and Electrotherapy*, February, 1917) states that he uses the following method in examining for stone in the kidney. A urethral bougie is passed by the surgeon. Both this and the shadow can be clearly seen on the screen and the tube is maneuvered vertically beneath the shadows. An exposure is made, and after the maximum possible tube shift of seven and one half inches, a second image is obtained. In the original negative double images are clearly visible of the opaque bougie, the stone shadow, and the edges of the bodies of the vertebræ. When the relative depths are worked out on the wall diagram it is found that the bougie lies one and one half inches further from the anterior surface of the abdomen than the opaque mass causing the suspicious shadow. This is considered conclusive evidence that the mass is not intrarenal.

**Colon Bacillus Pyelonephritis.**—E. Granville Crabtree and Hugh Cabot (*Journal A. M. A.*, February 24, 1917) do not deny the occurrence of renal infection by the colon bacillus through direct extension up the ureter, but they believe that the condition of pyelitis is usually due to a hematogenous infection arising from the intestine, a purulent urethra or prostate, an inflamed bladder, or some other portal. They have previously shown that the colon bacilli may be cultivated from the blood during the early hours of symptoms and that the blood infection may be primary. The bacilli are filtered out in the glomeruli, pass through them without injury, and down the tubules to the pelvis, where they set up a purulent inflammation. During the process of excretion the convoluted tubule is the part most damaged, as shown by phenolsulphonaphthalein tests and microscopical examinations. This damage is of short duration and does not result in permanent injury. In the subacute and chronic stages the condition is one of almost pure pyelitis. But there are repeated slight injuries to the renal tissues from temporary invasions by the organisms. From stasis or relaxation of the pelvis the final stage is one of pyonephrosis. Some degree of immunity may be acquired against the colon bacillus and this explains why prostatics operated upon within three or four weeks following a pyelonephritis are better operative risks than the average. On the other hand, the immunity is short lived and susceptibility is common

as a result of any of the many factors which may lower the general normal resistance and health of a person. It is among the latter type that the cases of so called idiopathic colon pyelonephritis occur. Some degree of artificial immunity can be produced by the use of vaccines, but this is seldom of curative value, although some relief of symptoms may be secured. The absence of curative effects is probably due to the fact that the immune substances never reach the infected mucosa in amounts sufficient to be of any destructive value. On the other hand, the induction of such artificial immunity in noninfected cases seems to offer some prospect of value as a prophylactic measure in cases to be submitted to operation for prostatectomy.

**Types of Tubercle Bacilli in Glandular Tuberculosis.**—A. Stanley Griffith (*Lancet*, February 10, 1917) adds the results of a further series of fifty-two cases to those previously reported, making a total of 102 strains of tubercle bacilli isolated from cases of cervical gland tuberculosis. The organisms were studied by cultural and inoculation methods to determine whether they were of the bovine or the human type. In the entire series only two cases were found in which the organism could not be definitely placed in one or the other groups. In these two cases the organisms were similar to the human type, but were of relatively very low virulence for guineapigs, closely resembling the strains which have heretofore been isolated only from cases of lupus. In the entire series forty-seven per cent. of the organisms isolated were of the bovine type, but the proportion of the two types differed strikingly with the age of the cases from which they were isolated. Thus in children under ten years old seventy-two per cent. of the organisms were of the bovine type; in patients between ten and twenty years old the organisms of about one third were bovine; and the organisms in only nineteen per cent. were of that form in patients above twenty.

**Uremia and the Internal Secretions.**—Rémond and Minvielle (*Bulletin de l'Académie de médecine*, January 23, 1917) report preliminary experiments intended to ascertain the role of the ductless glands in uremia. The role of the liver in this condition being recognized, an attempt was first made to show the defensive property of combined liver and thyroid extracts. These extracts were injected on five successive days into a rabbit, and in intravenous injection of blood serum from a human case of uremia then slowly given until the animal succumbed. In this rabbit the lethal dose of the uremic serum proved to be 68.45 c. c. per kilogram while in a control animal from the same litter only 18.5 c. c. were required. Similar results were obtained in animals in which the hepatic and thyroid extracts had been injected intraperitoneally instead of subcutaneously. A rabbit that had received intraperitoneal injections of the extracts and was then given five milligrams of sodium cantharidate was still living two weeks later, while one that had not received the extracts died in twenty-four hours of uremia secondary to cantharidal nephritis, confirmed at the autopsy. These and other experiments are held to show that an exaltation of the hormonal functions is capable of manifestly increasing the resistance to uremia.



# Proceedings of Local and National Societies

NEW YORK ACADEMY OF MEDICINE.

*Stated Meeting Held January 18, 1917.*

The First Vice-President, Dr. EDWARD D. FISHER, in the Chair.

**Etiology of Mexican Typhus Fever.**—Dr. B. S. DENZER presented the results of an expedition by Doctor Olitsky, Doctor Husk and himself into Mexico during the early part of 1916 for the purpose of studying typhus fever. The work was done in Matehuala, Central Mexico, a town of 10,000 people, where the estimated number of cases during the winter months was 500. The epidemic involved the entire highlands of Mexico and the mortality was twenty per cent. Clinically, the disease in Mexico corresponded to the classical type. The scientific work, except for that reported by Doctor Olitsky, consisted of virus and bacteriological studies, serological tests on typhus patients, work on the pathogenicity of the organism recovered from the blood of patients suffering from typhus fever and finally, prophylactic inoculation with a vaccine made from *Bacillus typhixanthematici*.

The virus studies confirmed previous observations that the blood of typhus fever patients removed during the height of the disease and injected into guineapigs produced a rise in temperature of from four to eleven days' duration after an incubation period of seven to fourteen days. The Mexican virus was transmitted in this manner through three generations of animals. Blood cultures were taken in thirty-one cases of typhus fever and on numerous controls. The technic and media employed were those used in the original studies in New York in 1914, except in three cases. The blood aspirated from an arm vein was cultivated in two per cent. glucose serum agar; in the three cases referred to above, one half per cent. glucose agar was used. Of the latter three cases, one was positive. Of the twenty-eight remaining cultures made on two per cent. glucose serum agar only eight per cent. could be followed a sufficiently long time, the authors' enforced departure along with all other Americans in that part of Mexico preventing the complete observation of all the blood cultures. All of these eight cultures showed an organism identical with that first isolated and described by Plotz in 1914. Blood cultures taken on patients suffering from other febrile conditions showed either the exciting cause of the disease or were negative.

Agglutination tests performed on the serum of typhus fever patients with *Bacillus typhixanthematici*, confirmed the previous findings. The reactions were uniformly negative before the crisis, occasionally positive at the crisis and uniformly positive after the crisis. Control agglutination tests, using the serum of patients suffering from fevers other than typhus, showed no such reactions. The organism obtained from the blood of typhus fever patients, as well as that isolated from lice, was identified by its morphological and cultural characteristics and serological reactions. The organism was

a slender bacillus about one micron in length, usually Gram positive, although many strains were Gram negative. The organism was an obligatory anaerobe, and grew sparsely on one half per cent. serum glucose agar; it fermented glucose, maltose, mulin, and galactose and failed to ferment lactose, mannite, and saccharose.

Agglutination, using endemic typhus serum against Mexican strains, showed positive reactions in four out of five of those tested. In like manner, complement fixation tests against typhus immune serum showed uniformly positive results and uniformly negative results with nontyphus serum. In a word, then, there was complete correspondence culturally and serologically of the Mexican organism with the bacillus of Plotz. Experiments on guineapigs indicated that the organism was pathogenic for this animal in the original culture and lost its virulence on repeated cultivation. The authors' stay in Mexico was limited to five weeks as the raid on Columbus, New Mexico, necessitated their prompt departure. At the same time two of the members of the expedition, Doctors Olitsky and Husk, fell ill of typhus fever. Doctor Husk died at the border on March 20, 1916. His work and sacrifice for the solution of the problems of typhus fever had received deserved acknowledgment and appreciation.

**Isolation of *Bacillus typhixanthematici* from Body Louse.**—Dr. P. K. OLITSKY said the observation that the louse was an active agent in the transmission of typhus fever had led numerous workers to attempt to find the infectious element in this insect. Since 1910 thirteen investigators had noted the appearance in typhus infected lice of a bacillus which was not found in normal lice. The description of this organism presented by all these investigators corresponded in the essential details. Up to the time of the Mexican expedition, all cultural work proved fruitless and the above observations were based purely upon a foundation of morphological data. One of the results of this expedition was the finding of the same organism in infected lice, grown under anaerobic conditions and proven to be the identical organism which Plotz reported as the etiological agent of typhus fever.

The work in Mexico on typhus infected lice might be divided into two groups: 1, the production of typhus fever by the injection of infected lice, and 2, the isolation of the typhus bacillus from such lice. In regard to the first series of experiments, in two instances, the injection of thirty and sixty-five lice respectively intraperitoneally into guineapigs led to the production of typhus fever. In the one cultured case the typhus bacillus was recovered from the spleen of the guineapig. In regard to the second series of experiments, six series of lice taken from five different typhus patients were cultured. From all these lice the typhus bacillus was isolated, sometimes in pure culture in numbers varying from two to an innumerable number of colonies; that is, the culture tube was riddled with pinpoint growths. In

all the experiments made these lice were proven infectious. In an additional series of lice removed from a very mild case of endemic (New York) typhus fever, the culture was negative. The lice at the same time were injected into a guineapig without producing a reaction. Organisms from early cultures from lice were pathogenic for guineapigs.

Another striking observation was that these organisms were usually Gram negative in the original colonies. After one of two subcultures they became definitely Gram positive. The relationship between the staining reaction and the virulence of the organism was very suggestive. It was of interest to note that in previous work it was observed that in the original colonies in blood cultures, the organisms were stained partly Gram negative, partly Gram positive in the same smear preparation. Da Rocha-Lima had corroborated this fact in his louse studies. Independently, and at the same time, Plotz in the Balkans, as well as Baehr in Russia, comparing normal with infected lice in smear preparations, found in lice from typhus patients numerous bacilli decolorized by Gram's method.

Since 1910, many observers in different parts of the world had reported the finding of an organism in typhus infected lice, but not in normal lice. This organism they believed to have a causal relationship to typhus fever. Owing to the fact that improper methods were used, culture of the organism was impossible. In Mexico it was possible to grow the bacterium and to show that morphologically, culturally, and serologically it was identical with the typhus bacillus.

**Etiology and Epidemiology of the Typhus Fever of Eastern Europe.**—Dr. G. BAEHR outlined the work of an expedition to southeastern Europe in which he and Doctor Plotz had taken part. The expedition was sent out in June, 1915, by Mt. Sinai Hospital and carried on its work under the auspices of the American Red Cross. The original plan had been to limit the work to Serbia, but after the invasion of that country, the investigations were extended to Bulgaria and to Volhynia, Russia, and Galicia at the invitation of the Bulgarian and Austro-Hungarian governments. After reviewing the previous work of the authors and the recent confirmatory work of European bacteriologists, the results of the authors' recent investigations were reported. The bacteriological studies made upon sixty-four individuals with the disease demonstrated that *Bacillus typhiexanthematici* was regularly present in the blood of people suffering from the typhus fever of eastern Europe. In Volhynia, anaerobic blood cultures were positive in nineteen out of twenty-four cases of typhus fever, or seventy-nine per cent. of the cases studied. In the Balkans, where blood cultures often could not be placed in an incubator until four or five days after they were taken, the percentage was lower, the organism being recovered from the blood in only nineteen out of forty cases, or forty-seven and five tenths per cent. It was furthermore found that the organism was regularly present in the blood from the very first day of the disease.

The relative bacteremia was also proportional to the severity of the disease. For example, in the

Russian typhus, in which the mortality was 5.5 per cent., and in the Balkan 1915-1916 typhus, in which it was eleven per cent., the bacteremia was greater than in the New York series, in which the mortality was negligible 0.2 per cent.; it was much less than in the Mexican typhus mortality, about twenty per cent., or the severe Balkan type of the disease mortality, eighteen to sixty per cent. It was furthermore found that during chills enormous numbers of organisms might be present in the blood, the maximum being 1,183 colonies in thirteen c.c. of blood. In another blood culture made on a patient during the initial chill on the first day of the disease, 168 colonies developed in twelve c.c. of blood. Morphologically, culturally, and serologically the organisms recovered from these Russian and Balkan cases were identical with those originally recovered from the New York cases of the disease. *Bacillus typhiexanthematici* had, therefore, now been recovered by the authors and others from typhus fever patients in the United States, Mexico, Serbia, Bulgaria, Austria, and Russia.

The maximum titre of agglutinins for *Bacillus typhiexanthematici* in the blood of the cases studied was one to 1,600; the average was one to 200. As a result of systematic studies carried out in 100 cases of typhus fever it was found that agglutinins usually first appeared in the blood on about the tenth or eleventh day of the disease or at about the time when the temperature began to break. The curve of the development of specific agglutinins in typhus fever was therefore a typical immunity curve.

An interesting feature was that during the course of the above work, specific agglutinins and complement fixation antibodies were found in the blood of twenty normal individuals in amounts only otherwise observed in convalescence from typhus fever. None of these people had ever shown any clinical manifestations of typhus fever. These twenty individuals were either doctors, nurses, or male attendants in typhus hospitals where they were constantly handling typhus patients, or they were peasants who had been living with relatives or friends ill with the disease. As these twenty contacts were the only individuals, aside from typhus convalescents, in whom such findings were made, it was reasonable to assume that during the time of their exposure to typhus fever they had actually been infected with the bacilli in quantities insufficient to induce the clinical manifestations of the disease, but had reacted with the production of specific antibodies. Such individuals act as carriers of infected lice and become the agents of their distribution throughout a community.

**Studies in Prophylactic Immunization with *Bacillus typhiexanthematici*.**—Dr. H. Plotz said that it had been shown that in endemic typhus fever in New York (Brill's disease) and in endemic typhus fever in Serbia, Bulgaria, Russia, and Mexico, a new organism was regularly found and had been cultivated. It occurred in greater numbers early in the disease and during chills and had been found in the blood of infected guineapigs. The organism was pathogenic for guineapigs in early subculture. Specific agglutinins, precipitins, opsonins, and complement fixing antibodies were regularly present in



the blood mainly after the crisis. The same organism had been cultivated from infected lice. Bearing these facts in mind, it was considered advisable to use the organism as a means of prophylaxis. Vaccination was carried out in Serbia, Bulgaria, Russia, and Mexico during the winter of 1915-1916. The vaccinations were restricted as far as possible to those persons who were most exposed to infection, such as doctors, nurses, and orderlies. In addition members of many other hospital units were vaccinated and in a few instances small military groups. The reactions following vaccinations were very slight. Among the 5,251 vaccinated individuals in Bulgaria, there occurred only three cases of typhus fever, of which one died. The exact figures for the incidence in nonvaccinated individuals could not be obtained, but it was definitely known that the incidence was much greater.

In the town of Uskab there were five military hospitals and vaccination was carried out in four. The unvaccinated were in a German sanitary unit, well trained in the methods of getting rid of lice. The Bulgarian hospitals, on the other hand, were very often louse infected. In these four hospitals no house infection occurred after vaccination was instituted, while in the nonvaccinated hospital, thirty-four house infections occurred. In the town of Gornjiemier, in Bulgaria, many cases occurred among the personnel of the hospital before vaccination was done. During the course of the vaccination, ten days, four more cases developed among them. After completion of vaccination, although 300 cases were admitted in the subsequent three weeks, no further house infection occurred. In Volhynia 3,169 persons in forty-six institutions were vaccinated and up to May, 1916, there occurred only three cases of typhus fever among the vaccinated persons. In all, about 2,000 people were vaccinated in Mexico, but owing to the fact that the men carrying on the work had to leave Mexico because of disturbed political conditions, no statistics were available. It must be stated, however, that two members of the expedition became infected with typhus fever. Whatever reports had come from Mexico up to the present time seemed to be favorable.

Altogether 8,420 persons, members of 109 hospitals, sanitation and other units in Serbia, Bulgaria, and Volhynia were vaccinated during the epidemic of 1915-1916, and of this number only six developed the disease during the four months of the epidemic. The experience in the Balkans and Volhynia during the winter and spring of 1915-1916 with the vaccine made of *Bacillus typhixanthematici* would therefore seem to indicate that it was capable of reducing the incidence of the disease, although it did not produce an absolute immunity to typhus fever.

Dr. GEDIDE A. FRIEDMAN said in regard to the clinical aspect of the subject of the evening, he had observed extensively typhus fever in Russia during three epidemics and he had also seen many sporadic cases. He was glad to hear this evening a confirmation of the opinion he expressed six years ago in the *Archives of Internal Medicine* about ambulatory typhus cases. He had often seen such patients, sometimes with high temperature, who gave a his-

tory of having been sick five or six days. It interested him to hear of the severe chills in some of the cases seen in the Balkans. It was a peculiar fact that typhus fever manifested itself in the beginning with chills which were not seen in any other disease, except perhaps malaria, and he had seen cases where the chills lasted for hours. He had occasionally observed chills in children but very rarely; commonly typhus in children did not begin with a chill, or perhaps a slight chill might be overlooked. The mild course of the typhus tabulated in his statistics might be explained by the fact that most of his patients were Hebrews and he had emphasized the fact that the course of typhus in some races, such as the Hebrews and Arabs, was mild and the mortality was not so high as among other races. The most severe cases were among Russian peasants. As to the body louse being the transmitting agent he could add from his own experience that this was probably true because typhus was a disease of the poorer classes. He had rarely seen it among the well to do.

Dr. NATHAN E. BRILL said that he was convinced that their results marked the culmination and completion of all experimentation on typhus fever, and subsequent work by other observers would prove to be merely corroborative. There was not the slightest doubt that *Bacillus typhixanthematici* as discovered by Dr. Harry Plotz, was the cause of typhus fever. Typhus fever existed clinically in two distinct forms: the epidemic and the endemic. There was no doubt that the body louse was the agent of transmission of the epidemic form of the disease to man, but there was some doubt whether it was the only agent concerned in the transmission of the endemic form of typhus fever and for the following reasons: The body louse was active in cold and inactive in warm temperatures. This explained many of the epidemiological features of epidemic typhus fever, a disease chiefly confined to the colder regions of the earth, and when it did occur in warm latitudes it was restricted in the main to the highlands where the average daily temperatures were low. All statistics, English, German, or Russian, in all of which countries epidemic typhus fever had repeatedly appeared, showed that this form of the disease was rampant in the winter months and diminished in severity and in the number of infected people as the summer approached, when it usually disappeared completely. There could, therefore, be no doubt that by far the greater number of cases of epidemic typhus fever cases occurred in the winter months.

On the other hand, study of the factors which related to the endemic form of typhus fever as it existed in New York would show that by far the greatest number of cases suffering from endemic typhus fever occurred in the summer months when, according to the investigators, the body louse was inactive and did not live. If then the body louse were the sole agent in the transmission of the disease, why should the larger number of the endemic cases occur in the period when the body louse was most lethargic and inactive, and the smallest number of cases occur in the winter months when that parasite was said to be most active? Either views in reference to the effects of temperature on the body louse, which seemed fairly well established, would have



to be modified or some other agent of transmission of the infection of endemic typhus fever would have to be sought.

Another argument in support of this view was furnished by the fact that house and family infection of the endemic form of the disease practically did not exist. In over 400 cases of this form of the disease as observed by the speaker personally, he had never seen more than one member of a family affected by the disease at even approximately the same time until the past spring at Mt. Sinai Hospital, when the first instance of nearly simultaneous infection occurred in husband and wife. There was not even one case of infection in another member of the family group or in the same house. If the body louse transmitted the endemic form of the disease, it would be natural that in the marital relations, in a large number of instances the wife would be infected by the body lice of an infected husband, or that the husband would be infected by the typhus infected lice of the infected wife. Such infections were extremely rare. Therefore, while it could not be said that the body louse was not the agent in the transmission of endemic typhus fever, more positive proof was needed than had been offered that there was no other source and agent of infection in the endemic form of the disease.

Dr. EMANUEL LIBMAN said that the observations made by Doctor Baehr concerning the return of the Widal reaction during a course of typhus fever in persons having had typhoid fever or having been vaccinated against typhoid fever, were of great interest. The late Professor von Leube, in a lecture given in New York in 1908, showed that in a patient who had a Widal reaction and had lost it, the reaction could be brought back temporarily by giving the individual a full meal or a hot bath, the phenomenon being due to hyperemia of the organs concerned in the making of antibodies.

It appeared probable that in the body of the louse the virulence of the organism was maintained and increased. The question arose whether the organism underwent any recognizable change coincident with the development of the virulence. It seemed very suggestive that the virulence was connected with some chemical change in the organism which made it respond in a different fashion to the Gram stain. In future in looking for the organism in the blood of individuals suffering from typhus fever, it would be important to look for Gram negative organisms as well as for Gram positive. Caution would have to be observed because there occurred very frequently in normal blood a body which was not to be distinguished morphologically from the Gram positive bacillus. In the first culture of the organism from human beings, it was not uncommon for either, or for some organisms present, to react negatively to the Gram stain.

The observations on the development of antibodies in individuals exposed to typhus fever, who had not manifested other evidence of the disease, was a finding of great value because it made it important in attempting to find the carriers of other diseases to test the blood for antibodies and not to look for organisms on the mucous membranes only.

### *Stated Meeting Held March 1, 1917.*

Dr. EDWARD D. FISHER, Vice-President, in the Chair.

**The Bacteriology of Influenza.**—Dr. WILLIAM H. PARK, of New York. This paper appears on page 529 of this issue.

**The Clinical Types of Influenza.**—Dr. N. E. BRILL, of New York. This article is published on page 530 of this issue.

**The Treatment of Influenza.**—Dr. SAMUEL A. BROWN, of New York. This paper is given in full on page 536 of this issue.

**The Epidemiology of Influenza.**—Dr. HAVEN EMERSON said that in using the word epidemiology when speaking of influenza one was on uncertain ground as the primary facts upon which epidemiological studies were based were, and would continue to be, unknown until cases of this disease and deaths from it, as those from other diseases of the respiratory tract, were reported correctly on a basis of a specific etiological factor instead of on a basis of morphology or symptom complex. Although in epidemics, influenza might attack as many as forty per cent. of a community, the identity of so called influenza was based on clinical facts rather than on correct or verified etiology. In other words, influenza, an acute and communicable disease due apparently in all cases to invasion through the upper respiratory tract by the influenza bacillus of Pfeiffer, was not identical with the infectious colds called grippe or influenza by the clinician and certified commonly as a cause of death.

With this proviso, it might be interesting to note that deaths from influenza did not appear on the records of mortality of the Department of Health of the City of New York previous to 1890. Since 1890, when part of the great pandemic of 1889-1890 swept from east to west, from Asia through Europe and to the west coast of the United States of America, there had been many deaths attributed to influenza, but as the reporting of the disease had not been required there were no data as to its incidence or case fatality. In the epidemic of 1889 it was said that the death rate in Germany varied from 0.1 per cent. among army groups to 0.5 per cent. among the general civilian population.

As far as the incidence could be estimated from the report of deaths, one must conclude that it ran exactly parallel with the incidence of pneumonia and bronchitis from all causes. Its seasonal occurrence in interepidemic periods was wholly different in duration from the accepted duration of epidemics where observed in limited community groups, usually four to six weeks. Deaths from influenza occurred in small numbers during the warm months of the year, but as the weather became cool and people closed their windows they became more numerous. At some time between the middle of December and the middle of March the deaths reached their maximum each year, gradually diminishing until May, when, in this climate, the windows were again opened and there was a rapid disappearance of respiratory infections of all types.

There were no constant characteristics of the incidence or deaths from influenza as to age and sex of those attacked, in any way different from the facts upon these points observed in bronchitis and

pneumonia due to other microorganisms. It was generally observed that there was a higher case incidence and mortality among men than among women, possibly because of the greater exposure of the men to contact infection.

From what was known of the presence of the influenza bacillus in nasal and throat discharges of patients and carriers, and from the bacteriological evidence that the vitality of the organism was lost rapidly if moisture was withdrawn, and that it could readily be recovered in viable state for as long as four hours after discharge from the nose, if suspended in moist droplets, it might properly be inferred that the infection was passed by personal contact, using that term as including all means of conveying the nasal or mouth discharge from person to person by direct or indirect means. There was no reason to suspect or consider an intermediate host, and no reservoir of the disease was known outside of the human body. If this summary of present knowledge of the subject had any value or bearing upon the prevention and sanitary control of influenza, it was equally applicable in dealing with practically all other similar respiratory affections grouped under the headings of bronchitis and pneumonia.

The prevention or control of influenza, infectious colds, and pneumonia consisted primarily in the education of the public and the individual sick person in the elements of personal hygiene. The sick should always be separated from the well, especially during the febrile stage, and this might be expected to prevent house epidemics and epidemics in institutions, especially for the tuberculous, for the aged, and for infants. Beyond this, the brief recommendation of Rosenau indicated sufficiently the promising lines of endeavor: "The danger from the use of the common drinking cup, the roller towel, kissing, droplet infection, handkerchiefs, pipes, toys, soda water glasses, spoons, and other objects recently mouthed should be emphasized; spitting ordinances should be enforced, ventilation and overcrowding of street cars should be corrected, and dust allayed."

Dr. MARTHA WOLLSTEIN said that her experience with influenza had been with young children at the Babies' Hospital, where for ten years careful studies of the respiratory diseases had been made with the aid of the laboratory as well as clinically. Bacterial studies of the sputum were compared with control studies of nonrespiratory cases for purposes of comparison. Whatever might have been the clinical picture of the disease termed influenza, or grippé in the earlier epidemics, or even in the pandemic of 1889-1890, it was certainly true that those terms had been loosely applied in recent years to include a number of cases of infectious colds in which Pfeiffer's bacillus was not found. Hence the value of the finding of this bacillus was regarded with skepticism, for there were many negative bacteriological findings in the reported cases.

Several years ago the Babies' Hospital studies showed that in cases suspected, from the clinical symptoms, to be suffering from influenza, Pfeiffer's bacillus was proven to be present in the sputum in seventy per cent., while in only twenty-three per cent. of unsuspected cases was this organism found. A certain number of the twenty-three per cent. were

carriers in whom the bacilli persisted after an attack of influenza. This was illustrated by the case of a nurse in whose sputum the bacilli were found for a period of over two months. Among babies it had been found that not as many as fifty per cent. harbored the bacilli of influenza during the winter months as had been reported among adults. In Doctor Wollstein's experience, *Bacillus influenzae* was not often found in the nose, and in the nasopharynx it occurred in only twenty per cent. of the cases examined, even when the organism was present in the sputum. The real habitat of Pfeiffer's bacillus was in the smaller bronchi, where it might persist for months and be the cause of recurrent attacks of influenza. Such a case had come under observation in a young child who within three months had three respiratory attacks, during all of which the bacillus was found in the bronchial secretions.

The influenza bacillus was not so often the cause of otitis media as was usually supposed. During the present winter, only one out of twenty-five cases of otitis media showed *Bacillus influenzae* in the pus, while during the same period of time there had been 155 cases showing the bacillus in the sputum cultures. The bacillus had been found in the pus from a retropharyngeal abscess in several instances. It was capable of causing a purulent leptomeningitis also, and such a case was always accompanied by bacteremia. At autopsy this bacillus had been found in pure culture in cases of bronchopneumonia, which always showed much congestion with many intraalveolar hemorrhages and marked polymorphonuclear leucocytic infiltration of the alveolar and bronchial walls. *Bacillus influenzae* in pure culture never caused a lobar pneumonia, though they not infrequently accompanied the pneumococci in such cases.

Immunological studies with a large number of strains of *Bacillus influenzae* had shown that in the ordinary case of influenza the bacilli in the respiratory tract were of low virulence, while those cultivated from the heart's blood, the meninges, and occasionally the lungs were of marked virulence for animals, such as rabbits and monkeys. It had been further shown that the nonvirulent respiratory strains formed no immune bodies, or only small amounts, while the virulent strains formed immune bodies in much larger amounts; hence the lack of immunity after an ordinary attack of influenza.

Dr. FREDERICK H. BARTLETT said that one should be careful in making the statement that because Pfeiffer's bacillus was present in the bronchial secretions, the clinical condition was influenza. He illustrated this by several temperature charts of cases coming under different diagnoses. The first was that of a child suffering from mild bronchitis with influenza bacilli in the sputum. The temperature ran irregularly from 105° to 94.4° F. The chart represented a fairly typical temperature course of influenza in infants as seen in hospitals. The temperature chart of another child of three months suffering from cerebrospinal meningitis of the epidemic form was puzzling. Clinically it suggested influenza, and cultures from the bronchial secretions showed the influenza bacillus. Serum injections for cerebrospinal meningitis were discontinued and the



temperature dropped, indicating that this was not influenza. Routine examination of another child of seven months showed bronchopneumonia with normal temperature, scattered rales, slight consolidation, and some bronchial breathing. From sputum cultures Pfeiffer's bacilli were isolated. The temperature was so different from what was regarded as the influenza type as to be remarkable. The diagnosis of bronchopneumonia was easy, but the question was, did the presence of the influenza bacillus in the secretions constitute this a case of influenza-bronchopneumonia? The influenza organism was undoubtedly important in influencing the course of temperature in certain pathological lesions, but one should be careful in making a statement that a given disease was influenza because the bacilli were present. It was not easy to make a true diagnosis of influenza.

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Les Dysenteries, le choléra asiatique, et le typhus exanthématique.* Par H. VINCENT, médecin-inspecteur de l'armée, membre de l'Académie de médecine; et L. MURATET, chef des travaux à la faculté de médecine de Bordeaux. (Collection horizon précis de médecine et de chirurgie de guerre). Paris: Masson et Cie, 1917. Pp. 181.

This work deals with the dysenteries, Asiatic cholera, and typhus fever, all of which diseases have been encountered, to a greater or less extent, during the present war. The dysenteries in the Near East have been common amongst the white troops, especially in Egypt and Mesopotamia. Concerning amebic dysentery caused by the *Entamoeba histolytica*, the authors write at some length. Although they agree with the great majority of those who have met with and studied this form, they are not so enthusiastic as some with regard to the therapeutic virtues of emetine hydrochloride given hypodermically. They are of the opinion that this drug is best used in conjunction with arsenobenzol. Asiatic cholera and typhus fever are discussed exhaustively, but no mention appears to be made of the work of Plotz and of the American medical men who went to Serbia to investigate the causes of the disease. However, the book provides an excellent reference work to those who desire to make themselves acquainted with the views of French medical men regarding these diseases.

*Granuloma Venéreo.* Dr. H. C. DE SOUZA ARAUJO. Trabalho do Instituto Oswaldo Cruz. Prefaciado pelo Dr. FERNANDO TERRA, Professor de Clínica Dermatológica na Faculdade de Medicina do Rio de Janeiro e Presidente da Sociedade Brasileira de Dermatologia Apresentado ao Primeiro Congresso Médico Paulista. S. Paulo, Dezembro de 1916. Rio de Janeiro: Companhia Lithographica Ferreira Pinto, 1917. Pp. 246.

This thesis is fully up to the high standard of former works coming from the Oswaldo Cruz Institute in Rio de Janeiro. It deals with venereal granuloma or serpiginous ulcer of the genitals and must have been the result of a tremendous amount of work, judging from the very complete review of the literature. The causative micro-organism, *Calymmatobacterium granulomatis*, is minutely described as shown in beautifully colored plates. In addition to the plates of the bacteriological and histological findings there are several excellent color photographs of the clinical appearance of the ulcer in the patient. As an appendix there is added a synopsis of the fifty-nine cases observed in Brazil up to December, 1916. As to treatment, tartar emetic seems to have given uniformly good results in this series of cases. To those who are not familiar with the work being done in South America this publication would come as a pleasant surprise.

## After Office Hours

"The Return of K. of K." in *McClure's* for March is a story of the Great War from a new angle, as it will be seen when the babies of today are old men.

\* \* \*

The *Pictorial Review* for April is full of milk and water and one good story, as full of spirits as the Irish with which it deals, "The Mad Man, the Dead Man, and the Devil" by Seumas MacManus.

\* \* \*

A little sermon in the form of a story, or more properly, an episode, is "The Danger of Safety" in the *Saturday Evening Post* for March 10. It will give an uncomfortable jolt to many a physician who has his funds in "gilt-edged" investments.

\* \* \*

A homely heroine is a dangerous experiment, but Bozeman Bulger has attempted it, not unnecessarily, in *Everybody's* for March.

\* \* \*

In "Fire and Flavor," Doctor Wiley in *Good House-keeping* for March, disposes of the raw food fad, saying "that we have no convincing evidence that a high temperature rightly applied for the purpose of developing flavor and digestibility has any noted deleterious effect upon the vitamins of food," and he discusses quite entertainingly this whole question of flavor as a part of the food problem.

\* \* \*

Dasheen, a starchy corn, is a staple article of food for millions of people in tropical and subtropical countries. The Bureau of Plant Industry of the U. S. Department of Agriculture is endeavoring to popularize its growth in the Southern United States; it does not stand the cold winters of the north. Some interesting notes are given on this new vegetable in the *Journal of Home Economics* for February, which also has an interesting summary of recent advances in our knowledge of digestion and absorption by Louise Stanley, Ph. D.

\* \* \*

*The Overland Monthly* always contains something interesting about the Pacific Coast. In the March number there are two articles of sanitary and medical interest. One of these deals with the education of the Alaskan natives which is along strictly practical lines, and the other tells of the excellent work being done by Dr. George W. Daywalt in his campaign against mosquitoes in the Philippine Islands.

\* \* \*

Remarkable things happen in that remarkable city, San Francisco. One of the most striking phases of the antive campaign in that city was the appearance of three hundred women of the tenderloin in the church of a pastor who had undertaken a crusade against them. One of their number spoke fluently, intelligently, and convincingly to the effect that such a campaign as was being carried on was not a cure, was not even a palliative, but merely produced a shift of commercialized vice from one locality to another. This incident is illustrated and described in the *Sunset Magazine* for March.

\* \* \*

"If the physician strays upon the stage," says the editor of *Scribner's Magazine* in the March issue, "where he is far less frequent than either the lawyer or the minister, he is sent for professionally. He is bidden for a purpose; he is there to cure or to operate or to declare that the case is hopeless. He may be the guardian angel, but it is as a medical man that his wings sprout and that he is seen soaring aloft. He may be a demon of selfishness, but he is ever and always represented as a physician, whether general practitioner or specialist. Even when he is held up to scorn, as he was by Molière more than two centuries ago, or as he has been more recently by the lively humorist whom a French critic has rashly hailed as the 'Irish Molière,' the doctor, whatever his dilemma may be, is a doctor to the bitter end." Not always does a physician fare so well on the stage, however, for in "Our Little Wife" there is a philandering physician who makes quite a pitifully comic figure in his indiscreet attentions to an all too willing heroine.



## Meetings of Local Medical Societies

MONDAY, March 26th.—Medical Society of the County of New York.

TUESDAY, March 27th.—New York Academy of Medicine (Section in Obstetrics and Gynecology); New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; New York Otolological Society; Onondaga Medical Society, New York; New York City Riverside Practitioners' Society; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York; Therapeutic Club.

WEDNESDAY, March 28th.—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Surgical Society; New York Society of Internal Medicine; Schenectady Academy of Medicine.

FRIDAY, March 30th.—Academy of Pathological Science, New York; Hospital Graduates' Club, Brooklyn.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending March 14, 1917:*

BRYAN, W. M., Passed Assistant Surgeon. Granted one month's leave of absence from March 14, 1917.

CUMMING, H. S., Surgeon. Reassigned for duty in the Hygienic Laboratory, Washington, D. C., effective February 14, 1917.

ESKEY, C. R., Assistant Surgeon. Directed to proceed to El Paso, Texas, stopping en route at Washington, D. C., for duty in connection with the prevention of the introduction of typhus fever in the United States; after two weeks directed to proceed to Eagle Pass, Texas, for the same duty.

HURLEY, J. R., Passed Assistant Surgeon. Directed to give a course in first aid to the Public Health Service Unit of the United Service Section of the American National Red Cross.

KEARNY, R. A., Passed Assistant Surgeon. Relieved from further duty on Coast Guard Retiring Board, convened by Department order of November 3, 1916.

LOMBARD, M. S., Assistant Surgeon. Relieved from duty at Hygienic Laboratory, Washington, D. C., directed to proceed to New Orleans, La., and take the first available steamer for Tampico, Mexico, for duty in the office of the American consul.

McMULLEN, John, Surgeon. Directed to proceed when necessary to points in the States of Kentucky, Tennessee, Virginia, West Virginia, and such other States in the Appalachian region as the Bureau may indicate, for the purpose of supervising the operations of trachoma hospitals, conducting field clinics and making investigations in regard to the prevalence of the disease.

MATHEWSON, H. S., Surgeon. Granted two days' additional leave of absence from February 25, 1917.

PRATHER, D. J., Assistant Surgeon. Relieved from duty at Ellis Island, N. Y.; ordered to proceed via St. Louis, Mo., to Okmulgee County, Okla., for duty in studies of rural sanitation.

SCHERSCHESKY, J. W., Surgeon. Ordered to proceed to Washington, D. C., on March 16, for a conference with the Bureau in regard to investigations of industrial hygiene.

SYDENSTRICKER, Edgar, Public Health Statistician. Ordered to proceed to points in Spartanburg and neighboring counties for the purpose of collecting epidemiological data relating to pellagra.

WALLER, C. E., Assistant Surgeon. Granted fourteen days' leave of absence from March 7, 1917.

WAYSON, N. E., Assistant Surgeon. Granted two days' leave of absence on account of sickness from February 28, 1917.

WHEELER, G. A., Assistant Surgeon. Directed to visit places in Spartanburg county and neighboring counties of South Carolina for the purpose of collecting data relating to pellagra.

WYNNE, R. E., Assistant Surgeon. Relieved from duty at Stapleton, N. Y.; ordered to proceed via Washington, D. C., Cincinnati, Ohio, and Lawrence County, Ind., to St. Louis, Mo., for duty in studies in connection with rural sanitation.

### Boards Convened.

Board of commissioned medical officers convened at the Bureau March 7, 1917, to examine Surgeon W. J. Pettus, to determine his fitness for promotion to the grade of senior surgeon. Detail for the board: Assistant Surgeon General A. H. Glennan, chairman; Assistant Surgeon General W. G. Stimpson, member; Senior Surgeon Fairfax Irwin, recorder.

## Births, Marriages, and Deaths

### Married.

BLANCHARD-BLAIR.—In Denver, Colo., on Thursday, November 30, 1916, Dr. Winthrop E. Blanchard and Miss Ramona Blair.

GREENWOOD-WHIPPLE.—In Pawtucket, R. I., on Thursday, March 8, Dr. Allen Greenwood, of Waltham, Mass., and Miss Hope H. Whipple.

### Died.

BETTS.—In Philadelphia, Pa., on Thursday, March 8, Dr. Thomas Betts, aged seventy-three years.

COIT.—In Newark, N. J., on Monday, March 12, Dr. Henry Leber Coit, aged sixty-three years.

EAGLE.—In Troy, Ohio, on Saturday, March 3, Dr. Peter F. Eagle, aged sixty-one years.

FORD.—In Springfield, Ill., on Sunday, March 4, Dr. Noel Bertram Ford, aged thirty-five years.

FRENCH.—In Frankton, Ind., on Monday, March 5, Dr. William French, aged seventy years.

HALE.—In Junction City, Ark., on Saturday, March 3, Dr. G. T. Hale, aged eighty-three years.

HAZELTON.—In Barnett, Vt., on Thursday, March 1, Dr. Hiram J. Hazelton, aged seventy-nine years.

HESSER.—In Larue, Ohio, on Monday, March 5, Dr. S. M. Hesser, aged fifty-five years.

HOLLOPETER.—In Philadelphia, Pa., on Monday, March 12, Dr. Ralph R. Holloper, aged thirty years.

ISERMAN.—In Florida, on Friday, March 9, Dr. J. C. Iserman, of Topeka, Kan., aged eighty years.

MCCARTHY.—In Baltimore, Md., on Wednesday, March 7, Dr. John T. McCarthy.

MCCLEARY.—In Pittsburgh, Pa., on Monday, March 5, Dr. William W. McCleary, aged fifty-six years.

MCDONALD.—In Schenectady, N. Y., on Thursday, March 8, Dr. George E. McDonald, aged seventy-six years.

MATSON.—In Pittsburgh, Pa., on Saturday, March 10, Dr. Eugene G. Matson, aged fifty-eight years.

MEIGS.—In Lowell, Mass., on Friday, March 9, Dr. Joseph V. Meigs, aged fifty-two years.

MORRIS.—In Wheeling, W. Va., on Sunday, March 4, Dr. John W. Morris, aged sixty-four years.

MOURY.—In Atlanta, Ga., on Saturday, March 10th, Da. David Moury, aged eighty years.

NEWMOMER.—In Baltimore, Md., on Saturday, March 10, Dr. Elmer Newcomer, aged twenty-eight years.

O'REILLY.—In New Orleans, La., on Friday, March 9th, Dr. William T. O'Reilly, aged fifty-five years.

RICE.—In Sunbury, Pa., on Saturday, March 10, Dr. Fred Rice, aged forty-one years.

ROZIER.—In Fayetteville, N. C., on Sunday, March 4, Dr. Stephen Rozier, aged ninety-three years.

STEPHENS.—In De Land, Fla., on Monday, March 5, Dr. William R. Stephens, aged forty-seven years.

SYKES.—In North Warren, Pa., on Sunday, March 11, Dr. Robert H. Sykes, aged fifty-one years.

WILL.—In San Antonio, Texas, on Tuesday, March 6, Dr. Frederick J. Will, of Des Moines, Iowa, aged fifty-eight years.

WILLIAMS.—In Syracuse, N. Y., on Sunday, March 11th, Dr. Marcus J. Williams, aged sixty-three years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal <sup>and</sup> the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 13.

NEW YORK, SATURDAY, MARCH 31, 1917.

WHOLE No. 2000

## Original Communications

### STUTTERING RELIEVED BY REVERSAL OF MANUAL DEXTERITY.\*

*With Remarks on the Subject of Symbol Amblyopia.*

By J. HERBERT CLAIBORNE, M. D.,  
New York.

In a paper read by me before the Section of Ophthalmology, New York Academy of Medicine, February 19, 1906, and subsequently before the Section on Diseases of Children of the American Medical Association, June, 1906, entitled Types of Congenital Symbol Amblyopia, I referred to the condition generally known as congenital word blindness, described by Pringle Morgan and others. Children affected with this condition either cannot learn to read at all or learn with great difficulty. My paper was based upon the study of two boys who had shown themselves so backward in learning to read that I suspected that they suffered from congenital word blindness. Owing to the shyness of both of them, I was unable to study them as carefully as I wished, but I presented my views after as complete an investigation as possible.

The first boy was unable to recognize his letters accurately; he miscalled them and wrote them wrong. The letter "e" seemed particularly difficult to him, and he kept calling it "s." Since he was unable to recognize letters, he likewise was unable to recognize words. In the matter of mathematics and in other respects he appeared to be fairly bright, seemed to understand words and commands, recognized objects and their uses, and according to his mother was talkative, even garrulous, at times, and played with other boys in the street in a normal manner. From time to time he would write at dictation and copy pretty well. He wrote his own name well, apparently automatically. He was right handed, and was able, as I stated, to recognize figures with ease and accuracy, though he appeared to have marks of slight motor aphasia. He was evidently word amblyopic for written and printed letters, but not for figures. The expression word amblyopia is used advisably, since to call this a case of word blindness would be inaccurate. The same difference exists between word amblyopia and word blindness, as exists between amblyopia and amaurosis or blindness. The lesion lies in the cerebral cor-

tex, probably in the region of the angular gyrus on the left side, seeing that the boy is right handed.

The second boy, nine years old, in a higher walk of life than the first, was brought to me by his father to see if there was anything the matter with his eyes, since he had not been able to learn to read easily. He was a bright boy, comprehended sentences and words perfectly when spoken, and knew objects and their uses, but the moment he was set to look at written or printed words or write at dictation, he showed all the signs of shyness and lack of selfconfidence. He recognized his letters without any error, but when he put the letters together to form words, his difficulty began. He called "how," "man"; "are" he called "ray"; "made," "ham" and "man"; "ham" he called "eat." Here we recognize a faint association of ideas. When asked to write the word "wood," he wrote "dans"; "dog," "dad"; "by," "bi"; "mamma," "mie," and he called "papa," "pipa"; the word "eye" he could not spell or pronounce. He wrote his name accurately and quickly but apparently automatically, but his first name, James, which he had written with a "y," he called "this." My name "Herbert" he wrote from dictation letter by letter, "Herbdrd" and called it "purram." When asked to make figures, his whole demeanor changed and he approached the task cheerfully and with confidence. He made figures accurately, and did several sums in addition and subtraction as quickly as any child of his age could. This boy was not letter amblyopic, but he was word amblyopic; he recognized the component parts of a word, and could pronounce each letter in each word, but with the exception of several well known words, such as "cat," "rat," and "dog" he could not make the sound which the combination of letters signified. He seemed to have the faculty of occasionally remembering the pronunciation fixed by authority. There is likewise in this case a defective audifit. His vision was normal, fields of vision normal, and he was right handed. Owing to his shyness, I was not able to see him again. I conceived the lesion to lie in the left cerebral cortex in the same region as in the preceding case.

In the papers referred to, I made the radical suggestion that children with this form of amblyopia might be corrected by reversing what I described as the dexterity—in short, causing those who are right handed and have this defect to become left handed, and those who are left handed with this de-

\*Read before the Medical Association of the Greater City of New York, January 15, 1917.

fect to become right handed. This suggestion is based upon the admitted fact that in right handed people, the centres for speech and allied acts lie on the left side of the brain, and in left handed people, on the right side of the brain, and upon the assumption that the condition in question is produced either by a lesion at the speech centres, either torpidity or arrested development of the cells constituting it. Since it is improbable that corresponding cells on both sides should be similarly affected in a given individual, the reasonableness of the idea becomes evident. I suggested at that time that experimentation should be made along that line.

It should be stated that at present no post mortem proof of the assumed congenital lesions in these cases is extant. In former papers I drew the following conclusions: 1. There is an incomplete word blindness which is congenital and which should be called word amblyopia. 2. There is doubtless an incomplete congenital figure blindness which may be called figure amblyopia. This may be the basis of the inability of some children to learn mathematics as easily as their general intelligence would lead one to expect. 3. These two forms of amblyopia may be called symbol amblyopia. 4. There is an incomplete congenital word deafness which should be called amblykousia to parallel the term amblyopia. 5. There is doubtless an incomplete congenital musical note deafness which may be the basis of the inability of some people to remember and appreciate musical notes; this should be called music amblykousia, or amblymusia. 6. When persons with these peculiarities are met in the schools they should be differentiated, properly grouped, and instructed. 7. The basis of the instruction should be repetition coupled with patience. 8. It is reasonable to teach such children to become left handed in order that the speech, symbol, and sound centres on the right side of the brain may be cultivated to the exclusion of those on the left, or as supplemental to the defects on the left.

The idea of applying this change of dexterity to those who stammered or stuttered was suggested by the history of the case of my own son who was born left handed. When he became old enough for this defect to attract the notice of others, which was about the time of the development of his speech, we had him taught French before English. When his left handedness became marked by those who saw him, we decided to change his left handedness into right handedness, and to that end instructed him and forced him to use his right hand in preference to his left. We experienced much difficulty in doing this, but ultimately when we commenced to see some results from our efforts, I noticed he began to stammer and stutter. This continued until he became totally right handed as a matter of habit, though even now at the age of fourteen, he still has a certain amount of dexterity with his left hand and will occasionally slip back to it in some unimportant act. When once his dexterity had been changed, his stammering and stuttering stopped, though occasionally he would have a slight lapse. The lesson which this case taught became immediately obvious to me. In the process of

changing the centre, from the left to the right side of the brain, a certain amount of confusion existed in the matter of commands, until finally the right hand having taken the upper hand, the left side of the brain commanded, and the right was in abeyance. It then occurred to me that changing the dexterity in cases of word amblyopia might be applicable to cases of stammering and stuttering, and to that end in a letter to the *Journal of the American Medical Association*, April 18, 1908, I related the case of my son as herein described, and set forth that suggestion.

On September 29, 1909, Dr. E. Bosworth McCready, of Pittsburgh, who had read this letter, presented a paper before the Section on Medicine, Medical Society of the State of Pennsylvania, entitled Congenital Word Blindness as a Cause of Backwardness in School Children: Report of a Case Associated With Stuttering. The following is an excerpt from Doctor McCready's paper, which I publish with his permission:

CASE.—"R. E. W., aged twenty, with negative family history, is the youngest of four children. He had enteritis when an infant. At the age of four years he had an attack of pneumonia with cerebral symptoms, from which he made a good recovery except that he was rather delicate for some years. He tells me that he had great difficulty in reading from the time he first began to attend school at the age of six years. At the age of ten he was subjected to a severe fright, which was the beginning of his stuttering. He had always been very backward in school and had drifted from public to private schools, to private tutors, until at last his parents, despairing of his ever gaining an education, had placed him in a business school, hoping that he might at least acquire sufficient practical knowledge to take care of himself. Considering him somewhat below par mentally, his parents have always tried, as far as possible, to protect him from ridicule. The patient first applied to me for treatment for stuttering on March 22, 1909. Examination showed a well developed boy in good physical condition.

"Dr. E. W. Day, to whom he was referred, reported nose and throat normal. The patient was wearing glasses for which he had been refracted eleven years before. I referred him to Dr. Edward Stieren, who reported that examination showed a high degree of hypermetropia with a moderate amount of primary atrophy of both disks; color, form sense, and muscular balance were normal. R.V. 6/50 with plus 6—50/ D.S. = V. 6/12; L.V. 6/50 with plus 6—50/ D.S. = 6/25.

"The patient was very shy and selfconscious. His expression was very dull and rather stupid and his movements awkward. His stuttering was so bad that the least attempt to speak seemed to throw him into a state of panic. He, however, entered into the exercises directed toward the correction of his speech defect with a great deal of interest and made rapid progress. I found that when asked to read simple verses and bits of prose that he stuttered as badly as ever, although he could repeat them after me or from memory very fluently. When he was able to enunciate the word he would call it something entirely different from what was printed; for instance, 'saw' was pronounced 'was', 'words', 'wan'; 'at', 'an'; 'sober', 'soder'; 'remember', 'remain'; 'because', 'beauties'; 'justice', 'jessive'; 'form', 'from'; 'wands', 'whines'; 'town', 'down'; 'beneath', 'bent'; 'back', 'bent.' Very few words at all was he able to pronounce even incorrectly without an appeal to his glossokinesthetic centre. He has since acknowledged to me that he often stuttered over a word to hide his inability to identify it. We writes a fairly good hand and is quick at recognizing figures and objects. His sense of touch, smell, taste, and hearing are well developed and accurate. He could copy correctly and could write well from dictation, though he often found it impossible a short time afterwards to read what he had written.

"The patient is a boy of at least average intelligence,



whose visual memory and speech defect combined have not only prevented him from making progress along educational lines, but have also interfered with the proper expansion of his personal characteristics. Necessarily his powers of expression and vocabulary are very limited. He has shown wonderful strength of purpose in following up the treatment directed toward the eradication of his defects and the improvement he has made is most gratifying.

"The object aimed at in the treatment of this patient, after the correction of the speech defect, was the development of the visual word centre in the right hemisphere and the establishment of functional relationship between it and auditory word centre as well as Broca's centre in the left hemisphere. To this end the patient was first taught to use his left hand, as advised by Bastian in the acquired form and later by Claiborne in the congenital form. He was then made to receive frequently repeated impressions of words through every possible avenue, through his auditory centre by hearing words pronounced and hearing himself pronounce them, which last also brought the glosso-kinesthetic centre into play by tracing over words at dictation at the same time pronouncing them himself, thus bringing all the centres involved in speech in accord at the same time. In addition he was given visual impressions of words in as many forms as possible, written, printed on the blackboard, cut out of cardboard, on the spelling board, etc.

"His improvement has been most satisfactory. He can now read a page of ordinary printed matter composed of the more common words almost as quickly as a person with normal visual memory and is able to read for pleasure, a thing he was never able to do before."

In July 5, 1913, I wrote to Doctor McCready asking him to tell me whether he made the attempt to change the dexterity in his case before or after word blindness had been discovered, and he replied that he had made the change afterward; that word blindness had been discovered several weeks only after all the exercises for the relief of stuttering had been instituted; that it was difficult for him to state how long it took the patient to become proficient in the use of his left hand, but he could say that the improvement both in reading and speaking began almost immediately after he had begun to use his left hand; that he noticed very little improvement in stuttering when the speech exercises alone were being used; that he had the boy under treatment for about a year, and that it was toward the end of the year he became able to read for pleasure to himself. He had found complete reversal of dexterity a difficult thing to accomplish in ordinary practice.

CASE.—J. B., now aged seventeen years, was first seen by me in 1909, eight years ago. I had treated both him and his little sister from time to time for some affection of their eyes. I noticed he stammered so badly that it was with difficulty he could make himself understood, and as is usual, he was worse when excited, angry, or abashed. I spoke to his mother in regard to the matter and suggested to her the possibility of curing him. He was a bright boy, and had no difficulty in learning to read or do mathematics. He was strong and healthy, and the only defects were his left handedness, and his stammering and stuttering speech. I explained my method of procedure to his mother and then to him. Both agreed to work together with the end in view. His mother and other members of his family induced him to use his right hand constantly, and corrected him when it slipped his mind, and he himself did his best to recollect it. In order to supplement these efforts, I suggested that he be sent to a school where, not only in addition to writing and drawing, he would be taught to do manual work such as elementary carpentering. He started his new school and his new life in 1909 and commenced to notice an improvement in his speech in the summer of 1910. The improvement continued slowly, but from time to time he

would lose interest and fall back upon his left hand, when he would have a relapse of stuttering. Having learned his lesson, he stuck to his right hand constantly. I saw him last in 1913, when he spoke English, French, and German fluently, with an occasional halt on the letters "w" and "o". He also read without hesitation. Antecedent to the commencement of his treatment, any attempt to read or recite in public was impossible and had to be abandoned. He learned English first and his stuttering started as soon as he commenced to speak.

Following is a letter received from the boy's mother on November 16, 1916, relative to his present condition:

MY DEAR DOCTOR CLAIBORNE: Jere is now almost seventeen; he was eight years old when you first saw him. His stammering was much improved after we had taught him to use his right hand. In fact, he so seldom stammered up to the time he was fifteen that we ceased to give it any thought, but about two years ago he started in again and last winter he really was very bad and could not make the dramatic club at school. He has a splendid command of English for a boy of his age, and as he holds several offices in the school, which at times necessitate his addressing his class, he naturally keenly feels his inability to speak without stammering. As a matter of fact, I do not know how much he used his right hand. I know he writes with it, but am not sure how much he uses it in his school games.

In 1913, he could use both left and right hands; but he used the right much more easily, and used it constantly by preference. Sometimes, in drawing, he had an inclination to use his left hand, and found it easier than the right in this act.

It will be remembered that my son stuttered during the transient stage of change of dexterity, but ceased to do so after it had been established.

When I was a boy of fifteen, I broke my right arm and had it in splints for about eight weeks; during this time I was naturally compelled to use my left hand, and I learned to write and to acquire a deal of skill with it. I could in fact do anything with my left hand that I could formerly do with my right with the exception of throwing a ball, but not with as much ease as I formerly could with my right hand. Nevertheless, I was for practical purposes left handed. Throughout this period I had no trouble with my speech and was as fluent as ever. When the splint was removed I commenced to use my right hand, and finally of course acquired perfect use of it, neglecting my left. I had no difficulty in speech on reassuming my right hand. A large degree of deftness in my left hand still remains and it has been a great advantage to me in the practice of surgery. In all the acts of surgery I am practically ambidexterous.

I herewith append the record of several cases in which during the process of changing the dexterity, from left handedness to right handedness, severe stuttering was produced, so that the parents of the children became alarmed, and ceased to enforce the use of the right hand, allowing them to return to the left. These letters are published by permission:

Cornell University, Ithaca, New York.

Dr. Guy M. Whipple,  
Ithaca, New York.

DEAR SIR: My second boy, Merle Newton Isbell, was born September 23, 1900. On August 18, 1903, I began to correct his tendency toward left handedness. Almost immediately he began to stammer. I was fresh from college, and having learned of the possible danger, immediately

ceased correcting him. He stammered quite a great deal for a week or so, then it gradually diminished and finally ceased altogether. I waited a little while and began again a little more carefully than at first—I was insistent at first. He sat next me at table and I would put his spoon in his right hand and insist on his using it; would put a ball in his right hand and make him throw it, etc. I tried to induce him to use his right hand without seeming to force him. Again he began to stammer much worse than before; immediately I stopped correcting him, but this time it took a longer time to get over it. I was somewhat frightened, fearing I had gone too far and censuring myself for ever attempting to correct him. After a few weeks, as I remember, he gradually got better and once more it finally ceased altogether. I thought I would not attempt to correct him again, but after quite a time, disliking to see him use his left hand, and hating to have him grow up with the habit, so awkward as it seemed to me, I very delicately tried it again. I would place his spoon so the handle would project over the right side of his dish when he was not looking, and in all such ways tried to induce the use of the right hand. He would always pick up the spoon in his right hand but immediately change it over to the left. I had not proceeded long when he began to stammer frightfully. He could hardly talk at all. This time I was really frightened; I communicated with Mr. Lewis, head of the Lewis School for Stammerers, Detroit, Mich. He wrote me that he could do nothing now but when my child reached the age of nine years, if he was no better, to send him to Detroit and he would cure him. He sent me one of his books, which I read with much care. I was thoroughly alarmed, for the boy continued to stammer for a long time. I have never seen any one stammer so badly as he did. There was no holding of the breath and then a sudden explosion of the syllable or word, but a continuous, rapid repetition of the first sound of the syllable of the word he was trying to speak, and these repetitions were long drawn out, so to speak. After a long, long time, months it seems to me now, he gradually became better and finally overcame it entirely. I never attempted to correct him again. He is left handed today in everything, strongly so. He has not stammered since until within the past week or so; he began to stammer, if I remember correctly, four different times since he started to say something to his mother. At first I thought he was playing with her, but after hearing it the third time I asked him and he had really stammered. \* \* \*

*Prof. Edward B. Titchener, Cornell University, Ithaca, New York.*

MY DEAR PROFESSOR TITCHENER: A rather interesting case has come to my notice and I am taking the liberty of asking your advice with reference to it.

A small boy, I should say seven or eight years old, who is left handed and attending school in the third grade, has been urged by his teacher to try to become right handed. In the attempt to do so, being constantly urged by the teacher, a defect of speech nearly equivalent to stammering has developed. Should the attempt to make the boy right handed be continued, or should it be stopped? Any advice that you can give me will be most thoroughly appreciated.

(Signed) J. A. Ford.

*Prof. G. M. Whipple, Cornell University, Ithaca, New York.*

DEAR SIR: In reply to your letter of October 31st, I am sending you under separate cover a reprint of my article on The Inheritance of Left Handedness. As you will see, I was interested primarily in this matter only as a problem in heredity. However, I soon became interested also in the educational significance of left handedness. I have frequently noticed among my own students that those naturally left handed, but trained to write with the right hand, have considerable difficulty in oral expression. In fact, from what I have read I am convinced that an inveterately left handed child will be handicapped for life if forced in the public school to write with the right hand.

At present I am having data collected in the public schools of three Southern States with reference to hereditary left handedness and its relation to certain morbid con-

ditions, especially eye defects and headache, and also to a lack of faculty in oral expression.

I am already in possession of considerable more data than are given in my paper, but have nothing further in shape for publication at this time.

(Signed) H. E. JORDAN,  
(University of Virginia).

It is quite obvious from the above letters that in the attempt to produce right handedness in purely left handed children stuttering may be produced in the transition stage, but, as will be observed, the attempt to change was not persisted in; therefore no one can say whether or not in the cases cited, if the treatment had been persisted in, the stuttering might not have ceased. The symptoms were so alarming in each case that the parents desisted. My own son's case is an exception to all these. His stuttering was very bad indeed, but at the time I never thought to attribute it to the transitional change of dexterity. The idea which I present on this subject came to me a considerable time after he had become completely right handed and had ceased to stutter. In my own case my right arm was in a sling, and there was of course no attempt on the part of the right hand to take command. It would be interesting to know whether, in the cases cited above, if the left hand were put in a permanent sling, and the right hand used constantly, the stuttering would commence again. It is possible that the contention between the two centres may be the cause of the lack of coordination, and I suggest this experiment to those who are willing to undertake it. I do not believe that any permanent harm would be done. There is, as a matter of fact, no reason why those children who are left handed should be right handed except for cosmetic reasons, unless the left handedness is associated with stuttering, stammering, some form of symbol amblyopia, or combination of these defects.

It will be observed from the history of Doctor McCready's case that left handedness was combined with stuttering and letter and word amblyopia, and in the case I report simply with stuttering. The brilliant results obtained in these two cases, it seems to me, offer hope to all such unfortunate ones. In them there was probably no contention between the two centres of the brain, since the cells on one side were apparently abnormal, and those on the other normal; hence the latter easily took command. In the cases of left handedness without stuttering, the cells on both sides of the brain were probably normal and equally vigorous; hence the contention which resulted in the lack of coordination and stuttering. Experiments along these lines should be made in institutions and records carefully kept. The results obtained in Doctor McCready's case and my own cannot be denied or gainsaid, but the whole subject may be said to be in a transitional stage. Future investigations will probably bring out other facts.

I have frequently noticed that those who have a gift for languages, and particularly those who are fluent in speech, privately and in public, either have no predilection for mathematics, or learn it without interest or with difficulty; that those who like mathematics and learn it with ease or have a gift for it,



rarely possess a faculty for languages, and still more rarely are fluent in private or public speech. The two persons with word amblyopia that I have described showed alacrity in figuring and were bright and quick in the learning and doing of mathematics.

Just here I might cite a case of imperfect word amblyopia which has recently come under my observation:

An exceedingly bright girl of seven was brought to me by her mother on account of difficulty in learning to read. This child had no letter amblyopia, but a most decided word amblyopia, and her auditif was very defective. To cite one word to show her defect, I found she knew the word "ox" by sight and could pronounce it, but was unable by putting an "f" in front of it to pronounce "fox." I made this experiment with her in a number of words that she happened to know by sight, and she invariably made mistakes. I would describe this as imperfect *auditif*. This little girl was mortified at school because she could not read with any degree of fluency. In mathematics her mother said she was excellent. I gave her several sums to do, and she was quick, bright, and intelligent, making a strong contrast with her actions when she attempted to read.

I have already referred to my own case in my paper on Symbol Amblyopia; suffice it to say, I have some faculty in learning languages, reading a number of them fluently, and speaking several sufficiently well. This knowledge has been obtained with ease; I likewise may be said to be fluent in my native tongue. As for mathematics, I know nothing about it, never having learned it at school or in after life, but I flatter myself that this is not due to a lack of intelligence but rather to figure amblyopia. I feel quite certain that I can think in a straight line, and draw conclusions consistent with the necessary forms of thought. I should like someone to show me a great mathematician who is at the same time a great orator. As stated likewise in my former paper, I believe the so called lack of card sense is due to figure and picture amblyopia. I think it will be found, as a rule, that good mathematicians are or may be good card players.

The investigations which Professor Jordan and others are instituting, with reference to the association of left handedness with other defects, it is to be hoped, will bring forth still more interesting data on this subject. I would ask if left handedness is not *per se* a sign of degeneracy, and if it is not generally associated with some form of moral obliquity? This question is asked in a broad sense. It would be of interest to know also what proportion of stutterers are left handed. To refer once more to the conclusions I drew in my former paper, entitled Types of Congenital Symbol Amblyopia, already cited in this paper, a ninth conclusion is hereby appended, relative to the matter of stuttering.

9. Experience shows that stuttering associated with left handedness has been cured in one case by changing the left handedness into right handedness in association with vocal exercises, and relieved for two or three years in another by simply changing

left handedness into right handedness without accompanying vocal exercises.

The result in these two cases suggests that the same object may be obtained with reasonable probability in similar ones. The history of several cases shows that stuttering may be produced during the transition from simple left handedness to right handedness, but ceases when the original hand is resumed. The whole subject at present is indeterminate, but offers a wide field for speculation and experiment which may lead to important results.

11 EAST FORTY-EIGHTH STREET.

## TREATMENT OF ABORTION.\*

By GEORGE L. BRODHEAD,

New York,

Visiting Obstetrician, Harlem Hospital.

The treatment of abortion may properly be subdivided into the management of 1, threatened; 2, inevitable; 3, incomplete; 4, artificial; and 5, the septic type of cases. For convenience, we shall consider our subject to include only those patients who have been pregnant for any period up to the end of the fifth month. It is naturally impossible in many instances to know whether we are dealing with a threatened or inevitable abortion, but we have assumed as a general rule following the teaching of the late Dr. T. G. Thomas, that if the cervix was dilated sufficiently to admit at least one finger, the pregnancy was certain to be interrupted, although no hard and fast rule can be laid down.

*Threatened abortion.*—The woman should have absolute rest in bed, light diet, if possible the services of a trained nurse, the bowels should be emptied by gentle laxatives or enemas, and visitors should be excluded. With slight bleeding, even when there is no pain, we have usually ordered small doses of morphine, one tenth grain three times a day. Vi-hurnum is used very extensively, but the writer feels skeptical as to its therapeutic value. The ice bag is also advocated, and is probably of some value, but morphine is the best agent at our disposal. When the bleeding is moderate or profuse, or when there is pain, a hypodermic injection of morphine one sixth grain is given, and repeated according to the necessities of the case, enough being given to relieve the pain. In our opinion, vaginal packing should only be used when bleeding is profuse, or where the patient is bleeding moderately and is living at some distance from medical advice, for no one can foretell when a profuse hemorrhage may occur. We believe that the tampon, although necessary in some cases, is very likely to cause dilatation of the cervix and hence hasten the abortion. I am aware that the tampon is considered by some to be valuable in the control of threatened abortion, but our experience leads us to believe it should be omitted, except under the conditions just mentioned. The amount and character of the bleeding cannot be considered an infallible guide in prognosis, for many patients bleed profusely and still continue along in pregnancy with-

\*Read before the Medical Association of the Greater City of New York, on January 18, 1917.



out further mishap. The patient should be kept in bed until at least several days have elapsed, with no bloody discharge.

*Inevitable abortion.*—With pregnancy up to two and one half months, we may tampon and wait for the completion of the abortion, or dilate and curette at once, or give a full dose of pituitrin (1 c. c.) and repeat after one hour, tamponing or curetting if this plan of treatment is ineffectual. We cannot agree with some authorities that all early cases of inevitable abortion should be curetted at once. Operative treatment in the hands of competent surgeons is safe, but many accidents such as perforation of the uterus and laceration of the cervix have complicated the usually simple operation of curetting, and septic infection not infrequently follows unskillful or careless work. Certainly in the hands of inexperienced men the use of the tampon is safer and is frequently attended with excellent results. In three instances where the patient has had no pain, we have used full doses of pituitrin with very gratifying success, and in a considerable number of this variety of cases where there have been both pain and bleeding, we have had excellent results with pituitrin. Two days ago, a patient four to four and one half months pregnant entered the Harlem Hospital, having slight irregular pains which she had had for hours prior to admission. There was slight bleeding, and a central placenta previa was found, the cervix admitting two fingers. A hypodermic injection of one c. c. of pituitrin was given, and within an hour, the uterus was emptied, the fetal sac being expelled intact. In any event, the treatment can do no harm and if a curettage can be avoided, there is a distinct gain in following the procedure. When pregnancy has advanced beyond the third month we may await the completion of the abortion, give pituitrin, or tampon and wait for full dilatation or complete expulsion of the ovum. In some cases embryotomy or manual extraction of the fetus and placenta will be necessary. In this type of cases the emptying of the uterus is made much less difficult, if time has been allowed to obtain complete dilatation and softening of the cervix, or at least sufficient dilatation to enable one to extract the fetus and placenta easily.

*Incomplete abortion.*—It is a matter of common observation that it is frequently impossible to determine whether there are secundines retained or not. In these cases we must observe the patient and curette when it is evident from the continued bleeding that some portions have been retained. We shall consider under this heading only cases of abortion which are presumably spontaneous and therefore probably not septic. In the early months, when the bleeding is slight or only moderate, pituitrin may be tried or curettage may be performed at once. If the bleeding is profuse, the uterus should be emptied as soon as possible. In the Harlem Hospital service we have used pituitrin in one c. c. doses in seventeen cases of incomplete abortion. In nine cases, or about fifty per cent., the uterus was emptied by the natural expulsion of its contents, and in a large majority of the patients only one c. c. of pituitrin was given. These results encourage us to make further use of the method, which has in so

many instances saved the patient from a curettage. In the latter months of pregnancy it is better to remove the placenta manually if possible, but if there is not sufficient dilatation, the uterus may be emptied with the ovum forceps and blunt curette, or the tampon may be used in order to obtain further dilatation. In these cases of incomplete abortion, the uterus can be safely emptied with a sponge forceps curved on the flat, and the dull Braun curette. It is never necessary to use a sharp curette, as the blunt instrument is sufficient and can be used with practically no danger. Digital curettage, which is so often spoken of, is applicable to very few cases, namely, those in which there is a large amount of dilatation and a considerable mass of tissue to be removed. In the vast majority of cases, and practically all of those in the first three months, instrumental curettage is necessary. Furniss (1) has advised the use of a hypodermic injection of one c. c. of pituitrin fifteen minutes before the operation of curettage in cases of incomplete abortion, asserting that the uterine wall contracts and becomes firmer and consequently is less liable to perforation, and also that there is less bleeding during the operation. This plan of treatment is one well worthy of trial, and we shall certainly use it in a series of cases. The question of packing the uterus with gauze after a curettage for incomplete abortion is a debatable one. Personally we do not pack unless there is bleeding. Some maintain that if the bleeding continues after curettage the uterus is not empty. This is, generally speaking, true, but that it is invariably so we cannot agree, for in a number of instances we have been obliged to pack the uterus for profuse bleeding, when we have made certain from digital palpation that the uterine cavity was empty. There is no reason why the uterus in abortion cases should always contract well, and, indeed, such is not the case. The use of pituitrin and ergot in these cases is of distinct value. In packing the uterus, we use the hollow tube and stem, known as the uterine gauze packer, and find it invaluable, as one is enabled to introduce gauze rapidly into the uterus, without the continual withdrawal and reintroduction of the more generally used uterine dressing forceps.

*Artificial abortion.*—When pregnancy has advanced to a period of not more than two and one half months, the operation of dilatation and curettage can as a rule be safely performed. In some of the cases, however, either because of difficulty in securing the proper amount of dilatation or on account of bleeding, it will be necessary to tampon and await further softening and dilatation, after which there may be a spontaneous expulsion of the ovum, or curettage may be necessary. After a period of two and one half to three months, we have a choice of two methods of procedure: 1. The dilatation of the cervix, with iodoform gauze tamponade of the lower uterine segment, followed twenty-four to thirty-six hours later, if necessary, by curettage or manual removal of the fetus and placenta. In the fifth month, the bougie and bag may be used, but these do not give the good results in this class of cases that we expect in the last two months of pregnancy. 2. Vaginal Cesarean section. This operation, in the earlier months of pregnancy, when per-

formed by surgeons who are experienced in vaginal work, is comparatively simple and free from danger. It is an operation which should be performed, if possible, in the hospital, with plenty of good light and competent assistance, and under these conditions it is an admirable procedure, especially in cases of heart lesion, toxemia, eclampsia, profuse accidental hemorrhage, etc. The uterus is speedily emptied by a clean cut surgical procedure under one anesthetic, the patient being spared the necessity of the further use of anesthesia, as well as the many hours of waiting for the spontaneous evacuation of the uterus by the ordinary methods previously outlined. For the general practitioner, however, the use of gauze packing and subsequent delivery is the safer and easier plan of procedure, but we advise the vaginal section for toxemia, including eclampsia, endocarditis, or profuse bleeding from premature separation of the placenta, where prompt and skillful operation is easily obtainable.

*Septic abortion.*—For convenience we may divide these cases into two classes, the mild or sapremic type, and the true septic type. We must admit that it is impossible to be sure that in treating a patient who seems to belong to the first class we are not dealing with the more serious type, but in general we would consider, in the first class of cases, patients who give a history of abortion within twenty-four to forty-eight hours, who have soft, partially dilated cervixes, with the products of conception palpable in the cervix or lower uterine segment, with slight or moderate bleeding, annexæ and peritoneum apparently not involved, with temperature of 100 to 105° F. We believe that the best plan of treatment in these cases is digital or instrumental curettage, very carefully performed, with the application of iodine to the uterine cavity, but no packing unless there is severe bleeding. We then order the Fowler posture, ice bag, ergot, and the use of tincture of nux vomica as a general tonic and stimulant, with plenty of fresh air and nourishing food, including eggs and milk. Treated in this way, the large majority of patients make a speedy recovery, the temperature coming down to normal within twenty-four to thirty-six hours, the woman feeling marked improvement almost from the time of the operation. In this class of cases, we cannot see the advantage of an expectant plan of treatment, believing that the sooner the uterus is emptied, the better the prognosis.

In the septic type of abortion, we would classify those patients who have been ill for some days, with tenderness in the fornices and over the annexæ; in other words, women in whom the infection has presumably spread beyond the uterus. In these cases we are frequently unable to determine whether the abortion is complete or not, but we would prefer to leave the secundines in the uterus, from which later they will be expelled, rather than to run the risk of extending the septic process by performing a curettage. We leave the uterus alone, and place the patient out of doors, if possible, in the Fowler posture and order the ice bag, ergot, and strychnine as before, especial emphasis being laid on the amount and character of nourishing food to be taken. This plan of treatment in this type of cases offers, in our opinion, the best prospect for a successful result. Should

abscess develop, drainage should be instituted, and other complications dealt with as may seem best at the time of their appearance. Fresh air, good food, and noninterference locally seem to us the best factors in the treatment.

#### REFERENCE.

1. FURNISS: *Surgery, Gynecology, and Obstetrics*, 1916, p. 365.

50 WEST FORTY-EIGHTH STREET.

### THE FREQUENCY AND SIGNIFICANCE OF DYSFUNCTION OF THE INTERNAL SECRETORY SYSTEM IN THE FEEBLEMINDED.\*

BY CAREY PRATT McCORD, M. D.,  
Detroit.

AND H. A. HAYNES, M. D.,  
Lapeer, Mich.

At the Michigan Home and Training School, a State institution for the care of the feeble-minded, 1,134 inmates have been examined for indications of abnormal functioning of the internal secreting organs. The population of this institution, 1,260, is so diversified as to age and degrees and types of mental deficiency as to afford ample material for quantitative conclusions. The following report is the result of this survey. The cases are not selected either as to diagnosis or treatment. The technical evidences from this series of examinations that serve as the foundation of the conception of the nature of feeble-mindedness here expressed are too extensive to be included. Essential points along this line will be grouped in more specialized subsequent reports.

The recent impetus of problems of internal secretion has resulted in activity directed more especially to the clinical aspects of glandular dysfunction. For many years only certain extreme clinical types were associated with glandular irregularity. Upon these infrequently encountered types, exhibiting a totality of manifestations, medical thought was so closely focused that there has been scant recognition of the many gradations between these complete types and normality. Very slowly have we become aware that the protean symptoms of these milder, intermediate glandular disturbances may be determined with reasonable precision in an integral part of the morbid states that come to the attention of the physician. Following the realization of the number of individuals in whose pathological condition a glandular element may be established, there have accrued much additional acceptable evidence indicative of an endocrine factor in widely diversified perversions of growth and development, of nutrition and elimination, of sex differentiation and maturation, of mentality, and of temperament. The correlations existing between feeble-mindedness and vegetative glandular dysfunction are, however, but meagrely delineated. This in some measure is attributable to the circumstance that at the time of this renaissance in endocrinology the close attention of those most familiar with the problems of feeble-mindedness has been directed to investigations of the intellectual

\*Paper read at American Association for Study of the Feeble-minded, Indianapolis, May, 1916.



limitations of the feeble-minded and the sociological and economical aspects of feeble-mindedness.

If all life activities are arranged in strata on the basis of phylogenetic progressions, three such levels mark the essential gradations: the level of vegetative activity, the level of reflex activity, and the level of psychic activity. Manifestly in these terms feeble-mindedness represents an inadequacy of functioning on the normal psychic level concomitant to inadequacy of functioning on the vegetative level.

The essence of feeble-mindedness lies in organic defect, morphogenetic or chemical, having origin in heredity or in embryonic or postnatal malconditions, involving the organism as a whole or through elective action, specific systems or organs.

It is duly recognized that the system of internal secreting glands is but one and not the exclusive source of substances influencing the diversified growth-differentiation processes. However, this endocrine vegetative unit, together with the integrating vegetative nervous system, is so essentially far-reaching that growth and development of the entire body can only proceed along normal lines under conditions of adequately normal functioning of these vegetative organs. Stimulus for the conception of internal secretory anomalies as a causative factor of certain mental deficiencies arises from the frequency of simultaneous occurrence of feeble-mindedness and developmental defects of a character known to be influenced by the internal secretory system. If comparison is made between the anomalies of body activity, the outgrowth of known endocrinous dysfunction and impaired body activity demonstrably associated with feeble-mindedness, the two in many respects coincide. However, the full measure of frequency and significance of these pathogenic relations remains undetermined and their investigation becomes an obvious duty.

#### THE VEGETATIVE GLANDULAR SYSTEM—THE VEGETATIVE NERVOUS SYSTEM.

*Pathogenesis of glandular diseases.*—It is deemed neither necessary nor profitable that this report should cover an exhaustive delineation of the specific individual glandular functions. The entire group of organs is evaluated as a unified system with interlocking functions. Although of different embryonic origins and having peculiar morphogeneses and spatial relations, these organs are intimately correlated one with the other and to a less degree with all other organs and tissues of the body. This ready far-reaching contact is affected and balanced in part through chemical correlations resulting from the exciting and restraining influence on cell dynamics induced by the glandular elaborations—the hormones; in part also these activities are mediated by the vegetative nervous system. The internal secretory organs are themselves vegetative and although terminology specifies the “vegetative glandular system,” and the “vegetative nervous system,” functionally the two are not sharply demarcated. The vegetative nervous system is composed of two antagonistic nervous mechanisms: the sympathetic and the autonomic systems. Certain substances are elective in their action upon these antagonistic factors and through this pharmacodiagnosis the state of

responsiveness of these components under various morbid conditions is quantitatively determinable.

These several mutually influenced elements in the vegetative system integrate the physicochemical activities of the body. Such activities, however, represent only one level in life processes; higher are the sensorimotor (reflex) and psychic levels. In the processes of the integration and in the functioning on these higher levels, the vegetative level is brought into intimacy of reciprocal relations. Thus the organism is not composed of isolated autonomies, but of interrelated systems so integrated as to make for a unified total organism.

The normal unfolding of the various growth development differentiation processes betokened at the conjunction of the male and female sex cells, the consummation of which is distributed throughout intrauterine and postnatal life, is dependent in full measure upon adequately functioning vegetative organs. However, notwithstanding this essentiality to the integrity of the entire organism, these organs are themselves subject to disease, to trauma, to a malheredity, to the influence of deleterious agents, and concomitant thereto the whole body is impaired. The etiology of glandular diseases is both diverse and obscure and the factors of incidence here included must be accepted as only partial. Heredity as a prime etiological factor in glandular disease is substantiated by a mass of material suggesting a genetic relation between glandular disturbances, but proof is lacking that these disorders in large numbers conform to Mendelian formulas. It is demonstrable that glandular instability may recur from generation to generation in certain families, but conflicts arise relative to the true inheritance of the condition when it is observed that in the offspring a gland is involved different from that involved in the parent. For example when the heredity of children of hypopituitary involvement is investigated an appreciable number of the parents and grandparents prove to be cases of hypothyroidism. This suggests that the inheritable factor, rather than regularly being a specific gland abnormality, may be an anomaly of the general vegetative system that may assert itself in any element of that system, especially in the vegetative nervous system.

“Goitre families” are of such frequent occurrence as to attract the attention of the laity; of less frequency, but well authenticated, are familial tendencies to diabetes, ovarian dysfunction, pituitary disease, excessive obesity, or excessive height. Timme reports three generations of glandular disease beginning in 1850 upon the marriage of a “moderate giant” and a diabetic. These are in approximate accordance with Mendelian laws. Among the cases of the present report there are three family groups presenting identical glandular lesions. The inheritance of glandular disease in certain instances involves the much debated question of the inheritance of acquired characteristics. It is noteworthy that endocrinopathies arising from some environmental condition—scarlet fever, trauma, syphilis, neoplasm—may reappear in the offspring. These do not constitute a true inheritance, but rather grow out of lack of homostimulation in intrauterine life, a matter to be again considered in later articles. Such



manifestations suggest that the internal secretory system may be a factor in the mechanism of inheritance and thus of far-reaching significance in practical eugenics. The whole matter of glandular inheritance may not be finally judged on data now available, but already the inference is that from an ancestry of vegetative irregularity expressed by



FIG. 1. Type of glandular disease in the feeble-minded. B. M. Chronological age, fifteen years. Mental age, 2.4. (Binet.) Hypopituitarism, hypothyroidism, and hypogonadism.

FIG. 2—Same case as FIG. 1, after two months of glandular therapy. Distinct improvement in both physical and mental condition.

glandular dysfunction, we may expect offspring also possessing vegetative irregularities.

Apart from inheritance other prenatal conditions may engender organic deviation. As yet no blastophthoric agent has been determined whose activity is electively directed toward the endocrine system. This system is, however, involved in any generalized blastophthoria. The intrauterine life, however, is a period teeming with opportunity for developmental deviation in which the glandular system may be an especial factor. The implantation of the embryo in the decidual wall of the uterus is dependent upon normality of glandular function. Faulty implantation is regarded by Mall as the source of many physical defects. The developing embryo is bathed in a blood containing nutritive, stimulating, regulating, and often deleterious substances. The growth stimuli of glandular origin are necessarily at first derived from the mother's glandular system. Very early, however, the newly developed fetal glands become functional. McCord has demonstrated a functioning of the pituitary and suprarenal glands within the second month of fetal life. The development of these fetal endocrine glands is influenced by the glandular system of the mother. Just as in the early postnatal life of a child with a glandular lesion, e. g., hypothyroidism, the exhibition of glandular treatment may establish a normal adequately functioning

of the deficient gland and treatment becomes no longer necessary, so in the embryo its glandular system appears to be influenced by the homostimulative action of the maternal glandular system. The correlations between the several units of the maternal glandular system is extended to embrace the fetal glandular system. In the mother a defect in any gland tending secondarily to involve others of the maternal system in a pluriglandular lesion may be expected to involve also the fetal glandular system.

In the larval developmental period of lower animal forms, which is only remotely comparable with intra-uterine life, the metamorphosis may be influenced almost at will as to rate and character by feeding with endocrine derivatives. Thyroid gland tissues added to the living water of frog tadpoles will bring about the transformation from the tadpole stage to the frog stage within one week, whereas without thyroid feeding the natural transformation would consume three to five months. This striking phenomenon is attributable to the premature differentiation of organs and tissues from thyroid stimulation. Such rapidly formed organs are always imperfect and the tadpoles do not usually survive. Similarly thymus tissue added to the living water of tadpoles retards differentiation. When tadpoles fed upon thymus tissue reach the period for normal transformation into frogs, no differentiation occurs. Such tadpoles continue to grow larger in size without the development of frog characteristics.

Toxic agents that under pathological conditions exist in the human—acetone, butyric acid, histamine—determine gross developmental defects in lower life forms. More elaborate experiments may allow the inference of a similar deleterious influence of such toxic bodies on the developing human. Histamine may prove of special significance, as it represents a type of amine arising from intestinal putrefaction or from throat and mouth infections. In the feeble-minded of low type, pyorrheas of appalling degree and frequency are encountered. Reasonable definiteness associates such mouth and throat conditions with the origin of glandular disease.



FIG. 3. Type of glandular disease in the feeble-minded. G. D. Chronological age, forty-four years. Mental age, five. (Binet.) Primary lesion hyperpituitarism with associated hypersexual activity which led to castration with the subsequent development of hypopituitarism.

Embryophthoria in the human is rarely considered except in relation to such conditions as syphilis, tuberculosis, typhoid fever, and alcoholism. The acuter infections and toxic processes leave so few persistent



FIG. 4.—Type of glandular disease in the feeble-minded. L. H. Chronological age, ten years. Mental age, about two. (Burd.) Hypopituitarism associated with hydrocephalus.

ent stigmata indicative of parental pathology that the inference is that the delicate developing organism likewise is unscathed. This assumption is many times apparently borne out when at birth the child is declared to be normal. However, potential normality at birth is no guarantee of its permanency throughout life.

In this recital of possible departures from normal intra-uterine life, the glandular system may be involved selectively or involved only in the general body impairment from conditions acting alike on all tissues. However, the same degree of impairment involving a gland and, for example, an ear or a muscle is of far greater consequence in the case of the gland, for upon its proper functioning the continued development of the whole organism is dependent.

As a result of these prenatal conditions, inheritance, blastophthoria, and embryophthoria, we may anticipate an appreciable number of births of individuals evincing various degrees of actual glandular disease or potential ready exhaustibility of the glandular system which succumbs to a trivial postnatal etiology. This postnatal etiology includes: 1, Infectious processes and toxins; 2, neoplasms and cysts; 3, trauma; 4, spatial abnormalities, such as pressure on the pituitary from hydrocephalus; 5, added strains incident to various periods of glandular functional readjustment, e. g., puberty, climacterium; 6, abnormal functional stimuli from the vegetative nervous system.

From an etiology purely prenatal or purely postnatal or from groupings of elements from both, we may expect glandular cases in the following groups: 1. Prenatal etiology with abnormalities, anatomic or functional, demonstrable early in embryogenesis: cretinism, multiple glandular hypoplasias. 2. Pre-

natal etiology with abnormalities lying dormant and development proceeding nearly normal until the advent of some factors of postnatal etiology which in degree may be trivial and insufficient to determine a lesion in a stable glandular system. The cases in these two groups may be monoglandular, but more often are pluriglandular. A monoglandular lesion may remain pure but more often because of its reciprocal relations becomes pluriglandular in nature even though the secondarily involved glands were primarily normal. 3. Without any factor of prenatal etiology any endocrine gland may become abnormal from postnatal causes, a number of which are grouped above. Primarily these lesions are more frequently monoglandular, but tend through distortion of their balances with other glands to upset the general equilibrium and become pluriglandular.

These states of exalted or of diminished functioning of the several glands and of their pluriglandular combinations are characterized by reasonably definite clinical manifestations. These states are thus recognizable clinical entities.

*Glandular diseases and feeble-mindedness.*—It will already have been perceived that the etiological background from which we may expect certain glandular conditions to arise is also the etiological background from which we may expect certain feeble-mindedness to arise. Frequency of simultaneous existence of these conditions growing from a common cause is rational. The coexistence of the two or the exhibition of feeble-mindedness subsequent to an already exhibited glandular defect more often does not warrant the immediate assumption that the endocrine defect of the primary pathogenic factor of the feeble-mindedness, or that substitution therapy with derivatives of the corresponding gland from animals should eliminate the mental defect. The visceral, somatic, glandular, and general neural defects observable in the feeble-minded and in glandular disease of prenatal origin are relatively fixed in degree, although in their consummation time is an element and their unfolding may be distributed over the normal span of life. Such



FIG. 5.—Type of glandular disease in the feeble-minded. G. S. Chronological age, thirty-four years. Deaf mute. Mild hypothyroidism with distinct physical improvement from glandular therapy.

defects are almost wholly nonirradicable, but to the hypoplasia of the glandular elements there must be attributed an additional significance. In the normal postnatal evolution of embryonic structures into the adult forms, there are continuous day to day requirements of the elaborations of these glands necessary for this embryogenesis and these elaborations withheld determine an increasing defect of the organism as a whole. In this supply of the day to day demands lies the field for substitution therapy, a procedure sharply delimited through the necessary general artificiality of processes and of less promise to the institutional degree of defection than to borderline and preborderline neuroglandular defectives and to pure glandular defectives.

Up to this point the greater emphasis, because of the probability of greater frequency, has been placed upon conditions the outgrowth of cooriginating feeble-mindedness and glandular defect. In these the glandular anomalies, while not accounting for the primary conditions, are accountable for the increasing defect, both somatic and neural. However, apart from this phase of neuroglandular disease, glandu-

degree of mental enfeeblement ranged from a few borderline cases to the lowest grade of idiot. Thirty-seven Mongolian defectives were among the number. The routine of examination, the program of which is not included here, varied with the probability of glandular disease after making a cursory preliminary examination. The limitations we have thrown around this investigation precludes the incorporation in this report of many obvious vegetative malconditions. Cases of pure vegetative nervous system involvement are debarred although such conditions are of widespread occurrence among the low grade feeble-minded. Since this system is an integrator of glandular function its perversions stand at the threshold of glandular irregularity. Of 116 low grade boys in the first and second decades, ninety-four were found to possess unstable vegetative nervous systems as evidenced in the hypothermia, cyanosis, coldness of acral parts, cardiovascular disturbance, lax joints and tissues, etc. This same group of boys averaged twenty-five pounds underweight for their age. Many were frankly infantile. This report is confined to those vegetative disturbances, demonstrably associated with the symptoms char-

TABLE I.  
RELATIONS OF FREQUENCY OF ENDOCRIN PATHOLOGY IN THE FEEBLEMINDED  
Thyroid—

Cases Examined, 1,131, 2,166 Glandular	Enlargement without retardations.		Hypo.		Hyper.		Total		Pituitary—		Testicular—		Ovary	Pluri-glandular	Parathyroid	Adrenal	Pituitary glandular	Mongolian	Total number examined	Percentage of cases in which endocrine cases
	Hypo.	Hyper.	Hypo.	Hyper.	Hypo.	Hyper.	Total	Hypo.	Hyper.	Hypo.	Hyper.	Total								
Females	21	21	6	48	16	17	102	13	16	13	16	33	13	16	3	1	68	12	485	25.6
Males	2	10	18	23	1	42	86	13	42	13	10	26	13	10	3	1	65	25	649	20.0
Total	20	31	6	66	39	2	114	26	58	26	26	59	26	26	6	2	133	37	1,134	21.6
Female and male: Percentage of types to total of individual glandular cases	14	17	9	95	3	97	23	17	8	34	106	3	8	26	18	79	32			
Female and male: Percentage of cases of individual gland to total number of cases of individual gland to total number of cases of individual gland	43.7	43.7	12.6	94.3	5.9	97.7	23	17	8	34	106	3	8	26	18	79	32			
Female: Percentage of types to cases of individual gland	43.7	43.7	12.6	94.3	5.9	97.7	23	17	8	34	106	3	8	26	18	79	32			
Male: Percentage of types to cases of individual gland	11.5	55.5	1.1	95.9	4	97.7	23	17	8	34	106	3	8	26	18	79	32			
Female: Percentage of cases of individual gland to total of female glandular cases	43.6	43.6	12.6	94.3	5.9	97.7	23	17	8	34	106	3	8	26	18	79	32			
Male: Percentage of cases of individual gland to total of male glandular cases	13.8	13.8	1.1	95.9	4	97.7	23	17	8	34	106	3	8	26	18	79	32			
Female: Percentage of cases of individual gland to total number of females examined	9.9	9.9	1.1	95.9	4	97.7	23	17	8	34	106	3	8	26	18	79	32			
Male: Percentage of individual gland to total number of males examined	2.7	2.7	1.1	95.9	4	97.7	23	17	8	34	106	3	8	26	18	79	32			

lar dysfunctions whose causative agents have in no wise involved the central nervous system may themselves through developmental inhibitions of cortical elements determine a true feeble-mindedness. Here again a multiplicity of gradations exist contingent upon the gland or glands involved, the degree of glandular defect, and paramount upon the stage of development at which the malactivity of the gland is exerted. A degree of glandular malfunction acting upon the developing child within its first year of life and producing a true hypoplastic feeble-mindedness is likely when acting primarily upon a mature adult to induce scant mental disturbances beyond an apathetic sluggishness.

The convictions here expressed represent the present trend of evidence from an unfinished study of the series of cases now briefly to be described.

Personal examinations of 1,134 feeble-minded individuals were made. Of this number 649 were males, 485 females. The range of ages was from six years to the years of normal senility, with a predominance of those in the second and third decades. The

characteristic of glandular dysfunction as manifested in body contour, metabolic deviations, spatial abnormalities, specific chemical reactions, etc.

The recognition of the frank glandular cases was a matter of inspection but in involvements of milder degree and in the more intricate pluriglandular types the criteria on which the diagnosis depends were rendered in many instances inaccessible through the inability of the patients to cooperate with the physician in the more complicated objective tests or to place at his disposal the very valuable subjective evidences. Moreover, many alterations in temperature, the cardiovascular system, blood findings, carbohydrate tolerance, etc., so valuable in the diagnosis of glandular perversions in mentally normal persons, occur in the feeble-minded with no other suggestion of glandular disease, with such regularity as to preclude whatever weight such alterations would carry under normal conditions.

Therefore the numbers included as glandular must be regarded as the minimum number involved which



is attainable through increased insight into the subjectivity of the cases and through more exhaustive objective studies, especially those directed toward an altered metabolism. It is also anticipated that continued study must necessarily increase the number of reported pluriglandular cases at the expense of the monoglandular.

Our findings as to the numbers of glandular cases are grouped in Table I.

These ratios are significant in case they hold true for large numbers of the feeble-minded. They indicate that one fifth of the feeble-minded present in varying degrees, the indications of malactivity of the internal secretory system. This frequency of involvement has long been anticipated. From earlier established evidence that inefficient endocrine organs may in some degree be quickened to greater activity,



FIG. 6.—Type of glandular disease  
a. Feeble-minded. b. Probable  
anterior pituitary tumor, hypothy-  
roidism are inherited glandular con-  
ditions.

supplemented or even replaced by the chemical derivatives obtained from the corresponding glands in animals, there has existed the substantial expectancy that newer developments in glandular therapy would afford means for more successfully treating these arrested developments. However, glandular therapy is so surrounded by sharp natural limitations that a concise, objective summary of its scope of efficacy does not allow any intimation that in feeble-mindedness, glandular substitution therapy is generally helpful. Promiscuous glandular treatment of the feeble-minded is unprofitable and unwarranted. However, among the feeble-minded there occur forms of glandular disturbances that are sufficiently amenable to the influence of glandular therapy that individuals so involved, when early recognized, intelligently and persistently treated, are preserved for reasonably useful lives; whereas if treatment is withheld, the defects become more and more apparent. These statements are more pertinent to the borderline cases than to the types usually to be found in institutions. However, even in institution cases we have been able to establish unquestionable improvements in glandular types. Under conditions of careful quantitative measurements of intellectual capacities prior to and during treatment we have produced distinct physical and mental betterment. The details of diagnosis, treatment, results of treatment, of these cases are reserved for subsequent reports.

## SUMMARY.

At the Michigan Home and Training School, a survey has been made of 1,134 feeble-minded inmates for evidences of involvement of the internal secretory system in the defects of growth and development in the feeble-minded. Of the number examined, 240, or 21.16 per cent., presented the characteristics of various glandular syndromes. From our investigation the following inferences appear justified:

1. Of the glandular cases seen in the feeble-minded, heredity stands out as the foremost factor in the etiology.

2. The demonstration of glandular syndromes in the feeble-minded does not in itself allow any inference that the feeble-mindedness is attributable to the glandular dysfunction. The glandular disease may determine the increasing defect but more often the coexisting feeble-mindedness and glandular defect are both the outcome of a common cause.

3. Promiscuous treatment of the feeble-minded with glandular derivatives is unprofitable and unwarranted. In established glandular types among the feeble-minded, more often glandular treatment is of no distinct and lasting value.

4. In borderline cases of glandular disease with trivial mental inadequacy, glandular therapy may prove of especial value. More often in these cases no true mental deficiency exists, and all manifestations of mental inadequacy are referable to the glandular malfunction. In such cases glandular treatment persistently carried out may be the factor deciding between normality and increasing defects.

## A COMPLICATION OF GASTRIC ULCER.

By L. G. COLE, M. D.,  
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AND J. P. HOGUET, M. D.,  
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Surgeon, French Hospital

This case illustrates a complication of gastric ulcer which has been more or less overlooked thus far and which, to our minds, is a clinical entity of considerable importance. It may indeed prove that a closer study of this condition may throw a great deal of light, not only on the indefinite conditions, known as intestinal toxemias and autointoxication, but also possibly on the etiology of gastric and duodenal ulcers. We refer to incompetency of the ileocecal valve, a condition in which the ileum is no longer invaginated into the wall of the cecum, so that the valve ceases to exist and intestinal contents can regurgitate backwards out of the colon into the small intestine.

CASE.—The patient was an unmarried woman of twenty-six, who had been under treatment for some time by D. W. A. Bartlett, by whom she was referred. Three years ago she began to have attacks of pain between the shoulders and in the epigastrium. This was followed shortly afterwards by vomiting after each meal. At this time she remained in a hospital for three weeks, where a diagnosis of gastritis was made and later changed to appendicitis. After treatment in the hospital symptoms disappeared for a period of

two or three months, after which the patient became ill again. She began to have attacks of pain about one hour after eating, but this could be controlled by the patient's remaining absolutely quiet. By July, 1916, the pain had disappeared from the shoulder region but there was a burning



FIG. 1.—Röntgenogram, showing minute punctate ulcer on the lesser curvature of the stomach.

and unbearable epigastric pain, occurring about two hours after meals. This was immediately followed by vomiting, but the vomitus never contained blood. Water brash was



FIG. 2.—Röntgenogram showing membrane involving cecum and ascending colon and incompetent ileocecal valve.

of constant occurrence. She was very constipated and had lost about twenty pounds in the last year so that her general health was undermined and she was very anemic. From a röntgenographic examination at this time (Fig. 1) Doctor Cole reported that he could make a negative diagnosis of cancer of the stomach, but found, however, a minute punctate ulcer on the lesser curvature about four inches from the pylorus. There was a small amount of induration around the ulcer. No evidence of postpyloric ulcer. From a study of röntgenograms of the colon (Fig. 2) after a barium clyisma, he reported that there was definite evidence of a veil or membrane involving the cecum and ascending colon. There was also an incompetency of the ileocecal valve, so that there was a moderate amount of regurgitation of the colonic contents into the ileum.

The patient was operated upon August 1, 1916, at the French Hospital by Doctor Hoguet. The abdomen was opened by a long rectum incision. The appendix was removed in the usual manner and the fat cleared away from the ileocecal junction for about three quarters of the circumference of the bowel, revealing the termination of the ileum, which always can be detected by an elliptical white



FIG. 3.—Röntgenogram taken three months after operation. Left side of cecum flattened and ileocecal valve competent.

line running transversely across the left side of the cecum. The ileum was then invaginated into the cecum for a distance of about three quarters of an inch and held in place by Lembert sutures of Pagenstecher, running from the white line to the wall of the ileum about three quarters of an inch from its end, below and on the anterior wall of the ileocecal junction. The stomach was then examined and on its anterior surface near the lesser curvature, about five cm. from the cardiac orifice, an ulcer was found which was about one cm. in diameter. By inversion of the wall of the stomach, one could detect by careful palpation a small crater within this area. The ulcer was excised with the knife and the edges of the stomach wall sutured with No. 1 chromic gut over which were placed several Lembert sutures of Pagenstecher. The pathological report showed a chronic ulceration of the gastric mucosa, with extensive chronic inflammatory changes in the deeper layers. Moderate chronic inflammatory changes in the appendix with some lymphoid hyperplasia and dilatation of the lumen.

Except for the vomiting for three days after operation, the patient made an easy recovery and left the hospital on the fifteenth day. She reported on October 4, 1916, that her general condition had improved greatly, was eating and sleeping without trouble and had gained twenty pounds



FIG. 1.—Röntgenogram taken six months after operation, showing smooth surface along lesser curvature at site of ulcer.

in weight. In January, 1917, she reported that she had no discomfort whatsoever after eating; she had gained ten pounds in weight, and was not troubled at all with constipation.

Röntgenograms made about three months after the operation (Fig. 3) showed that the barium clysmia passed all the way back to the cecum. The left side of the cecum was flattened and the indentation for the ileocecal valve was distinctly seen. There was no evidence that any of the barium had passed into the ileum indicating that the valve was competent, and that its repair had been complete. A series of röntgenograms made about six months after the operation (Fig. 4) showed an absolutely smooth surface along the lesser curvature at the site of the ulcer. The only röntgenographical evidence visible was a slightly altered depth in the gastric peristalsis in this region.

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**Acidosis in Burns in Children.**—R. J. Minnitt (*British Medical Journal*, February 3, 1917) points out the fact that acidosis is a very common occurrence of infants and young children after burns of even moderate extent and is the usual cause of death. For this reason he includes in the treatment of such cases the administration of 1.3 grams of sodium bicarbonate in four mls of syrup of glucose and thirty mls of water every four hours. Small doses of brandy are also given where there is great prostration. Under this plan the fatality of burns in this class of cases has been greatly reduced.

## CLINICAL EMPLOYMENT OF THE PORCELAIN FILTER.

By W. J. MCGURN, M. D.,  
Boston.

In response to the many inquiries received regarding the administration of salvarsan through porcelain, and to facilitate the distribution of a reply that will amplify the description furnished by the writer when the filter was first introduced (1), the following brief review of work done is offered.

Since the days of Pasteur no chemical or biological laboratory could be considered complete unless equipped with a variety of filter tubes capable of eliminating from chemical solution the presence of all microscopical bodies. Indeed, the porcelain tube has been of such great importance in medical research that it was only through its employment that some of the most splendid scientific discoveries were made possible, nor has its usefulness been limited to the scientific observer. For years it has occupied a place in many thousand American homes as a ready means of procuring pure water for drinking and other household purposes, and has often been a faithful companion to the tourist, the hunter, the soldier, and the explorer.

During the Spanish American War some of our soldiers were furnished with unglazed filter tubes, each tube being combined in such a manner with an army canteen that its reservoir could be hastily filled with stagnant pond or polluted river water and after thirty minutes had elapsed the soldier could partake of clear, sparkling water that had gravitated into his porcelain tube.

So great is the recognized value of porcelain as a filter that many of our

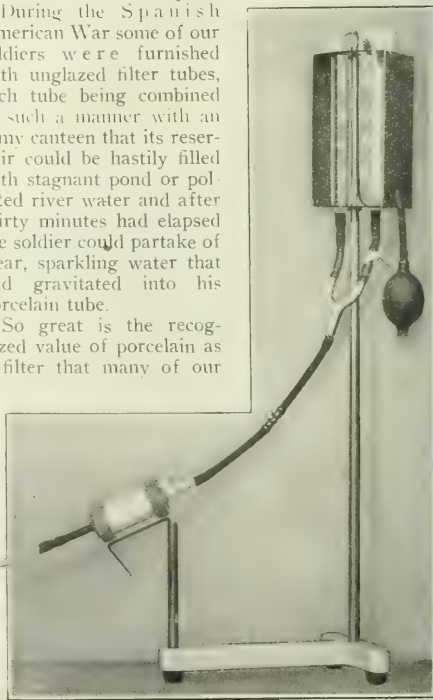


FIG. 2.—Salvarsan apparatus used in my work for the past four years. The device, as shown, combines gravity with pneumatic pressure afforded by means of a valveless hand bulb. An observation chamber to determine the speed at which the solution is flowing, also the final porcelain filter. The device is thirty-two inches high and weighs about three and one-half pounds. It is collapsible and can be carried in a twelve-inch handbag.



larger pharmaceutical laboratories have adopted its use in the very careful preparation of their serums and other products intended for subcutaneous and intravenous administration; also

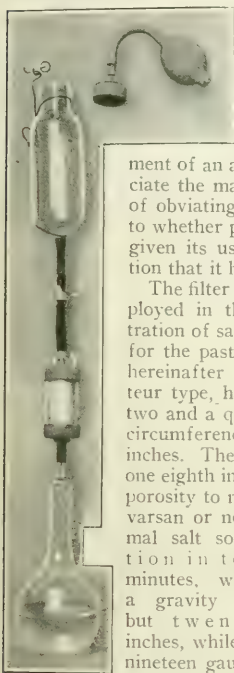


Fig. 2.—Shows a suitable device, to be used when it is desired to filter the solution before administering it by Scriber's method.

in the production of some of their less important drug specimens which represent the elegance of modern pharmacy. If we comprehend the vast field for profitable employment of an adequate filter and appreciate the many dangers it is capable of obviating, serious doubt arises as to whether physicians as a class have given its use the careful consideration that it has long deserved.

The filter which the writer has employed in the intravenous administration of salvarsan and neosalvarsan for the past four years and the one hereinafter described is of the Pasteur type, having a filtering surface two and a quarter inches long and a circumference of four and a half inches. The wall of the tube is about one eighth inch thick and of sufficient porosity to negotiate 500 c. c. of salvarsan or normal salt solution in ten minutes, with a gravity of but twenty inches, while a nineteen gauge needle is distally attached. Its outlet consists of a glazed, constricted extension, which

serves as a suitable male portion for the flexible slip joint needle attachment.

The material used in the production of this filter consists largely of kaolin, or North Carolina clay, which is first passed through a fine metallic screen having 140 meshes to the linear inch. The clay is then mixed with other physical ingredients to render it more plastic and again screened, after which it is subjected to several processes of sedimentation, steaming, drying, etc. It is then moulded, bored, and placed in a kiln, where it is baked at a temperature approaching 2,500° F. or

1,371° C.—determined by color tests and pyrometric cones—for twenty-four hours and allowed to cool gradually for a much longer period before being "drawn." The constricted portion of the tube is then dipped by the glazier and refired. The tube is firm, hard, and white, but not fragile. It has a porosity that permits the passage of most of the smaller types of microorganisms, but is impervious to bodies one third the size of the red blood corpuscle. These filters are unaffected by acid or other chemicals and can be used over and over again. When their surface becomes foul or plugged after prolonged severe usage they can be revived by brushing the surface with pumice or carborundum.

The limited purposes for which this special tube was first intended was to serve as a final filter in the intravenous administration of liquids, especially that of salvarsan, to insure against the possibility of extraneous matter of any kind reaching the general circulation. It has been shown (2) after prolonged use, however, that ampuls of neither salvarsan nor neosalvarsan, when mixed with distilled water or chemically pure saline solution, are productive of complete chemical solution and always contain bodies that appear in residue when such a filter is employed.

The accompanying cuts show these microscopical bodies intercepted upon the exterior surface of the

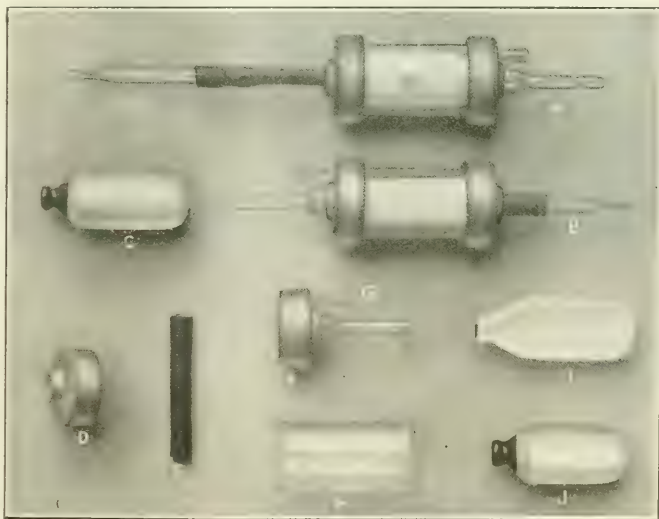


Fig. 3.—a, A filter ready for connecting. The residue shown at the arrow point represents the extraneous matter intercepted during the ten minutes required for the administration of 240 c. c. salvarsan solution and 750 c. c. alkaline salt solution which followed. The constant appearance of a similar amount of such foreign material at a point where the tube rests upon its chamber, furnishes most graphic evidence of the extent to which the air at all occupied rooms is polluted and gives one an idea of what most surely enters the vein when a filter is not employed. About one-third actual size. b, Side elevation of the complete filter when assembled. About one-third actual size. Various parts of the filter when disassembled are shown in: c, the porcelain filter tube; d, soft rubber filter cap; e, pure gum rubber outlet to filter; f, rubber cap and glass inlet to filter; g, glass vent to filter chamber; h, annealed glass filter chamber; i, longitudinal section of filter tube indicating thickness of walls and smoothness of its interior; j, filter with residue upon its surface after negotiating 0.6 grain salvarsan mixed with 240 c. c. of 0.5 per cent, chemically pure sodium chloride solution and rendered alkaline by the addition of 26 drops standardized to one minim each, of a 15 per cent, chemically pure sodium hydrate solution. The longitudinal band of white seen on the surface of the filter shows where residue has been removed by brushing its surface with carborundum. About one-third actual size.

filter and in the alkaline sodium chloride solution used in washing its surface.

A few of the facts favoring the use of the porcelain filter are: 1. The filter can be successfully combined with any apparatus furnishing positive pressure or gravity of twenty or more inches. 2. Salvarsan or neosalvarsan cannot be produced in pure chemical solution until they have passed a filter that would prove impervious to bodies one third the size of red blood cells. 3. The transparency of a liquid is sorely lacking in proof of its chemical solution. 4. It affords protection against insoluble bodies of any kind reaching the general circulation and is an important safeguard against the retention of salvarsan. 5. It is impossible for air to pass the filter. 6. It provides against the possibility of neosalvarsan entering the vein when precipitated from its solutions, either by partial oxidiza-

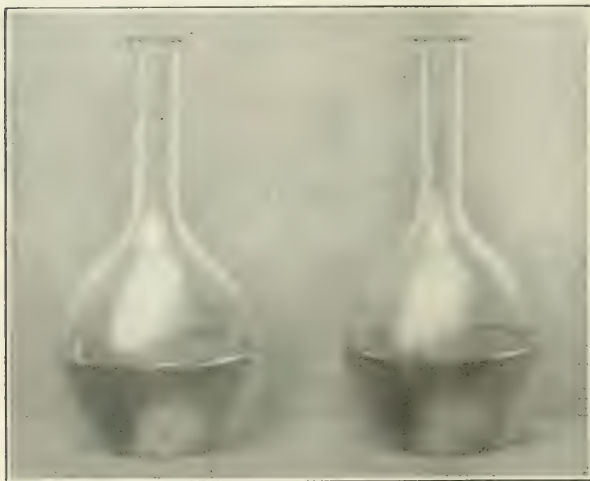


FIG. 4.—a, 300 c. c. of 0.4 per cent. sodium chloride solution into which has been washed the residue found upon the surface of a tube after filtering 0.9 gram neosalvarsan dissolved in 150 c. c. of 0.4 per cent. chemically pure sodium chloride solution. Here oxidation of the residue was hastened by the addition of ten drops of peroxide hydrogen. Such slight difference in color exists between that of the filter surface and the neosalvarsan residue that it becomes difficult of demonstration until suboxidization takes place. Owing to the peculiarity of the photographic film the wash water shown in Figs. 7 and 8 appear slightly darker than observed. About one-third actual size. b, A flask with 300 c. c. of 0.5 per cent. sodium chloride solution to which an excess of sodic hydrate has been added and in which the residue seen in Fig. 4 has been washed. About one-third actual size.

tion or by excessive dilution with saline solution. 7. Patients are favorably impressed with the pain-taking means by which their lives are protected from technical dangers. 8. With proper handling the filter and its parts are practically indestructible. 9. Only ten minutes are required for administration of 500 c. c. of solution, which permits gradual blending of the salvarsan with the bloodstream. 10. All insoluble irritants are removed from the solution, so that spasm of vein and its consequent stasis of salvarsan is never met with when the porcelain filter is employed.

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## BLOOD PRESSURE IN CLINICAL MEDICINE.

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The measure of blood pressure is of such widespread applicability in modern clinical medicine that, excepting the thermometer, probably no other diagnostic instrument enjoys so much popularity as does the sphygmomanometer. When one reviews the numerous fields of special practice, and particularly when one recalls how frequently specialists in one field segregate themselves from those in other fields, it is gratifying to find that they are one in at least their common allegiance to the clinical thermometer and the sphygmomanometer. In spite of the fact, however, that the sphygmomanometer is now so

much in evidence, there is reason to believe that it is not always well understood, not always properly employed, and that deductions drawn from blood pressure readings are not always correct. Especially is there a fair amount of incorrect therapeutics based on blood pressure findings that are ill interpreted. I therefore wish to discuss some of the principles involved in sphygmomanometry, and try to make clear why blood pressure readings should be more detailed than they sometimes are. Too many of us speak of blood pressure when we mean systolic blood pressure, and too many of us feel that systolic readings are all important and sufficient.

In what follows, in speaking of blood pressure without qualification, I refer, as is usual in clinical medicine, to arterial blood pressure in the brachial artery above atmospheric pressure measured in terms of millimetres of mercury. It is clear that arterial blood pressure, as measured clinically, is lateral pressure at the point of compression of the artery by the pneumatic cuff, and is slightly lower than the end pressure, which is what is commonly obtained in the physiologist's laboratory when an animal is the subject of study. The end pressure in a branch artery is about equal to the lateral pressure in the main trunk at the point where the branch takes origin. Thus, the lateral pressure in the brachial artery is equal to the end pressure in the radial.

The systolic pressure is the highest pressure attained during a cardiac cycle, and appears at the crest of the pulse wave. The diastolic pressure is the lowest pressure attained during a cardiac cycle. The pulse pressure is the difference between the systolic pressure and the diastolic pressure, and it is this pulse pressure that makes itself felt to the finger palpating the artery. In the normal young adult the number of millimetres of mercury representing the

systolic pressure bears to the number representing the diastolic pressure a ratio of about three to two. Thus the systolic pressure is to the diastolic pressure as three is to two, and consequently it is to the pulse pressure as three is to one. It is perhaps more clearly represented and may be more easily remembered thus:

Systolic pressure = 3 ..... or 120 mm. Hg.  
 Diastolic pressure = 2 ..... or 80 mm. Hg.  
 Pulse pressure = 1 (the difference) or 40 mm. Hg.

Deviations from the normal may occur in the systolic pressure alone or in the diastolic pressure alone, or in both simultaneously, in the same or in opposite directions, and to the same or to different degrees. The variations in pulse pressure are obviously dependent on the variations in the systolic and diastolic pressures.

The blood pressure is dependent upon four factors. These are the heart beat; the vascular resistance, especially in the peripheral arterioles, capillaries, and veins; the quantity of blood in the system; and the elasticity of the arteries. A somewhat doubtful factor is blood viscosity. Modification of any one of these factors will be reflected in the sphygmomanometric registrations. A thoughtful analysis of abnormal blood pressure figures when readings are taken in sufficient detail, will frequently reveal which of the above mentioned factors is abnormal, while a mere reading of systolic pressure seldom suffices to do this. The accurate indexing of the faulty factor is of considerable aid in determining the correct therapeutic procedure, which, in the ultimate analysis, is the object of all the efforts of the clinician. It is therefore my plea that the clinician cease to be content with systolic blood pressure readings, and that he consider it practically wasted effort, certainly lost opportunity, if his sphygmomanometric record does not include a diastolic reading as well, which automatically renders a pulse pressure record.

Before proceeding to illustrate the manner in which detailed blood pressure study may aid in diagnosis and treatment, it may be well to discuss very briefly the instrument and the most approved method of using it. I want to mention that most of this discussion is applicable to the adult only. Blood pressure studies in children are still too few, and the difficulties of obtaining accurate records when dealing with children are too great, to make a discussion of the findings profitable.

The sphygmomanometers on the market are numerous, and the claims for relative advantages as many as are the instruments. For the practising clinician it resolves itself into finding an instrument that will render the most accurate information in the briefest time, in a most convenient manner, and with the least expense. A mercury machine is more constant in its accuracy than an aneroid; it is cheaper; there are now some on the market that are about as readily portable and as convenient to use as are aneroids. The apparatus should have joints and valves that do not leak. The brachial cuff must be wide (twelve cm.). An apparatus with a mercury reservoir and a single tube is to be preferred to the U shaped manometer, because in the former case the scale reads in millimetres, while in the latter

the column, being doubled, the scale reads in half millimetres, making the observation more difficult and doubling the margin of error. Of aneroid machines there are two on the market; both are good, but they require checking up with a mercury machine from time to time. Their chief advantage is their ready portability.

The quickest and most accurate method of measuring blood pressure, which is also practical for the clinician, is the auscultatory method. Of course, a graphic record made with the aid of an apparatus of the Erlanger type is even more accurate, eliminating, as it does, the errors that might be introduced by the examiner's personal equation, but it is not a practical method outside of a research clinic. In measuring blood pressure by the Korotkow auscultatory method, we recognize five phases. When the pressure in the cuff has been raised to such a point that the pulse in the artery below it has entirely disappeared, the escape valve of the sphygmomanometer is opened and the pressure slowly released. In taking the systolic reading it is advisable to obtain it by the ordinary palpatory method before resorting to auscultation. The bell of the stethoscope is applied over the brachial artery one to two cm. below the cuff. When dealing with a stout arm, a fair amount of pressure is permissible, but when dealing with a thin arm, considerable care must be exercised not to compress the artery with the stethoscope bell, for then decidedly inaccurate diastolic readings will be obtained. The five phases above referred to consist of: 1. The appearance of a sharp, snappy tone resembling somewhat a snappy first heart sound at the cardiac apex. This appears when the air pressure after pulse obliteration is sufficiently released to permit of the passage of a pulse wave below the constriction. The onset of this sound marks the systolic pressure. 2. This is followed by a series of blowing murmurs, resembling in quality a loud mitral regurgitant murmur. 3. Next follows a sharp, snappy tone, usually sharper, snappier, and shorter than the tone of the first phase. This resembles in quality an accentuated second heart sound, as heard in the aortic area in cases of hypertension, with an efficient left ventricle. 4. This is succeeded by a dull tone, short, and quite distinctly fainter than the tones of phase one or three. The transition from the tone qualities of phase three to those of phase four is quite abrupt, and this transition marks the diastolic pressure. 5. Finally the dull tone and all sound entirely disappears. This disappearance of all sound is called phase five. There is still some discussion as to whether the onset of phase four or its termination and onset of phase five, properly marks the diastolic pressure, but the weight of reason and opinion favors the onset of phase four, which is generally quite sharply differentiated. The average duration in healthy adults of each of the several phases has been studied and determined. They are approximately as follows:

First phase, ..... 14 mm. Hg.;  
 Second phase, ..... 20 mm. Hg.;  
 Third phase, ..... 5 mm. Hg.;  
 Fourth phase, ..... 6 mm. Hg.

The third phase is frequently of much longer



duration than here indicated, especially in cases with low diastolic and high pulse pressure.

It has been attempted to ascribe considerable significance and to draw definite conclusions as to cardiac strength and circulatory efficiency from variations in duration of the tones and murmurs appearing during the various phases. It may be well to ignore this until the statements made by various authors show closer agreement.

That the physician's records of blood pressure readings may be justly comparable, it is well to establish the habit of making the readings with the patient always in the same position. I suggest the recumbent position rather than the sitting posture, for then records of the patient when bedridden may be compared with his records when ambulant. It is necessary to observe the precaution of having the patient's arm above the pneumatic cuff free from all constrictions by elastics or by the rolled up sleeve. It is to be preferred that the arm under the cuff be bare. It is very important that the patient's fear, anxiety, and apprehension as to the procedure be quieted before accepting blood pressure readings. Usually, for this reason, the first reading obtained should be discarded, and another reading taken after it has become evident to the patient that he has nothing to fear from the manipulations. Fortunately, the error introduced by the psychic disturbance of the patient can generally be recognized. Also, it affects the systolic pressure, causing a considerable increase in this phase beyond what it normally should be, while it leaves the diastolic pressure very little, if at all, disturbed. The patient's reactions suggesting nervousness usually consist of uneasy movements, gasping or sighing respirations, a quickening of the pulse, and a flushing of the face. A sinus arrhythmia is a frequent appearance clearly indicating nervousness. The principle to be borne in mind in placing the patient in any given posture is that the arm should be at the level of the heart, so that there may not be a column of blood in the artery either below or above the heart level whose weight might be required to be subtracted from or added to the sphygmomanometer readings. It is furthermore well to remember that variations of pressure in a given individual are of greater significance than the relation of his pressure to an assumed absolute standard.

I wish now to show how much information of value is sacrificed when one is content to measure systolic pressure to the exclusion of measurement of diastolic and pulse pressure.

Thus, two young women of about the same age present themselves, each complaining of weakness and dizziness. The systolic blood pressure in each is 100 mm. Hg. So far as physical examination of the heart is concerned, neither shows anything definite. The blood examination in each reveals a slight anemia, of almost equal degree. The pulse rate in each is slightly accelerated. The diastolic pressure in A is seventy-five mm. Hg, while the diastolic pressure in B is fifty-five mm. Hg. Thus A has a sufficiently high diastolic blood pressure, indicative of sufficient but not excessive peripheral resistance, but a pulse pressure of only twenty-five mm. Hg., which is one third of the diastolic, while

it should be about one half. The inference is that the heart muscle is insufficient. It is found that she has a little dyspnea on exertion, a little edema of the legs at the end of the day, and that she recently had a rather severe attack of influenza, after which she allowed herself only a very brief period of rest. The patient A requires rest and digitalis.

Patient B has a large enough pulse pressure, but an excessively low diastolic, pointing toward a sub-normal peripheral vascular resistance, a widening of the splanchnic bloodstream, with an insufficiency of cerebral and general circulation. It is found that she has a very much relaxed abdominal wall, general visceroptosis, and emaciation. Obviously this patient requires a different line of treatment. She needs increase of abdominal pressure by a proper corset, fattening, and vasomotor tonics, such as caffeine and large doses of strychnine. Digitalis is here contraindicated and bed rest unnecessary.

A young man presents himself complaining of precordial uneasiness of several months' duration. Occasionally he has palpitation. He denies having ever been ill, and especially denies having ever had rheumatism or syphilis. On examination his heart is of normal size, but at the apex a fairly loud, short diastolic murmur is audible. This murmur seems limited to the apex, and his doctor makes a diagnosis of mitral stenosis, as indicated by a mitral diastolic murmur. His pulse is 102 in rate, good size, soft, and suggests an approach to the collapsing type. His blood pressure is, systolic 140, diastolic sixty, pulse pressure eighty. Now, while a man may have mitral stenosis with a systolic pressure of 140, in such case he is not likely to show so low a diastolic pressure and such a large pulse pressure, for, on the contrary, in compensated mitral stenosis we have a disproportionately high diastolic pressure (compensating vasoconstriction) and hence low pulse pressure. Hence the diastolic reading is quite clearly of diagnostic value, and, indeed, on more careful auscultation of the precordium it is revealed that a faint diastolic murmur is present in the aortic area, and is transmitted down to the apex. Thus the diagnosis is changed to aortic regurgitation, a blood Wassermann reaction is performed and is found strongly positive, and a syphilitic involvement of the aorta is clearly revealed, with an indication for anti-syphilitic treatment.

While speaking of blood pressure in aortic regurgitation, I may mention that in this disease, with the patient lying on his back, the blood pressure in the femoral artery is distinctly higher than the pressure in the brachial artery, in both the systolic and diastolic phases. This does not hold good in normal subjects nor in other cardiovascular diseases.

A young man, a college student, complains of feeling tired, with anorexia and a morning headache, which disappears toward noon. His urine is negative, free from indican, and his tongue fairly clean and moist. Heart sound and size normal. Rate a little excessive. His blood pressure is ninety systolic, fifty-eight diastolic, and thirty-two pulse pressure. This is low in all phases, but properly proportioned. His heart is strong enough to keep pace with his vasomotor tone, the essential disturbance being an insufficiency of the latter. We have here

a man with constitutional hypotonia. He works too hard, rests and plays not enough. He needs more physical, outdoor exercise, less mental exercise, tonic cold baths, and a sufficiency of sleep. Small doses of strychnine may help, but digitalis is not needed.

A young woman aged thirty years, stenographer in a lawyer's office, complains of sleeplessness and palpitation. Her blood pressure is, systolic 160, diastolic seventy-five. Her heart is overacting, but not enlarged; she has a soft pulmonic systolic murmur. Her urine is normal in all respects. Pulse rate is 130, there is a fine tremor of the hands, moist, flushed skin, a slightly enlarged thyroid, and slight Stellwag's and von Graefe signs. Here obviously is a case of Graves's disease. She has a distinctly excessive systolic pressure, but a normal diastolic, and no vasodilators are needed. She needs the nerve sedative treatment indicated in Graves's disease, and her high systolic blood pressure will come down.

A merchant forty-five years of age, feeling entirely well, comes for a routine periodical examination. Everything is negative excepting blood pressure, which is 170 systolic, and 105 diastolic, pulse rate sixty-five, and urine which has a low specific gravity (1.012). Here the systolic pressure is little different from that in the last cited case, but what a wholly different ratio between the systolic, diastolic, and pulse pressures. Here we are dealing with an early case of hypertensive cardiovascular disease. It is to be noted that even in this case the pulse pressure is more than fifty per cent. of the diastolic, the average normal proportion. It is my belief that in every case where the diastolic pressure is to any degree in excess of the normal, the ratio of two to one between diastolic and pulse pressures no longer holds, if the circulation is well compensated. This is so, because, as is so common in nature, when an organ is overtaxed and it has to hypertrophy to keep pace with the demand made on it, it always overcompensates in the attempt to maintain an adequate margin in its factor of safety. And so I think it will be found that the higher the diastolic pressure in a well compensated case of hypertensive cardiovascular disease, the higher will be the ratio of the pulse pressure to the diastolic pressure. Thus, in this case of an early, well compensated hypertensive vascular disease, the study of the relation between the systolic and diastolic pressures helps to determine this, and to indicate further that no direct nor violent treatment of the circulation is required. The measures required are rather general hygiene, and the elimination of the factors causing the excessive peripheral resistance, so far as it is possible to ascertain those causes in the present state of our knowledge.

In another case of hypertension, with a systolic pressure of 220 mm. Hg., a diastolic pressure of 130 mm. Hg., and a pulse pressure of ninety, the man has a pulse rate of ninety-six, with edema of the legs, dyspnea, cough, cyanosis, pain in the epigastrium, and nausea. The urine has a specific gravity of 1.014, with albumin, casts, etc. The systolic pressure of 220 is indeed very high, but not high enough to maintain an adequate circulation against a resistance of 130 diastolic pressure. This man's heart muscle is failing. He has a blowing systolic murmur at the apex, congestion of the lung bases, and a

congested liver. Digitalis is urgently indicated, and will, even without catharsis, salt free diet, etc., improve the circulation and lower the diastolic pressure. I do not want to be understood to say that the other measures, as rest in the most comfortable position, reduced fluid intake, saline catharsis, salt free diet, etc., are not important. They are extremely important, but digitalis is more so. Digitalis improves this man's condition by its stimulating effect on the heart muscle, so raising the pulse pressure to a point sufficient to force the blood around against the excessive peripheral resistance. Once started, the blood flow is accelerated, the blood is better aerated, and its carbon dioxide content reduced. Carbon dioxide is a powerful vasomotor stimulant. Reducing the amount of this in the blood helps to reduce the excessive diastolic pressure. The acceleration of the blood flow through the kidneys, by raising the pulse pressure, promotes diuresis, which further helps reduce diastolic pressure. Following the fall of the diastolic pressure, the systolic remaining the same, the pulse pressure obviously is increased, and it may even become greater than required, so that the systolic pressure may safely fall below its former level, and yet maintain an adequate pulse pressure and adequate circulation. And so it is, that in cases of hypertension with failing heart and especially with cyanosis, digitalis, a powerful cardiac stimulant, may reduce blood pressure, and the study of the relation between systolic and diastolic pressures gives us a view of the case which the study of the systolic pressure alone could not yield.

Now it has been said that a systolic pressure constantly above 160 or a diastolic pressure constantly above 100 is definitely pathological at any age. It does not follow, however, that such a blood pressure always requires interference. Indeed, the elevated blood pressure is mostly a symptom of an underlying disturbance of anatomy or function, and seldom requires treatment *per se*. Nevertheless, conditions do arise when treatment aimed directly at the pathological elevation of pressure is urgently indicated, and may relieve suffering or even save life. These conditions are the vascular crises, such as angina pectoris, splanchnic arteriospasm, spasm of the cerebral vessels, etc., and in them the rapidly diffusible vasodilators, the nitrites, are most effective. The effect is on the vascular spasm, to which fibrotic vessels are predisposed. The fixed and organic lesion in the vessels is of course not affected. The management of the constant hypertensive condition is a much more difficult matter, requiring the greatest nicety of clinical judgment. The subjects of this condition are living on the edge of a precipice. A false step in one direction or the other may be fraught with the gravest of consequences. In the great majority of instances they die of uremia, cerebral apoplexy, angina pectoris, or gradual heart failure. Forcing the blood pressure too low may precipitate uremia or initiate heart failure. Permitting it to remain too high may allow the appearance of a coronary spasm or rupture of a cerebral vessel. A close watch on the systolic and diastolic pressures, and particularly their fluctuations or constancy from one examination to another, may aid in keeping the balance safe. Measures that



tend to reduce the diastolic pressure are safer than such as might reduce the systolic. General hygiene, dietetic, eliminative, and mild hydrotherapeutic remedies, are the most rational. Drugs must be held in reserve and used with caution and judgment, so as not to unduly interfere with nature's compensatory efforts, but only to hold in check such excessive compensation as may threaten the integrity of a cerebral vessel, for example.

I come now to the blood pressure relations of the one infectious disease in which it is of the greatest consequence, i. e., pneumonia. In all acute infectious diseases the intoxication of the vasomotor system is reflected in a fall in diastolic pressure, followed by a fall in systolic pressure. In sthenic cases, the fall in systolic is not so great as the fall in diastolic or is even very slight or nil, hence an increase in pulse pressure—the bounding pulse. As the disease progresses and the intoxication continues, the vasomotor system is further taxed, the heart muscle tires, and the blood pressure, diastolic and systolic, may fall still lower.

In pneumonia the case is more complicated than in most other diseases, because of the added mechanical interference with proper oxygenation of the blood, and the comparatively common direct effect of the disease of the myocardium. Gibson's rule, that if the systolic blood pressure registers as many millimetres Hg. as the pulse registers heart beats a minute, the outlook is good, whereas if the systolic pressure registers fewer millimetres Hg. than the pulse does heart beats the prognosis is grave and must be taken with a clear understanding of its shortcomings. It should be understood that what is sought is that the pulse rate be kept down to the level of a normal systolic pressure. It is obviously small comfort to have a pulse rate of 180 in pneumonia, even though the systolic pressure is 190 or 200, in a subject of hypertensive disease. It seems to me that much information as to the true efficiency of and outlook for the circulation, and also indications for correct treatment, can be gleaned from an observation of the relation of systolic to diastolic pressure. It is because not all cases of pneumonia suffer from a disturbance of the circulation in the same plane that such diverse forms of treatment hold sway. Some excellent clinicians maintain that all the trouble lies in the vasomotor failure and recommend treatment accordingly, while others equally qualified to speak maintain that the essential trouble lies in a myocardial failure, and recommend treatment in accordance with their belief. So some always advise the use of vasomotor stimulants, while others advise the use of digitalis. As a matter of fact, they are all right and they are all wrong. At times it is the vasomotor intoxication which is chiefly at fault, while at others it is myocardial failure that threatens life, and a study of the blood pressure that takes cognizance of the diastolic as well as the systolic pressure, will sometimes help determine which it is that requires stimulation.

For example, one patient may have a pulse rate of 150, and the pulse small, while the respirations are rapid and labored and the finger nails are bluish. Take the systolic blood pressure in a young individual without kidney or hypertensive disease and

you may find it 145. Thus, according to Gibson's rule, he is doing well. According to the adherent of the vasomotor failure theory, he needs vasomotor stimulation, for he looks ill and is a little cyanotic and has a rapid, small pulse. Take the diastolic pressure and you may find it 105. Thus, he has a comparatively high diastolic pressure, with an insufficient pulse pressure to carry on the circulation against the resistance of 105. If you give this man oxygen you may reduce his diastolic pressure by reducing the carbon dioxide passing through his vasomotor centre, and so relatively raise his pulse pressure by lowering the diastolic pressure and thus improve the peripheral circulation. Digitalis will add to this effect by stimulating the heart muscle and so tending to raise the systolic and the pulse pressure. The oxygen alone may suffice and in such cases it is best to omit the digitalis, so as not to whip a muscle that has enough to do at its own pace. If, however, the systolic pressure was 110 and the diastolic 80, and the other symptoms as above, digitalis would be more clearly indicated, and oxygen better withheld, so that the vasomotor stimulation of the carbon dioxide may be continued in view of a not excessive diastolic pressure.

Given, on the contrary, a patient with a pulse rate 114, temperature 101° F., and systolic pressure 110, again, according to Gibson, the patient may be doing well. However, our patient is pale, has occasional sinking spells, and feels dry and weak. Take his diastolic pressure and it may be 65. This man does not need digitalis nor oxygen, but needs vasomotor stimulation, probably hot coffee or caffeine sodium salicylate hypodermically. Examples could easily be multiplied, but I hope that the few given will suffice to emphasize the contention as to the importance of taking not only systolic but also diastolic blood pressure readings. I have purposely omitted much important detail, so that I might devote the time to principles. Having spoken so much for instrumental pulse study I fear that I may be understood to emphasize unduly the value of an instrument. I am very anxious to make this point clear. I consider it of far greater value even today to palpate the pulse understandingly with the unaided finger, than to study it with all the instruments at our disposal, if the finger palpation is neglected. I insist on always making an estimate of the qualities of the pulse with the unaided fingers first, and then making the more exact instrumental study, as a means of educating the tactile sense no less than as a means of acquiring more exact information. We will always have our fingers when called to the bedside, but may not always have a sphygmomanometer.

1845 SEVENTH AVENUE.

**Preparation of Tannic Acid Solutions.**—Huerre (*Presse médicale*, January 8, 1917) finds that the moulds which soon appear in watery tannin solutions result, not from the presence of spores in the tannin itself, but from spores in the distilled water, often kept for a long period before use, employed in their preparation. Tannic solutions made with recently sterilized distilled water remain sterile indefinitely.



## THE EAR AND THE GENERAL PRACTITIONER.

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The purpose of this paper is to refer only to the common ear conditions encountered every day by the general practitioner. Our chief aim is to call attention to some ear manifestations, such as dizziness, nausea, vomiting, and diarrhea, which are produced by a diseased internal ear, but are generally not recognized as such and are frequently mistaken for something else. We will speak first of the common affections of the external ear, then of the middle ear, and finally of the internal ear.

## EXTERNAL EAR.

The conditions most commonly met with in the external ear are impacted cerumen, foreign bodies, eczema of the auditory canal, and furunculosis. Impacted cerumen is not the result of lack of cleanliness on the part of the patient and it is well to assure him of that fact. Unless one does so the patient feels greatly embarrassed, not realizing that it is impossible for a person to remove impacted wax from his own ear. It is well to tell the patient that the canal is an inch and a quarter deep and that he must never attempt to remove the wax himself. The general belief that the impaction is due to an excessive secretion of wax is erroneous. On the contrary, it accumulates in the canal and finally becomes impacted, because there is not enough of it secreted. Impacted cerumen accounts for a very large number of cases of sudden deafness. It is a curious fact that an ear may be almost entirely full of wax or other debris and yet as long as there remains an open channel to the drum membrane, no matter how tiny this channel may be, the hearing is absolutely unimpaired. The commonest occurrence is for a patient to say that after bathing he becomes suddenly deaf from "water in the ear." This almost invariably turns out to be impacted cerumen, and a mere drop of water has been sufficient to close up the remaining channel through which he had previously heard perfectly. Inspection is the only method of diagnosing this condition and the total removal of the plug immediately restores the hearing; but the patient should be warned that it is likely to recur again and again unless proper treatment is instituted to prevent the reaccumulation of cerumen.

Foreign bodies in the external auditory meatus are common, especially in children. There seems to be a natural tendency among the young to introduce various objects into their ears. Among the substances occasionally found are buttons, beads, bits of glass or wood, paper, pebbles, peas, beans, etc. Insects likewise enter the canal occasionally and require removal. The history of the case and inspection make diagnosis easy. Removal of such foreign bodies without injury to the parts is of course the only treatment. Here it is well to caution the physician that the first thing to do in such cases is to attempt the removal by syringing. The vast ma-

jority of foreign bodies can be successfully removed in this way. The employment of hooks, forceps, and other instruments should be undertaken only after syringing has failed, and then by none except those skilled in the manipulation of such instruments about the ear. As an instance, we might cite the following:

CASE I.—A. B., a young man thirty years old, was annoyed considerably by itching in his right ear, and sought relief by scratching his auditory canal with a matchstick. While doing this the matchstick broke and a small piece remained in the deeper portion of the canal. He immediately went to his family physician, who tried to remove it with a pair of forceps. However, he failed in the attempt. When we saw him three hours later, the auditory canal was bruised and swollen. There was a laceration in the upper part of the tympanic membrane, through which could be seen a white spot. Careful examination showed this white spot to be the end of the matchstick, which the doctor had pushed through the membrane into the tympanic cavity in his attempts to grasp it with the forceps. Fortunately we were able, after much difficulty, to grasp the end and remove it. As it was, the case was converted from a simple one where a syringeful of water would have cured the patient, into one where he was seriously endangered and it was weeks before he recovered.

Eczema is a most annoying condition. It is usually bilateral, may be dry or moist, and is the forerunner of boils. The itching is often unbearable, and toothpicks, ear spoons, matchsticks, and hairpins are employed as means of relief, with infection and formation of "boils" as a consequence. The use of these instruments, therefore, cannot be too strongly condemned. This sequence of events in the production of boils is the rule to such an extent that when a patient presents himself with furuncles the first question we ask him is not "Did you pick it?" but "What did you pick it with?" Furuncles of the ear are usually multiple and occur in crops; the swelling of the canal is very rapid, often producing sudden deafness. The most prominent symptom is pain, which is excruciating. The practitioner's story over the telephone runs somewhat as follows: "My patient is very ill with an earache. The condition came on very suddenly and the slightest touch is extremely painful; although it has lasted only a day or two the ear is much swollen and any attempt to introduce an ear speculum cannot be tolerated." When we hear such a story, followed by a request to hurry out with the mastoid operating set, we usually know that we shall find a case of furunculosis. The prognosis is invariably good. The condition is one of severe pain chiefly, and complications are very rare—in fact, have never been known to occur in our experience.

## MIDDLE EAR.

The term "middle ear" is frequently erroneously used as meaning the tympanic cavity. The middle ear comprises much more than that; it includes the mastoid cells, the mastoid antrum, the attic, the tympanum proper, and the Eustachian tube. Practically all of the affections of the middle ear come from the nose and throat. An infection, whatever it may be, reaches the ear by way of the Eustachian tube. This point in the etiology is of the greatest importance, if the practitioner hopes to institute rational and efficient treatment of his case. Where inflammatory conditions of the middle ear have resulted from patients' having gone in swimming, even

physicians are wont to attribute this condition to the water having entered the auditory canal. Nothing could be further removed from the actual truth. What happens in such cases is that the water entering the patient's nose and throat causes him to sneeze, gulp, or choke; this forces some infectious material up the Eustachian tube into the tympanic cavity, with inflammation as the result.

Diseases of the middle ear are of two types: 1. Those not accompanied by inflammation and resulting in a gradual change of the various structures within the middle ear with a diminution or loss of hearing as the result. 2. Those showing evidence of acute inflammation produced by some infective microorganism. The most prominent symptom in cases of the first type of middle ear affections is deafness, and too much emphasis cannot be laid on the role which chronic conditions of the nose, tonsils, and adenoids play in the production of a middle ear deafness of this type. Given, let us say, a deviated septum, a sinusitis, hypertrophies of the turbinates, diseased faucial tonsils or adenoids, and the Eustachian tubes will most certainly suffer. It is but a short step for the process, which consists of a gradual change in the normal structure of the parts, to extend up the Eustachian tubes into the tympanic cavity and cause more or less profound alterations in the ossicular chain and drum head, with deafness and tinnitus as results. For these reasons the doctor will serve his patient well by advising proper treatment in cases of diseased tonsils, adenoids, and many nasal disorders which are so prevalent and yet so frequently neglected.

The inflammatory diseases may be either acute or chronic. Deafness in these cases is only incidental. They are characterized by symptoms which usually accompany any inflammatory process elsewhere. Such cases are seen first by the general practitioner. What is more, he frequently remains in charge more or less throughout the entire course of the disease, seeking special skill only when the condition has progressed beyond cure. It is as a rule safer, therefore, for such a case to be under the guidance of one particularly trained in this line of work. Many grave and serious complications might be avoided in this way. It is rare for a case of middle ear abscess, treated from the beginning by a specialist, to go on to mastoiditis or worse. Nearly all cases requiring mastoid operation have been in the hands of a general practitioner who treated the case with "washes" and whatnot, until suddenly there appeared pain and swelling behind the ear, at which time only was the ear specialist consulted.

Middle ear abscesses usually follow a "cold in the head," or they accompany the acute infectious diseases. When the child too young to speak cries incessantly or is peevish, the doctor's first, and not the last, thought should be of the ear. He should not wait for a canal overflowing with pus in order to make a diagnosis. He should examine the ears immediately. It is bad practice always, and particularly so in children, to wait for the ear to open spontaneously. Serious complications with possible loss of life may be the outcome of such practice. The presence of infected fluid in the tympanic cavity is always dangerous and the drum head should be in-

cised without delay. In cases of febrile diseases, where the temperature is unduly prolonged without any apparent reason, the ear will not infrequently be found to be the cause of such prolongation. In grippe and pneumonia, even when the patient does not complain at all of the ear, it is not uncommon to find an abscess of one or both ears, and one should never fail to have the ears examined in such cases.

Acute otitis media, as the term implies, involves the entire middle ear. The inflammatory process is not limited to the tympanic cavity alone; the mucous membrane lining the mastoid cells is usually involved at the same time, so that we must not be surprised to find some tenderness over the mastoid region. After a few days, however, in an uncomplicated case the mastoid cells become normal again and the process limits itself to the tympanic cavities. The most prominent symptoms are pain, fever, and deafness. In a child there may be one or more chills. All these symptoms vary to some extent, excepting that of deafness, which in the ordinary case persists through the entire course of the disease, and perhaps long after the disappearance of acute symptoms.

Of the complications, the first to be looked for is another and more serious extension of the process into the mastoid cells, with caries of a portion or all of the mastoid. This usually occurs two or three weeks after the onset of the disease. The purulent discharge suddenly ceases or becomes very profuse. There appears an intense pain in the ear or on that side of the head. The mastoid becomes tender and there may be, especially in children, edema or fluctuation behind the ear. A very frequent symptom is an unaccountable insomnia; without any sharp pain to keep him awake, the patient for some reason cannot fall asleep. Fever may or may not be present. It is usually absent when the trouble has not extended beyond the mastoid cells. Examination of the auditory canal shows a drooping or sagging of the upper posterior wall. We agree with the teaching of B. A. Randall that so long as the condition is one of "mastoid empyema" only, that is, one where the mastoid cells secrete and contain pus but are not cariously affected, the patient is not in immediate danger and resolution without operative interference may be looked for. On the other hand, where there is distinct caries of the bone, operation should be immediate. This differentiation is not easy to make, and a specialist should be called in.

It is well to remember that purulent conditions of the middle ear are responsible for many intracranial complications, such as meningitis, lateral sinus thrombosis, and brain abscess; but what is still more important is that these serious intracranial complications are more prone to follow the apparently mild scantily discharging chronic ears, than they are the acute. The seriousness of chronic running ears should be emphasized to the patient who is apt to say "Oh, it is nothing but a running ear." Yet few life insurance companies will on any terms accept such a risk.

From the foregoing remarks it is hardly necessary to dwell on the importance of recognizing when the ear is or is not the seat of disease. Unfortunately



it is one of the parts of the body extremely difficult to examine and much training and skill are necessary to carry out a thorough and satisfactory examination. There are, however, two aids with which every practitioner should be provided; they are a head mirror and a tuning fork. The examination of the different portions of the ear by inspection is so important that it is absolutely essential for everyone to be more or less skilled in the use of the head mirror. Perhaps a somewhat easier way would be the employment of an electrical otoscope with the light within the speculum; with the aid of the latter it requires very little training to learn how to see the various portions of the ear. Another great help is the tuning fork, and we recommend its universal employment. When a tuning fork of about 200 double vibrations a second is struck and held in front of the ear, a patient suffering from middle ear disease will hear it very faintly or not at all. If the shank of the fork be then quickly placed behind the ear over the mastoid it will be heard much better and louder. Furthermore, if a vibrating fork be placed on the top of the head it will be heard more loudly on the affected side. Anyone can try on himself the following simple experiment. A vibrating tuning fork is placed on the top of the head. One finger is then placed in the right auditory canal. Immediately the sound of the fork is heard much more loudly in the right ear. If the finger be transferred now to the left ear, the sound will likewise be transferred to the left ear. In this way the sound can be lateralized at will in either ear, illustrating well how an obstructive lesion, such as seen in middle ear deafness, lateralizes the sound to the affected side. Given then a patient who complains of "earache," if the physician is in doubt whether it is due to an affection of the middle ear or something else, all that is necessary is to strike the fork and see if it is heard better in front or behind the ear. If it is heard better in front of the ear it is not a case of middle ear disease, but is probably some reflex pain in the ear. If on the other hand the fork is heard better behind the ear, then it is a case of middle ear disease. The fork placed on top of the head will be heard equally well on both sides in a case where the middle ear is normal, whereas it will be heard better on the side complained of if a middle ear disease should be present.

#### INTERNAL EAR.

When speaking of the internal ear, it might not be amiss to point out that it is composed of two distinct portions: the cochlea for hearing, and the vestibular, or static, part for equilibration. The cochlea is a spiral tube concerned exclusively with the function of hearing. The static portion consists of the three semicircular canals which appreciate turning movements of the body, the utricle presiding over linear movement in an anteroposterior direction, and the saccule concerned in movement of the body sideways. This static portion is the chief sense organ of equilibration. Affections of the cochlea are made manifest by impaired hearing and noises in the head. Disturbances of the static labyrinth manifest themselves by dizziness, staggering, nausea, vomiting, and

diarrhea. When confronted with deafness and tinnitus, a general practitioner is instantly aware that he is dealing with an affection of the ear, but we venture to say that when confronted with dizziness, nausea, vomiting, etc., he is not apt to suspect the ear quite so readily. It is this latter fact that we particularly wish to emphasize. Nausea and vomiting are so frequently encountered by the general practitioner in various abdominal and other disorders that he is not so apt to think of the ear as a possible causative factor. In every such case the ear should be thought of, but if the nausea and vomiting are also accompanied by dizziness, then he should immediately suspect the ear or its intracranial pathways.

Affections of the inner ear may be noninflammatory or inflammatory. When noninflammatory there occur many annoying symptoms such as deafness, tinnitus, vertigo, and staggering, all bad enough in their way, but at the same time not serious in the sense of requiring immediate intervention of any kind, nor endangering the life of the patient. Such noninflammatory conditions are produced by a toxemia or by increase in blood pressure within the internal ear, with or without hemorrhage. Inflammatory affections, however, should be regarded quite differently; in such cases immediate expert attention is imperative, and the patient's condition should be considered most grave.

Many ludicrous as well as tragic errors are made by physicians unacquainted with the significance of disturbances of the static labyrinth. We will cite two typical instances.

CASE II.—A man, aged thirty years, three weeks before admission to the hospital, while at work, was suddenly seized with dizziness, severe enough to make him fall over. He had headache, vomiting, and diarrhea and had to be taken home and put to bed. A doctor was called in, who thought the man had "stomach trouble," and treated him accordingly. The vomiting had ceased, but as the vertigo and headache persisted, the patient left the doctor and applied to a medical dispensary for treatment. The physicians there thought his trouble was due to his eyes and referred him to the eye department. The ophthalmologists undertook to treat the case and prescribed a mydriatic. The patient was not getting better and consulted Doctor Shmookler, who, on taking the history, immediately realized that he was dealing with a case of disease of the vestibular apparatus. When he found that the patient had had chronic running ears since childhood, he was convinced that the symptoms were referable to the ear; he therefore had the patient sent to the hospital again, but this time to the ear service. Our examination of the case showed that we were dealing either with a circumscribed labyrinthitis, or with a cerebellar abscess—either condition a very serious one and not to be trifled with. It had therefore been from the very beginning exclusively an ear case.

CASE III.—A man, aged fifty-one years, was seized with dizziness, staggering, vomiting, and diarrhea on board ship coming back from Europe. The ship's doctor naturally attributed it to seasickness, but after the patient reached land the symptoms did not disappear. A few weeks later the vertigo and staggering were so marked that he could not stand nor even sit up in bed. Doctor Kercher, his physician, immediately recognized it as an ear condition, especially as the patient had had running ears off and on nearly all his life. On examination, we found that douching the left ear failed to produce the normal responses of the static labyrinth, namely, nystagmus, vertigo, pastpointing, and falling. These tests showed involvement of the horizontal canal which destroyed its function completely, also of the vertical canals, whereas the cochlea was entirely normal.



This apparently surprising phenomenon was easily explained as due to an extension of the inflammation from the middle ear through the oval window, involving the end organs of the semicircular canals, but so limited that it did not extend forward into the cochlea. Rest in bed and local treatment of the ear was followed by uninterrupted convalescence.

A mastoid operation should now be done to cure the purulent middle ear condition and so prevent a recurrence of such an attack. In this case, according to old standards, with a perfectly functioning cochlea, not the slightest earache, no discharge from the ear, or lighting up of an old middle ear suppuration, and with the patient himself not complaining of his ear nor calling attention to it, there was nothing whatever to suggest ear involvement. He simply presented a picture of a big healthy man unable to stand up because he was dizzy. It was only his doctor's familiarity with the significance of dizziness and staggering that made him think of the ear.

In conclusion we wish particularly to emphasize that the general practitioner should be familiar with the symptoms referable to the static labyrinth. Deafness and tinnitus are well understood to be ear phenomena, but we venture to say that dizziness and staggering are not so recognized. When a patient complains of dizziness and staggering the first thought should be of the ear.

1017 SPRUCE STREET,  
1831 CHESTNUT STREET,

## ABDOMINAL CÆSAREAN SECTION FOR TOXEMIA OF PREGNANCY.

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Toxemia of pregnancy is a term used to designate a condition peculiar to the gravid state when certain definite symptoms are manifested. These symptoms may vary in intensity from the usual morning nausea and vomiting in the early months of pregnancy to the severest type of eclamptic seizure. It has been a matter of considerable speculation and research as to what the etiological factors are in bringing about such a condition. Authorities seem to agree that it is a reaction of the maternal tissues to a foreign protein of a fetal origin. These proteins are absorbed through the placental sinuses into the maternal circulation. What this tissue or cellular reaction is on the part of the maternal organism has been the subject of much experimentation. Recently the experiments of Hull and Rhodenburgh seem to conclude that it is a process of hydrolysis resulting in the action of the proteolytic ferment circulating in the maternal blood upon the fetal protein, and that one of its products, leucin, acts as the toxic agent, causing the pathological changes found in the liver and kidneys of toxemic cases.

These pathological changes are thought to take place primarily in the liver, with secondary changes in the kidneys. The hepatic lesions may vary from scattered areas of focal necrosis around the central vein of the lobule to larger areas of necrosis with

considerable hemorrhage and thrombosis of the smaller vessels and loss of tissue substance. The kidney lesions may show, according to the severity of the toxemia, lesions that vary from a cloudy swelling of the parenchyma to all the various grades of acute toxic nephritis. The preeclamptic stage of toxemia of pregnancy is characterized by the following symptoms: The patient complains of severe headaches, nervous irritability, nausea and vomiting, dizziness, ocular symptoms presenting spots before the eyes, flashes of light, and at times sudden blindness. Blood pressure is increased and edema of the extremities and face occur. The urinary output is diminished in quantity, showing the presence of albumin and many casts of hyaline and granular character. The eclamptic attack is ushered in by the patient complaining of severe epigastric pain and marked nervous twitching of the face or extremities. The convulsive seizure is of an epileptic type, tonic and clonic in character, and followed by a coma of varying duration. The patient may die in the attack from acute dilatation of the heart, cerebral hemorrhage, edema of the lungs, or the overwhelming toxemia. The coma is followed by a period of consciousness which may continue only a short time when another convulsion ensues. There may be one to a dozen or more of these convulsive attacks. There is, however, a type of eclampsia in which no convulsive seizures are present; the patient previously presenting toxic symptoms of a moderate degree suddenly enters into a comatose state. These cases show lesions of a severe character only in the liver, with little or no kidney involvement at the time. No albumin or casts are present in the urine; these may be present, however, at a later date.

In the treatment of these conditions considerable division of opinion exists. Everyone who comes in contact with these patients believes that the proper procedure is the emptying of the uterus, at the same time placing the patient upon eliminative treatment. The method of emptying the uterus is a subject of considerable discussion. The conservative element induce labor by means of bags or bougies, and while waiting for labor to begin place the patient upon eliminative treatment. The radical element first empty the uterus by a vaginal hysterotomy or abdominal section, later putting the patient upon the eliminative process. Inasmuch as the products of conception cause this morbid condition, it seems rational that the sooner the uterus is emptied the better the chances are for both mother and child. In the use of bags or bougies their introduction necessitates in a large percentage of cases the use of an anesthetic, and when labor begins and has progressed sufficiently, it is often necessary to hasten its termination by the use of forceps or a version with extraction. Both of these procedures require the use of a second anesthesia. In the interval between the introduction of bags or bougies and the termination of labor, the patient is becoming more toxic and valuable time is lost, endangering both mother and child by the delay in emptying the uterus. The shock to the patient in performing the more radical hysterotomy is no more than a hard forceps operation or a version with extraction, and

instead of two anesthetics with an interval of delay only one anesthetic is given, thereby lessening the introduction of further toxins into the maternal tissues.

As the fetal mortality in this condition is extremely high, it seems reasonable that by the adoption of this radical procedure it will be lowered considerably. The following are the statistics in a published report of ninety-two cases of eclampsia at Winter's clinic treated by the various methods:

Cases	Method	Maternal mortality
8	No interference.....	40%
19	Delivered after full dilatation of the os....	30%
32	Delivered late in the second stage by bags and incisions of the cervix.....	25%
34	Delivered by early vaginal section.....	0%
22	Delivered by abdominal Cesarean section..	None

These statistics seem very impressive. While there are only ninety-two cases reported giving the results of the various methods of treatment, they certainly teach us considerable as regards the proper handling of these severe and fearful cases. The following case came under my observation at the Post Graduate Hospital:

**CASE.**—Mrs. G., age twenty-three, para 1. *Family history.*—Father and mother died of tuberculosis at an early age.

*Previous history.*—Three years ago she had several attacks of articular rheumatism, involving knees, ankles, and wrists; the duration of these attacks was three months. Following this there was an attack of pleurisy. Shortly after this she was treated at the Dublin Hospital, Ireland, for cardiac dropsy. Two years ago had pneumonia of five weeks' duration. Has been treated off and on since then for kidney trouble.

*Present history.*—On March 8th the patient came to the hospital complaining of dyspnea, frontal headaches, spots before the eyes, dizzy spells, and swelling of the feet and ankles. Headaches had increased in the last few days with throbbing of the eyeballs. She had vomited off and on with varying degree of severity for the last seven and half months.

The urine was examined at this time, showing considerable albumin and hyaline and granular casts. Attempts were made to persuade her to enter the hospital immediately, but without success. Three days later she entered the hospital with an exaggeration of all the foregoing symptoms. At this time her urine on examination showed an increase in albumin and many hyaline and granular casts. Her blood pressure was 140. Heart action was very rapid, varying from 130 to 140. The patient at this time complained of epigastric pains. The pelvic measurements showed a slight flattening, the true conjugate measuring nine to nine and one half cm. The fetus was of fair size and in good condition. It was estimated gestation had progressed about eight and a half months. The head was not engaged in the superior strait. Fetal heart varied from 168 to 170. As the patient presented all the symptoms of a severe toxic state, it seemed that she was on the verge of an eclamptic seizure, and it was deemed advisable to empty the uterus immediately. After keeping the patient under observation for several hours we felt that further delay would certainly prove fatal for the child and possibly the mother through an eclamptic attack.

In view of the moderate contraction of the pelvis, it was thought wiser to perform an abdominal section rather than to do a vaginal section and find difficulty and delay in extraction of the head. A classical Cesarean section was done and a living six pound male child was delivered. The postoperative course for several days showed a high pulse rate, ranging from 140 to 160, then gradually assumed the normal rate. The patient in the meantime was placed upon an eliminative treatment which consisted in colonic irrigations, saline catharsis and a limitation of nitrogenous intakes. The patient left the hospital at the end of two

weeks, the abdominal wound having healed primarily. At this time the urine was free from albumin and casts, and her toxic symptoms had entirely disappeared.

I feel sure that if this patient had been treated by conservative measures that the delay in emptying the uterus would have caused the death of the fetus from the severe toxemia and that the mother's chances of coming through an eclamptic attack would have been considerably lessened.

250 WEST SEVENTY-FIRST STREET.

## IMPOTENCE.

### *Its Significance and Treatment.*

BY BURTON PETER THOM, M. D.,  
New York.

Impotence is a condition of great significance in the diagnosis of certain diseases and it is also one which is met with considerable frequency. Impotence in itself is not a disease; it is a symptom, the result of a cause which may be functional or organic. The distinction between these two causes, functional and organic, is well marked. The two never coexist. Functional impotence implies the loss or impairment of the power of erection due to psychic influences, such as fear, superstition, or perversion, or to debility of the nerve centres from exhaustion following excesses or the effects of some wasting disease. The clinical picture of functional impotence presents many diversities. They are perhaps the more interesting because so many of them originate from depths of the psyche which we are at present unable to fathom. One of these and the one easiest to understand is fear, usually of contracting some venereal disease. Under circumstances where such apprehensions need not be considered, as the marital state, these individuals are perfectly potent. Most frequently the mental impressions or perversions which exert a deterrent effect on the sexual power are the result of some shock or unnatural stimulus to the mind in the past. If the mental scar, as it were, can be smoothed out these patients are quickly restored. It is remarkable how many of these cases bear out the theories of Freud.

Impotence due to exhaustion from excesses or from the debilitating effects of disease may be considered as a neurosis which is cured by the removal of the cause. Organic impotence is due to some structural change either in the penis or, more remotely, the nervous system or other organs which inhibit erection. Organic impotence originating in the penis may be due to trauma or disease. An example of a traumatic cause is the fracture of Buck's fascia, the enveloping and supporting fascia of the organ, due to violence in coitus or to a blow or crush. The resulting impotence is caused by inability of the penis to erect beyond the point of fracture. Congenital deformity such as epispadias or hypospadias are causes of impotence, but in these cases the deformity must of necessity be extreme. Shortness of the frenum, causing the penis to bend during turgescence, has been given as a cause of impotence. I am inclined to think, however, that as



a cause of impotence this condition is rare. Scrotal hernia, hydrocele, elephantiasis, and carcinoma of the penis are causes of organic impotence. Distortion of the organ from loss of tissue due to trauma or disease may cause impotence. The plaques and nodules that sometimes follow gonorrhea or are associated with gout, penile topi as it were, may cause distortion. These indurations may be single or multiple, soft or of almost bony hardness. Touffier, Pousson, and Verneuil found them present in diabetes and I can personally recall a similar case. Gummata of the corpora cavernosa may also cause tissue destruction and consequent scar formation and thereby prevent normal erection. But by far the most frequent cause of organic impotence existing in the penis itself is stricture of the urethra. This applies to stricture of any part of the canal. In fact it can be stated almost positively that every tight stricture causes impotence and is almost invariably cured by dilating the urethra to its normal calibre.

Impotence is frequently coexistent with disease of other organs, notably chronic interstitial nephritis and diabetes. It is well, therefore, in searching for the cause of impotence in a middleaged man to examine the urine, the eye fields, and the blood pressure. Many diseases of the spinal and cerebral nervous systems cause impotence. Of these the one most frequently encountered is locomotor ataxia. It is often the symptom for which the patient first seeks medical advice because it not infrequently is the first noticeable symptom that he has. Where disease of the kidneys, diabetes, stricture, or exhaustion can be excluded incipient tabes should always be considered. The reflexes should be carefully tested, bearing in mind that in tabes they are lost, but are increased in Erb's spastic paralysis which is the symptom complex most resembling tabes. Examine the eyes for inequality of the pupils or the Argyll Robertson phenomenon. Inquire as to fleeting but intense pains in the extremities or trunk which the patient may ascribe to rheumatism. Note whether the patient gives a history of symptoms which you may regard as "crises"—gastric, laryngeal, rectal, or vesical. It may be well to remember that many attacks of so called indigestion which can be laid to no dietary indiscretion are often nothing more nor less than a gastric crisis of an unrecognized tabes. The presence or absence of Romberg's, Westphal's, and Kernig's signs should be determined. None of these pathognomonic signs, however, may be present. As a rule they are not present in the incipient stage and it is usually in that stage that the patient presents himself. For that reason, if for no other, a Wassermann should be taken of the blood and a lumbar puncture made in order to determine the cytological findings of the spinal fluid. The last will reveal much should the case be one of locomotor ataxia or some other form of nervous syphilis. It is well to remember in regard to the examination of the spinal fluid that the Wassermann is positive in only about fifty per cent. of tabetics. The factors to be considered in a cytological diagnosis are an increased cell count, a positive Noguchi or colloidal gold, or a Pandy or Nonne-Apel't test.

The treatment of impotence naturally resolves itself into the treatment of the cause. Psychical impotence requires a thorough analysis of the psyche in order to discover the underlying mental fault. A few words of cheer and encouragement and a sympathetic understanding of the patient's disability helps many of these patients immeasurably. Those cases whose impotence is due wholly to sexual excesses should be enjoined to rest. This implies mental as well as physical rest. The patient should be warned against lascivious thoughts such as may arise spontaneously or from the outward stimulus of books, pictures, or conversation, especially with the opposite sex. Such cases are benefited by tonics—strychnine, zinc phosphide, phosphorus oil, sumbul, ginger, yohimbine. Cold sponging and some form of electricity are also beneficial. The faradic current is in my opinion the best form to use. The sponge electrodes should be applied to the scrotum and the groins. Its action is almost entirely psychic, but even so it helps. Massage of the prostate is of decided benefit to these atonic cases; so also is the rectal psychrophore with cold water. I do not advocate the use of the urethral psychrophore, but the passage of a cold sound of moderate size, about 26 French, is attended with good results in some cases. The occasional instillation of a four per cent. nitrate of silver solution, about eight minims, with a Keyes-Ultzmann or preferably, a Guyon syringe, in the deep urethra I have found has a decided tonic and stimulant effect. A procedure which I have found of marked benefit, especially in middleaged men, is circumcision. It is truly surprising how many of these patients will "pick up" after this little operation. In a somewhat extensive experience I have rarely known it to fail. Circumcision not only causes a return of sexual power, but it also causes a distinct increase in the size of the organ, which is a source of vast satisfaction to many of these patients.

Some years ago ligation of the dorsal vein of the penis was advocated as a surgical measure for impotence. At present it is rarely performed. Its benefit is problematical at best and therefore has been relegated to the limbo of exploded fallacies. It should not be done. A patient complaining of impotence who shows a varicocele should be operated upon; although varicocele cannot be classed as a cause of impotence except in a psychic sense. The relief to the patient's mind which the operation affords is sufficient reason for doing it. I prefer the open operation to the subcutaneous ligation method, unless the varicocele is very small. Opening the scrotum directly over the veins is the operation which I prefer to that of Bloodgood or Thornburgh, where the incision is made in the inguinal region over the cord. Impotence due to constitutional dyscrasia the result of disease of such organs as the kidneys or cerebrospinal system offers but slight hope of restoration. The patient should be told the facts plainly. Not infrequently he does not realize the seriousness of his condition. He should not be allowed to continue under such a delusion. It is for the honest physician to set him right so that he may receive proper treatment before, perhaps, it is too late.



# PAI TA-SHUN, POET, PROFESSOR, AND PHYSICIAN.

During the past two years many charming lyrics have been printed in the literary magazines signed "Pai Ta-Shun." These have dealt commonly with natural phenomena or with landscapes in their relation to humanity and to the universe, themes which are favorites with Chinese artists whether of the pen or of the brush. One of these, a study of the flight of wild geese, brings vividly before the reader a picture not only of the flight of the birds itself, but of the far off lands whence they come and whither they go:

## WILD GEESSE.

How oft against the sunset sky or moon  
I watched that moving zigzag of spread wings  
In unforgotten Autumns gone too soon,  
In unforgotten Springs!  
Creatures of desolation, far they fly  
Above all lands bound by the curling foam;  
In misty fens, wild moors and trackless sky  
These wild things have their home.  
They know the tundra of Siberian coasts,  
And tropic marshes by the Indian seas;  
They know the clouds and night and starry hosts  
From Crux to Pleiades.  
Dark flying rune against the western glow—  
It tells the sweep and loneliness of things,  
Symbols of Autumns vanished long ago,  
Symbols of coming Springs!

The poems of Pai Ta-Shun have been collected and printed in luxurious form by Kelly & Walsh of Shanghai,<sup>1</sup> illustrated with collotype reproductions of ancient Chinese paintings and bound in Chinese silk, and with the appearance of the volume comes the announcement that Pai Ta-Shun is the pseudonym of Dr. Frederick Peterson, a well known New York physician.

Doctor Peterson was for years an assistant editor of the NEW YORK MEDICAL JOURNAL and a frequent contributor to its columns. Not only have many of his communications on purely technical topics appeared in the columns of this journal, but he has also contributed editorial articles from time to time and at least on one occasion a dainty bit of verse.

Another of the poems in the new volume of verse which is beautiful in its simplicity and which adheres closely to the traditions of classic Chinese poetry shows how each little circumscribed area contains a world all complete within itself.

## THE BRIDGE.

Across the foaming river  
The old bridge bends its bow;  
My father's fathers built it  
In ages long ago.

They never left the farmstead  
Past which the waters curled.  
Why should one ever wander—  
When here is all the world;

Family, friends, and garden;  
Small fields of rice and tea;  
The cattle in the meadow;  
The birds in stream and tree;

The pageant of the seasons  
As the slow years go by;  
Between the peaks above us  
An azure bridge of sky?

Though dead, they live and linger  
In each familiar place  
With kindly thoughts to hearten  
The children of their race.

Nor are the poems of Pai Ta-Shun the first adventure of Doctor Peterson in the realm of belles lettres, for as long ago as 1883 he published a volume of poems and Swedish translations. In his own specialty, that of neurology, Doctor Peterson has long occupied an eminent position, as a teacher, a consultant, and an author. For many years he was professor of psychiatry in Columbia University, and is the joint author with Doctor Church of a work on nervous and mental diseases and with Professor Haines of the American Textbook of Legal Medicine, and is Editor of von Hoffman's Hand Atlas of Legal Medicine. He is now consulting neurologist to the Manhattan State Hospital and the Neurological Institute and consulting alienist to Bellevue Hospital.

## Abstracts and Reviews

### DEVIATIONS FROM THE ORDINARY IN CARDIAC FUNCTION.

*Observations on Some of the Commoner Forms Encountered in the Examination of Supposedly Normal Persons.*

By W. S. THAYER, M. D.,  
Baltimore.

Doctor Thayer stated that many common cardiovascular phenomena were interesting in connection with the examination of the heart in supposedly healthy individuals applying for insurance, for entry into the army or navy, for membership in mutual benefit organizations, or with regard to fitness for athletic sports. First, in regard to questions about the size of the heart, it was not infrequent to meet with patients regarding whom there had been some controversy as to the presence or absence of evidences of cardiac hypertrophy. This was especially common in the growing boy in whom, from the ages of ten to sixteen, the heart was often disproportionately large as compared with the general physical development. Such a condition was in no sense alarming if the boy was about at puberty, unless the heart was really larger than it should be in the adult, or unless there were definite signs of cardiac embarrassment or of hypertension. The so called hypertrophy of adolescence was in many instances a simple, temporary disproportion between the size of the heart and the size of the physical frame.

Second, the striking movability of the heart was not always appreciated. Misconceptions had often been made based on a physical examination with the patient lying on the left side, with the resulting shifting of the apex impulse to a point well outside the usual position. The change of position of the normal heart sometimes amounted to as much as a hand's breadth as the patient turned from side to side.

Third, regarding gallops and split sounds, con-

<sup>1</sup>New York, Scribner & Sons.

siderable confusion sometimes arose in connection with the interpretation of split heart sounds and with the presence of so called gallops. The commonest form of a split heart sound, was the reduplication of the second sound during inspiration. This reduplication, present in many apparently normal individuals, depends on delay in the closure of the pulmonary valves, and might perhaps be regarded as confirmatory evidence of muscular weakness, if present throughout the cycle or in association with other signs of cardiac disease. There was, however, no positive evidence to indicate that a slight splitting of the second sound during inspiration alone in the pulmonary area in the absence of other evidences of cardiac disturbance, need be regarded as a phenomenon of special pathological significance. The significance of gallops and their confusion with split sounds was an interesting question. The first and commonest gallop rhythm was the protodiastolic gallop, or third sound, which was audible in a large proportion of young people in the recumbent or left lateral posture; but without other evidence of cardiac disease this might be regarded as a perfectly normal phenomenon. In a few young people a faint presystolic gallop might be heard, but such a sound, if slight and unassociated with other evidence of disease, was also of no pathological significance. It had also been observed that a protodiastolic gallop of considerable intensity was a common association with, and a grave prognostic sign in ventricular dilatation. A presystolic gallop was the rule in marked hypertrophy with hypertension, but if unassociated with this or other evidences of cardiac disease, it need not be regarded as pathologically significant.

Fourth, systolic murmurs were phenomena which most commonly caused needless anxiety and doubt. In a large proportion of young persons cardiac murmurs were present in perfect health. They were almost always systolic in time. The commoner forms were 1, the basic pulmonary systolic murmurs; 2, the apical murmurs, disappearing in the erect posture, and 3, the cardiorespiratory murmurs, especially the loud, systolic inspiratory murmur so commonly heard in the young in the back after exercise; they were not intracardial in origin and were of no pathological significance.

Fifth, arrhythmias were particularly apt to give rise to controversy. For one reason or another it was too often assumed that peculiarities of rhythm were evidence of disease of the heart muscle, and the term myocarditis was applied far too frequently to the hearts of individuals whose arrhythmia proved eventually to be of little pathological significance. This was also true of the commonest form of arrhythmia, that associated with respiration, which in children, in the young, and in the neurotic was often rather exaggerated. In some children and in young people with bradycardia following an acute disease, this phenomenon was very striking and gave rise to unnecessary anxiety.

A physiological curiosity, rather than a pathological manifestation, was the occasional sinus arrhythmia unassociated with, but often accentuated by, respiration. Polygraphic and electrocardiographic studies of an arrhythmia of this sort showed

no abnormalities in the complexes and a normal sequence of auricular and ventricular beats. Such cases were not especially frequent, but they were not uncommon. Associated with tachycardia, cardiac enlargement, or modification of the heart sounds, the significance of the arrhythmia should be differently regarded. Sinus arrhythmia was usually easily recognized with a high degree of probability by means of careful inspection of the cervical veins and by ordinary polygraphic tracings; with certainty by electrocardiograms.

The form of arrhythmia which gave rise, perhaps, to the most interest was that associated with precocious systoles. Extrasystoles were among the commonest manifestations met with by the physician and among the most difficult to interpret. Is a heart showing precocious systoles, ventricular or auricular, to be regarded as diseased? Must an individual with occasional so called intermissions be refused insurance or considered unsuitable for admission to army or navy? These are two of the hardest questions for the physician to answer. In many instances there was no doubt about conditions pointing to an unstable nervous system or to other general influences, such for example as autointoxication—gastrointestinal disturbance, tobacco, coffee, and of course digitalis—which might increase the cardiac irritability without the production of true organic lesions. Clinically, such cases appeared to be common. On the other hand, extrasystoles were often associated with actual myocardial lesions, hypertensions, or mechanical cardiac defects. In smokers, in the neurotic, in women at the menopause, in individuals who had been subjected to special mental strain, if there were no other evidence of cardiac insufficiency or disease, the extrasystole might be regarded as of little importance. But where the heart was enlarged in the presence of obvious vascular sclerosis or where with extrasystoles which had not been frequent enough to produce of themselves much impairment of function, there was yet evidence of diminished cardiac capacity, the extrasystole should be regarded as a possible evidence of anatomical myocardial change. The hope was expressed that electrocardiographic studies might in time give important prognostic help in such instances.

#### Vertigo: Its Causes and Methods of Diagnosis.

—Lewis Fisher (*American Journal of Surgery*, March, 1917) concludes that the following points with regard to vertigo may be emphasized: 1. There can be no vertigo unless there is a disturbance of the vestibular apparatus. When disease in remote organs is accompanied by vertigo it is because such a pathological state somehow or other affects the vestibular apparatus. 2. Vertigo may be due to simple irritation of the vestibular tracts. In such a case it is temporary and fleeting in character, leaving the apparatus itself intact, and the tests will therefore show normal responses. 3. Vertigo may be produced by a lesion of the internal ear itself. 4. Vertigo may be produced by a lesion situated within the brain along some pathway in association with the ear. 5. Disturbances of the vestibular apparatus, with vertigo, can be definitely diagnosed and differentiated by means of the ear tests.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

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Address all communications to  
A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

### Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MARCH 31, 1917.

## THE RUSSIAN REVOLUTION.

The Russian avalanche that was precipitated with such startling, though by many not unexpected suddenness, while sweeping away the old autocratic régime with its innumerable abuses in every domain of the nation's life, will undoubtedly inaugurate a new era in the world of medical affairs in Russia. This can be confidently vouched for not only by the general character of the upheaval, which is extremely democratic in its nature, but also by the make up of the new Cabinet, which includes among its members such men as Mr. Kerensky, the Minister of Justice, who is an outspoken socialist and a determined defender of the common people's rights, and Doctor Shingareff, the Minister of Agriculture, who has devoted most of his active life to the tremendously difficult cause of public hygiene and sanitation, wherein he became a prominent figure, in the teeth of constant opposition on the part of the government.

Ever on the alert to suppress any social activity that did not emanate from its own sources, and in perpetual fear of private or collective initiative, lest the bureaucratic chains that fettered the nation be

rent asunder, the former autocracy rested primarily on well calculated and thoroughly organized ignorance and poverty of the masses, who were kept down under the heel of tsarism in a state of primeval brutishness physically, morally, and mentally. The country was always suffering from a deplorable lack of physicians, the 1914 census showing 24,031 medical men, three fourths of whom lived in the cities, for a population of 178,000,000. This was due to the small number of medical schools—there are a dozen or so in the entire empire—the entrance into which is hedged about by galling restrictions, and by a process of fine tooth combing that eliminates the “politically unreliable” students. On the other hand, the artificially cultivated ignorance of the masses and the inherent fatalism of the Slav prevented any sanitary and hygienic measures from taking root in the life of the populace. Epidemics that are either entirely absent, or quickly and effectively controlled in other communities, spread like wildfire in Russia, claiming as their victims entire villages, with the government either looking on passively or actually stepping in to prevent their check, if the latter was undertaken by any but governmental agencies.

Russia is the classical land of “cholera boonts,” i. e., the ignorant peasant's revolt against the sanitarian who attempts to introduce measures against the spread of contagious diseases; and many a physician has paid dearly for his devotion to the cause of public sanitation. The contagious and infectious diseases, such as syphilis, typhus, smallpox, diphtheria, etc., find a favorable habitat in the land, and show a mortality of two millions for the last ten years, out of a morbidity of fifteen millions. The general mortality is simply appalling: Twenty-three per cent. die before they reach one year of age; and less than one third reach the age of fifty. The general mortality in 1911 was twenty-eight, just double that in the United States. This is not at all surprising if we consider that on the average a hospital in Russia contains but twenty-seven beds, and supplies the needs of a population of some 20,700 people in an average area of 2,400 square miles. The general morbidity, as registered by the various municipal bodies, exclusive of the practice of private physicians, amounted in 1911 to eighty-seven millions, which means that every second person in the land had to seek medical advice; of these, twenty millions, or twelve per cent. of the entire population, were put down as suffering from contagious diseases.

Fortunately for Russia, it not only rid herself of



tsarism, which Herten, one of the early martyrs of Russian freedom, branded as "crime permanently enthroned," but of a no less formidable enemy that sapped the very vitality of the nation, namely, alcoholism; thus the government was compelled to abolish, much against its will and interest. Statistics of the effects of alcohol are too horrible to go into; it is sufficient to observe that almost one third of the nation's wealth, over five hundred million dollars, was spent annually on drink, mostly out of the pockets of workmen and peasants. In 1908, 30,000 fatal accidents were directly traceable to drunkenness, which was also responsible for one third of all the crimes committed, the number reaching one half in the province of Petrograd, for one fourth of the population of the insane asylums, an enormous number of hereditary alcoholics, criminals, prostitutes, mental defectives, idiots, etc., *ad nauseam*. For all this the old régime is directly responsible. The victory over alcohol is by far not complete, as there appeared on the market numerous substitutes, most of them containing wood alcohol, with its resulting fatalities in death or permanent blindness.

The new government is indeed facing a colossal task, but with the two great enemies removed, and given the unbounded natural wealth of the country, and the wonderful vitality of the nation with its inherent love for order and selfrestraint, as shown by the occurrences of the last few days, there opens before our mental eye a vista of undreamed of possibilities, when Russia will be admitted into the family of civilized nations, among whom it shall occupy the place that its greatness deserves.

#### PURCHASING MILITARY SUPPLIES.

At the close of the Spanish-American War the Dodge Commission was appointed to investigate its conduct and recommend steps which might be taken to prevent a recurrence of the errors which had been committed in that war. This commission recommended that "a year's supply for an army at least four times the actual strength, of all such medicines, hospital furniture, and stores as are not materially damaged in keeping, be kept constantly on hand in the medical supply depots."

We now have material in reserve for the sanitary equipment of an army of approximately two hundred thousand men. But our army now is being recruited up to about that number, exclusive of the National Guard; consequently, we shall have only one fourth the medical supplies recommended by the Dodge Commission as the minimum. In the event of war we shall require in addition to the regular army, at least two hundred and fifty thousand militia and five hundred thousand volun-

teers. To meet the medical requirements of these three quarters of a million men, we are told by the *Military Surgeon* that there is now practically nothing on hand and that even if the money were available it would take "nearly a year to obtain the material which would cost about ten dollars a man." We are relatively exactly where we were at the outbreak of the war with Spain and at the outbreak of the Civil War, namely, with barely enough supplies for the regular army and no provision made for the volunteer army.

The first step to be taken is for Congress to comply with the recommendation of the Dodge Commission and authorize the purchase of reserve supplies for an army four times the actual strength of our present army or better still for an army of 750,000. This should be done immediately and will give us at least a stock to cover our needs for the immediate future.

But this step only meets the immediate situation and still leaves us without adequate provision for additional supplies which we need in excess of the quantity named and moreover does not provide for the supplies which are not permanent in their character. In addition to this step, therefore, we must make a radical departure from the methods which have hitherto prevailed in obtaining governmental supplies of all sorts. So long as Congress requires the present system to be followed there will invariably be scandals associated with the outbreak of war.

The Navy Department, which is practically always on a war footing, has shown a way out of this difficulty. We learn from the daily press that all the ship yards and armor plate plants in the United States have agreed to devote at least seventy per cent. of their force to Government work and to accept a profit of ten per cent. above the actual cost for work performed for the Government. If the War Department is authorized to make contracts on a similar basis it would certainly not take a year to obtain the medical material for three quarters of a million men, providing the contracts were divided among all the manufacturers of such goods.

Much of the time required in filling orders for military supplies is taken in getting specifications, issuing instructions, advertising for bids, making awards, and in what might be termed the preliminary paper work on the part of the contractors. All this could be saved by adopting the following suggestions:

Let the authorities take a census of the manufacturers of military medical material, noting the special lines which they manufacture and their capacity. Divide the requirements for armies of two hundred and fifty thousand, five hundred thousand,

one million, and two million, among all these manufacturers proportionately. Furnish each manufacturer with a complete schedule of the articles which he would be asked to supply with full instructions as to packing, shipment, and point of delivery. Provide each manufacturer with a secret code, and on receipt of the appropriate code word he would immediately begin the manufacture and delivery in the shortest possible time of the quota of goods allotted to him for an army of a quarter of a million, a half million, or a million as the case might be. Let contracts with the manufacturer be contingent contracts under which he would agree to furnish the goods required in the shortest possible time, after receipt of a definite order, at a price to be made up of the actual cost of production, plus a specified profit.

The weak point in giving contingent contracts as proposed is that the contractor has no incentive to accumulate reserve stocks of crude materials. Whether it is rubber for plasters, wool for blankets, or iron for enameled furniture, the average manufacturer does not carry in reserve a sufficient quantity of raw material to enable him to meet any such demand as would arise in case of the mobilization of half a million troops. But if these contingent contracts were arranged in advance, every contractor would at least be able to plan his work in advance and weeks or even months of valuable time would be saved besides the monetary saving which would run into the millions. Legislation would be required to authorize the purchase of supplies on such contingent contracts, but there should be no difficulty in obtaining such legislation.

### THE BIOLOGY OF WAR.

Much is said these days about the human and basic necessity for war as an institution. If such an institution be a necessity, however, it must assuredly find its reason in some biological requirement of the human race, and this, it is asserted, does of reality exist. Few scientists have examined into the nature of this necessity and therefore unusual interest attaches to the opinions expressed by Jacques Loeb (*Science*, January 26, 1917). Loeb concludes that the views expressed above pertain to a pseudoscience and have no true basis in observed data either experimental or quantitative, and that wars, biologically speaking, are neither justifiable nor desirable.

Loeb states that the war enthusiast's biology is antiquated, in that it depends on the old literal ideas of the survival of the fittest, and the struggles for existence which Loeb goes on to show are not of universal application and are metaphorical rather than exact. War is especially welcomed by "indi-

viduals with a strong homicidal mania, who just manage to suppress their paranoiac tendencies since it removes for them the burden of constant inhibition." And yet human society is dependent for its existence on the very consciousness of that inhibition and "a nation is liable to pay a high price for the privilege of having a semipractical individual at the head of its government."

Loeb takes decided exception to the view that so called strong or superior races have the right to impress their ideas and type of civilization on other races because of an inherent biological necessity or obligation. No such thing exists. A new type of statesmanship is needed which shall be based on the application to international affairs of the practical and also the theoretical results of exact science, and which shall follow the methods of experimental and quantitative science in its operations.

### SPRING FEVER.

Popularly at least there is still afloat a belief in an entity known as spring fever. Old wives run for household laxatives and tonics, and manufacturers of nostrums fatten upon the credulities and habit superstitions of mankind. Even physicians incline to a seasonal housecleaning in the body organism and talk of impure blood, constipation, auto-intoxication, and what not.

There is at work an expectation of lassitude and lack of tone—fever seems wide of the mark—which meets with fulfilment. Society has always been accustomed to think and move in fixed grooves and only with difficulty to move from them to a more actual plane of living. Overwork, general climatic conditions, and the particular turn of the year are some of the rationalizations which serve to hide the real causes of lack of healthful efficiency.

The oppression of the annual sulphur and molasses regime is still sufficiently upon us to cause us unconsciously to choose this time of the year as an excuse to give way to an indolence which is always seeking to turn us out to play. This pleasure desire withdraws from the task that abundant flow of interest which rightfully knows neither times nor seasons, and which truly exercises the body away from fatigue and malaise. The law of the conservation of energy, however, teaches us that withdrawn energy is only at work somewhere else. Therefore it may be suspected that in man's ancient and somewhat magical feeling of identification with the world of nature, which still survives, there arises at this season a renewed impulse for self-expression, and for exercise of creative power. And yet man's life today is so complex and hampered by the manifold restraints of a cultured society that at once a thou-

sand considerations oppose themselves to the freedom which the awakening of Nature calls forth. Hence that feeling of ineffectualness which easily interprets itself in terms of an overcharged blood stream, sluggish intestinal activity, or other somatic disturbance. It is the same unrest, with the same symptoms, which may be observed at any time or season in those, for example, whose chronic condition is one of repression and fettered interest.

For man, in his dual impulse to activity and to indolence, is prone to forget the control which the human race has acquired to make it independent of external conditions and to permit it, in the interests of progress, the sort of dynamic utilization which directs the sum of energy into an increasing joy of activity, that crowds out lassitude and illness itself. A true spring fever might thus well be cultivated to supplant all periods of default of energy and to continue spring at all times and under all circumstances.

#### AGAIN THE FLY.

War was declared against the hosts of *Musca domestica* years ago. The only outcome is the supremacy of popular intelligence and science, but the cost in human life is great. This phase of the great war against preventable disease and its manifold sources of infection is waged by the general public. Our indefatigable government supplies the weapons of knowledge; bacteriologists, entomologists, and sanitarians constitute the spy system, and munitions can be procured at the local drug store. In a few weeks the seasonal truce will expire. Countless numbers of little maggots will crawl out of their trenches in various forms of decomposing animal and vegetable matter, take wings unto themselves, and alight in our midst supported by their assiduous allies, the bacteria, grateful for the lift to more comfortable quarters for propagation.

The impending struggle between nations and the existing struggle between genus *Homo* and genus *Musca* with its allies *Bacteria* fortunately demand different preparation, equipment, tactics, and strategy. With a war cloud considerably larger than a man's hand on our national horizon, we should take up this season's campaign against the fly as an important factor in health preparedness. If the storm breaks we must maintain the highest possible physical efficiency. We must eliminate as far as it is scientifically possible all known sources of infection. Some sources are infinitely obscure and devious. One so obvious, so patent, so easily controlled as germ laden flies must be wiped out. Not only must this season's flies be killed, but this season's work must contribute toward the complete elimination of the whole race of flies in contact with man.

The United States Public Health Service in a bulletin entitled *Experimental Studies with Muscicides and Other Fly Destroying Agents* (*Hygienic Laboratory Bulletin No. 108*) offers a comprehensive study of the various lines of attack and the best means of disposing of our fly enemies. Swatting is conceded one hundred per cent. efficient, but requires the maximum of human effort. Sticky fly papers are unsightly and unpleasant. Poisoning is the simplest and its disadvantages—the dangers to children and the scattering of fly corpses—are the least objectionable. As a result of extensive experimentation, it is concluded that the dangerous arsenical commercial fly papers are much less effective than formaldehyde—1.25 to 2.5 per cent. of the forty per cent. solution sold as formalin—and a one per cent. aqueous solution of sodium salicylate. These poisons should be exposed in small dishes or other containers to tempt the fly as he goes about his nefarious business. This is the whole story. As every one knows, the method and the material are simplicity itself. The fly seems willing and anxious to be caught. We are told that he is no less attracted to plain poison than to sugared poison. He has no prejudices. The essential factor is human persistence.

#### Obituary.

CHARLES S. BRADDOCK, JR., M. D.,  
Haddonfield, N. J.

Dr. C. S. Braddock, Jr., formerly chief medical inspector of Siam, and a leading expert on cholera and smallpox, died at his home in Haddonfield, N. J., on March 25th, of cerebral apoplexy. Doctor Braddock won a world wide reputation thirteen years ago when he perfected a smallpox virus now used in the tropics. In 1901 he was appointed chief medical inspector of the Royal Siamese Government, and in that capacity traveled all over the kingdom in his fight for sanitation. One of the last acts of Doctor Braddock before he left Siam was to write the health and sanitation laws now in effect there.

Doctor Braddock was born in Haddonfield in 1863. He was graduated from the College of Pharmacy in 1886, and from the Jefferson Medical College in 1896. After serving in the Spanish-American War, where he was detailed to the cruiser *Resolute*, Doctor Braddock resumed his practice at Haddonfield. He was a member of the Japan Society, the Circumnavigators' Club, the Army and Navy Club of New York, the Camden Medical Society, and the American Medical Association. He was for years a writer on medical subjects and was a frequent contributor to the *NEW YORK MEDICAL JOURNAL*. Doctor Braddock received two medals from the American Government and many gifts from the Siamese Government.



## News Items

**American Association of Immunologists.**—The fourth annual meeting of this association will be held at the New York Academy of Medicine, Friday and Saturday, April 6th and 7th, under the presidency of Dr. Richard Weil, of New York.

**American Association of Pathologists and Bacteriologists.**—The annual meeting of this association will be held in New York, Friday and Saturday, April 6th and 7th, coincidentally with the American Association of Immunologists. Programs may be obtained from the secretary, Dr. H. C. Ernst, 240 Longwood Avenue, Boston, Mass.

**Hearing on the New York Narcotic Bill.**—The bill providing for changes in the New York State antinarcotic law, which were recommended by the joint legislative committee, was the subject of a hearing at Albany on March 22d. Representatives of various medical and pharmaceutical organizations appeared at the hearing. Several minor points in the law were criticized, though the changes as a whole met with the approval of most of those in attendance.

**A Five Hundred Bed Base Hospital Presented to the Government.**—Mr. Clarence H. Mackay and his mother have presented to the United States government, through Roosevelt Hospital, a five hundred bed base hospital. The organization of the unit has been completed and if war is declared will at once enter the service as Red Cross Base Hospital No. 15. Dr. Charles H. Peck is director of the unit, Dr. James I. Russell is chief of the surgical service, and Dr. Rolfe Floyd is chief of the medical service.

**Medical Association of the Greater City of New York.**—A special meeting of the association will be held in the Masonic Temple, Richmond Hill, Long Island, on Monday, April 2d, at 8:45 p. m., under the direction of Dr. L. Howard Moss, chairman for the Borough of Queens. Dr. Charles T. Sharp, resident physician of Queensboro Hospital for Contagious Diseases, Jamaica, will deliver an address on Complications of Scarlet Fever, which will be illustrated with lantern slides. Dr. E. E. Smith, of New York, will read a paper on Gastrointestinal Toxemias: Their Pathological and Clinical Significance.

**Personal.**—The Board of Health of the City of New York has sent the name of Dr. Linsly R. Williams to the Civil Service Commission with the request that he be appointed deputy commissioner of health of the City of New York without civil service examination. Doctor Williams is at present deputy commissioner of health for the State.

Dr. Luther C. Peter has been appointed professor of ophthalmology at Temple University, Philadelphia, to fill the vacancy caused by the death of Dr. Wendell Reber.

Dr. Charles S. Hirsch has been elected urologist to the Jewish Hospital, Philadelphia.

Dr. Paul J. Pontius has been appointed visiting ophthalmologist to the Philadelphia General Hospital.

Dr. Ethan A. Gray has been appointed assistant professor of medicine in Northwestern University. He was formerly medical superintendent of the Chicago Fresh Air Hospital.

**New Jersey Division Medical Reserve Corps, U. S. A.**—On Wednesday evening, March, 28th, there was organized at the First Regiment Armory, Newark, N. J., the New Jersey Division of the Medical Reserve Corps of the United States Army. The following officers were elected: First Lieutenant David A. Kraker, Newark, president; vice-presidents, First Lieutenant Martin W. Reddan, Trenton, First Lieutenant James L. Evans, Woodcliff, First Lieutenant H. S. Martland, Newark; First Lieutenant Joseph MacDonald, Jr., East Orange, secretary; First Lieutenant Ambrose F. Dowd, Newark, treasurer. The following councilors were elected; First Lieutenant A. A. Strasser, Arlington, N. J.; First Lieutenant D. H. Crawford, Newark, N. J.; First Lieutenant D. B. Street, Jersey City, N. J.; First Lieutenant W. J. Condon, New Brunswick, N. J.; First Lieutenant J. H. Carlisle, Passaic, N. J. If any regular licensed physician in the State of New Jersey desires to join the corps, application may be made to any officer or councilor, when the necessary blanks will be furnished.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, April 2d, Wills Hospital Ophthalmic Society, Academy of Surgery, Clinical Association, Blockley Medical Association; Tuesday, April 3d, Aid Association of the County Medical Society (directors), Laryngological Society, Medical Examiners' Association; Wednesday, April 4th, College of Physicians; Thursday, April 5th, Obstetrical Society, Southeast Branch of the County Medical Society; Friday, April 6th, Physicians' Motor Club (directors).

**Medico-Chirurgical Buildings to Be Spared.**—At a conference held on Monday, March 19th, between Mayor Smith and a delegation that included Dr. James M. Anders, Dr. Ernest La Place, Dr. William E. Ashton, Dr. L. Webster Fox, and former Attorney General John C. Bell, who represented Provost Edgar Fahs Smith, of the University of Pennsylvania, it was decided that, while all buildings along the line of the Parkway were to be razed by June 15th, according to specifications in the bids, the group comprising the Medico-Chirurgical Hospital should be spared temporarily for use in case of war.

**Lectures on Military Medicine at Cornell Medical College.**—Cornell University Medical College announces a course of lectures on military medicine, sanitation, and surgery, to be given at the college, Thursday afternoons at five o'clock, by Major Philip W. Huntington, and Captain Arthur N. Tasker, of the Medical Corps of the United States Army. The course is open to the senior class of the college and to all members of the Medical Reserve Corps in and about New York, as well as to the physicians and nurses of the various Red Cross units throughout the city. A printed program of the lectures can be obtained from Dr. W. M. Polk, dean of the college.

**Auxiliary Medical Committee for National Defense of New York.**—This committee is a subsidiary of the Council of National Defense and its membership comprises the presidents of the New York County Medical Society, and the Academy of Medicine, the deans of the city's medical schools, and the heads of Red Cross hospital units. The navy needs fifty and the army 340 doctors immediately, and the committee intends to get together as many of them as soon as possible. Last Thursday evening lectures were delivered at the Academy of Medicine by Colonel F. M. Hartsock, of the Army Medical Corps, and Medical Inspector Lung, of the navy, showing how the service offers attractive careers to young doctors.

**The Council of National Defence.**—The Philadelphia Medical Auxiliary of the Council of the National Defence was organized on March 6th. It is in charge of a committee composed of the following members: Dr. John H. Jopson, chairman, Dr. Charles A. E. Codman, secretary, Dr. Richard H. Harte, Dr. Edward Martin, Dr. Robert G. Le Conte, Dr. John M. Baldy, Dr. George E. de Schweinitz, Dr. Frank C. Hammond, Dr. John H. Gibbon, Dr. E. H. Siter, Dr. Edward Kirk, Dr. William Pepper, and Dr. Seneca Egbert, of Philadelphia, Dr. John B. McAllister, of Harrisburg, Dr. Cyrus L. Stevens, of Athens, and Lieutenant Colonel Henry F. Page, Medical Corps, U. S. Army. To these will be added an officer of the Medical Department of the National Guard of Pennsylvania.

**Physicians Wanted to Serve in the Medical Officers Reserve Corps.**—The Association of the Medical Reserve Corps, U. S. Army, New York State Division, has issued an appeal for more members of the Medical Officers Reserve Corps, U. S. Army. If it is found necessary to increase the regular Army forces, the U. S. Army will require a large number of medical officers to carry on the necessary work of examining recruits, as officers of volunteer regiments to be formed, as officers of ambulance companies, base hospitals, etc. The members of the regular Medical Corps of the Army will all be required for instructive and sanitary work, so that it will be necessary to call on the members of the medical profession of New York and all over the United States to help. A board of officers of the Medical Officers Reserve Corps of the United States Army will be in session at the New York Academy of Medicine every week day except Saturday, from 3 to 5 p. m., to examine candidates for appointment in the corps, and to explain the details of the work they may be called upon to do.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By LOUIS F. DE M. SARGES, B. S., M. D.,  
Philadelphia.

(Continued from page 503.)

In the group of the hypnotics or nonnarcotic soporifics, expense reduction is best accomplished by an almost exclusive use of certain well tried official drugs, in particular chloral hydrate and the bromides. The former, while still selling at a price approximately twice that prevailing before the war, remains by far the least expensive pure hypnotic drug from the double standpoint of efficiency and cost. Though among the hypnotics longest in use its superiority over more recently introduced agents is as yet practically unthreatened, and there seems no reason why, it in the great majority of cases, it should not be given preference over all others. While some caution in its use is, perhaps, wise in the presence of cardiac weakness or depression of the respiratory and especially vasoconstrictor centres, the formerly much emphasized apprehension of harm from chloral hydrate in cardiac cases, transcribed from one textbook to another, has been shown erroneous by Cushny and many others, and need no longer deter the practitioner from availing himself of this drug in the large variety of cases in which its great somnifacient power entitles it to consideration, especially if massive doses are avoided. Its burning taste and the possibility of irritation of a sensitive stomach can be diminished by administration in a dilute mucilage or syrup of acacia, though absorption may thus be somewhat slowed, as well as by the use of syrup of orange or an alcoholic vehicle.

Paraldehyde, though considered somewhat safer in large doses than chloral hydrate from the standpoint of circulatory and respiratory depression, and therefore substituted for it by some in delirium tremens, is admittedly less powerful and certain than chloral and imparts an unpleasant and most persistent odor to the breath. It is, moreover, at present prices about five times as expensive, dose for dose, as chloral hydrate. Sulphonmethane (sulphonal) and sulphonethylmethane (trional), though fairly strong hypnotics, present the disadvantages of acting slowly, of causing more or less persistent depression after the awakening, of occasionally irritating the kidneys, and of sometimes giving rise upon repeated use to a dangerous form of cumulative poisoning. Their substitution for chloral hydrate may at times seem advisable because of their lack of unpleasant taste and gastric irritant properties, but prolonged use—as in the use of other hypnotics, in less degree—is to be avoided. The cost of sulphonal and of trional is about twenty times, dose for dose, that of chloral hydrate.

Probably the chief rival of chloral, from the standpoint of efficiency and general availability in

respects other than cost, is diethylbarbituric acid (veronal). This unofficial agent, now considered by many the equal of chloral hydrate in hypnotic power, is advantageous in being unirritating and almost tasteless and in possessing an additional analgesic property. It acts more rapidly than sulphonmethane, though less rapidly as a rule than chloral hydrate, and the patient is usually free of after-depression. That veronal is by no means free of the possibility of toxic action, however, is suggested by the rather numerous reports of acute poisoning which have appeared since its introduction. While some of these instances doubtless arose through the tendency to excessive doses often attending the use of newly discovered drugs, veronal seems easily to produce peripheral vascular paralysis, several instances of fatal collapse through this action having resulted from administration of only ten or fifteen grains. In view of this risk, there seems little reason for substituting veronal for chloral hydrate in the presence of circulatory weakness. The analgesic property of veronal is of no special advantage, since it can readily be supplied through addition of a small amount of one of the usual analgesics to the chloral hydrate or other hypnotic used. Veronal, moreover, has been held to possess, by reason of its relatively slow rate of excretion, a cumulative tendency similar to that of sulphonmethane, though less marked. Its cost is at present very high.

The bromides, predisposing toward rather than enforcing sleep, belong in a class different from that of chloral hydrate, and require no detailed comparison with the latter. These salts, after exhibiting a tremendous increase in value in the earlier months of 1916, have now returned to a price not far above that prevailing in 1914. Potassium bromide, however, has remained relatively expensive in comparison with the sodium salt, which it now exceeds in cost by nearly 150 per cent. The strontium and ammonium salts are almost twice as expensive as sodium bromide. Potassium bromide is now, pound for pound, not far from equal to chloral hydrate in cost, and since the latter is much the stronger hypnotic, substitution of small doses of it for the larger therapeutically equivalent amounts of bromide seems feasible as an expense reducing measure in appropriate cases. Again, while the sedative power of sodium bromide is admittedly below that of the potassium salt, its substitution for the latter, even in larger doses, seems advantageous in view of the present great difference in cost. The frequently used combination of bromides with chloral hydrates is to be borne in mind as an effectual sedative measure in many cases, though according to recent studies little or no potentiation, whereby the dose of each component might be reduced below one half the dose normal for that drug, is to be expected in a combination of bromides either with chloral hydrate or with morphine.

None among the remaining multitude of hypnotic

remedies, whether official, e. g., ethyl carbamate (urethane), or unofficial, e. g., butylchloral hydrate (crotonchloral), chlorbutanol (chloretone), hedonal, luminal, etc., appears to present any such special useful property as would indicate its substitution for chloral hydrate or bromides, except perhaps occasionally for alternation purposes. While some of the newer imported agents, especially those containing bromine, seem serviceable as mild, rapidly acting hypnotics, most of the unofficial drugs of this class are either weak in action or exhibit undesirable side effects, and their employment at present, in view of the reliable official hypnotics at hand and the extremely high prices at which most of the unofficial hypnotics now sell, appears in most instances distinctly wasteful and useless.

(To be continued.)

#### Treatment of Diarrhea in Breastfed Infants.—

Marfan (*Paris médical*, February 3, 1917) advises, in slight diarrhea in breastfed babies, that, on the first day, the child be put to the breast only every four hours for five or six minutes at a time; a few teaspoonfuls of pure boiled water may be given in the intervals. On the next day, the intervals may be somewhat shortened, the third day, the duration of the feedings increased, and thereafter a gradual return to normal feeding allowed. In more intense diarrhea, three or four feedings may be omitted, the milk being replaced by a quantity of boiled water by bottle or spoon equal to the amount of milk the child would have taken if well. Feeding as in mild diarrhea is then carried out. As soon as the treatment has been started, a search should be made for some definite cause, such as over-feeding or faulty composition of the milk. Even where such a cause cannot be found, and the diarrhea seems due to a special susceptibility of the digestive tract to irritation by mother's milk, no attempt should be made to change the feeding radically unless the condition is obstinate and seriously retards development. The irritability always finally disappears, but meanwhile two feedings daily may be replaced by bottle feedings with diluted and sweetened cow's milk or, if the child be over four or five months old, with a gruel of rice, milk, and water boiled for twenty or thirty minutes. Auxiliary treatment includes the giving of one or two enemas a day of 150 to 250 c. c. of a decoction of marshmallow root at 40° C., to be administered once or twice daily on the first four or five days, then every two or three days. Calomel should be avoided, as it aggravates and prolongs the diarrhea. Lime water may be given, one teaspoonful before each feeding, either alone or mixed with one half part of simple syrup or, if it proves insufficient, of krameria syrup. For more marked effects a mixture of benzophenanthol, bismuth subnitrate, and syrup of opium with acacia and water may be used. If the stools contain much mucus, 0.25 gram of tannigen may be given two or three times a day in a little milk. In the few cases with alkaline and malodorous stools, lactic acid in doses of a little over one minim, before feedings, is sometimes effective. If insufficiency of gastric secretion is suspected, the

following combination may be tried, though not indicated as often as is generally supposed:

R Peppermint . . . . . 1 gram;  
Acid hydrochloric diluted . . . . . 0.5 gram;  
Syrup . . . . . 50 grams;  
Aque distillate . . . . . 100 grams.

M. et Sig.: One teaspoonful a few minutes after, or fifteen minutes before, each feeding.

If, on the other hand, insufficiency of secretion seems chiefly intestinal one may give:

R Pancreatin . . . . . } ana 5 grams;  
Crete. preparate . . . . . }  
Sodii bicarbonatis . . . . . 1 gram

Phon. in chartula no. xx.

Sig.: Three or four powders a day a little before meals in milk or sweetened water.

#### Treatment of Stricture of the Deep Urethra.—

Franklin R. Wright (*Urologic and Cutaneous Review*, March, 1917) says that dilatation can be performed in two ways: either by temporary or continuous pressure. In the temporary method a sound or bougie is passed and allowed to remain in place from a few seconds to several minutes. In the continuous method the bougie is allowed to remain for a number of hours or days. The former method is adaptable to strictures of large calibre, the latter to very narrow strictures. To this mechanical treatment sitz baths should be added. They should be given two or three times daily and should be of from twenty to thirty minutes' duration. After a No. 10 or 12 bougie can be passed without difficulty a bougie or sound need be passed only every four or five days. In traumatic stricture no attempt should be made at dilatation. In all cases the urethra must be kept dilated to its normal size until the scar tissue loses its tendency to shrink.

**Surgical Correction of Deformities of the Nose Without External Scarring.**—J. Bourguet (*Bulletin de l'Académie de médecine*, January 23, 1917) reports successful results in correcting humped, deviated, long, unusually large, or saddle noses by the endonasal route, thus obviating external incisions and scars which sometimes almost completely annul the esthetic success of operations carried out from the external surface. Under local anesthesia Bourguet separates the skin from the underlying supporting tissues. The bone and cartilage in the superfluous segment of the nose is then removed with a small saw or, in humped noses, with an electrically driven burr, and the skin restored to contact with the improved superstructure. In completely deviated noses portions of the frontal bones are luxated, the perpendicular plate of the ethmoid fractured, and the bony frame of the nose carefully straightened and held in place until consolidation occurs by means of an intranasal splint or external apparatus. In saddle nose, a piece of the tibia of suitable size, covered with the periosteum, is transplanted under the skin of the nose. In excessively long noses, excision of a triangular section of the septum and of the triangular cartilage is carried out to reduce the member to its proper size. Finally, in excessively broad noses, the ascending portions of the superior maxillary are displaced toward the median line and portions of the alar cartilages removed.



**New Method of Acidosis Therapy.**—Alexander O. Gettler and Edward Lindeman (*Journal A. M. J.*, February 24, 1917) cite the fact that the amount of alkali in the circulation is directly proportional to the volume of blood plasma. An increase in the plasma should, therefore, be followed by an increase in the total alkaline capacity of the blood and provides a basis for the consideration of transfusion in severe cases of acidosis. Observations on normal persons proved the possibility of artificially increasing the alkalinity of the blood by the oral administration of alkali. An increase of seventy-four per cent. was obtained in one case. This maximum increased alkalinity was obtained in from twenty to forty minutes after the administration of alkali, and it was possible to maintain a marked increase by the frequent administration of small doses. From these observations the authors proceeded to the use of blood from a prealkalinized normal donor in the treatment of a case of most extreme acidosis which had failed to respond to all other forms of treatment. They transfused by the syringe method 1,100 mls of blood and 300 of Locke's solution after the withdrawal from the patient of 400 mls of blood. The results were most strikingly favorable. A second smaller transfusion was made and recovery was complete. This method is, therefore, suggested as available in severe cases of acidosis, especially when not controlled by simpler means.

**Salvarsan Treatment of Syphilis.**—Lloyd Jones and A. J. Gibson (*British Medical Journal*, February 3, 1917) record their experiences in a series of 1,320 injections of salvarsan in 200 cases of primary and secondary syphilis. They gave the drug intravenously and combined the salvarsan with mercury by intramuscular injection according to the following schedule: First week, three doses of 0.3 gram salvarsan and one dose of mercury; second week, one dose, each of salvarsan and mercury; third, one dose of mercury; fourth week, one dose of 0.4 gram salvarsan and one dose of mercury; fifth and sixth weeks, each one dose of 0.5 gram salvarsan and one of mercury; seventh week, one dose of 0.5 salvarsan and two doses of mercury. This was called "Course A" and if a negative Wassermann reaction and absence of all clinical signs were not secured 0.6 gram of potassium iodide was given three times daily for two weeks. If the patient still showed evidences of syphilis three injections of mercury and a total of 1.2 grams of salvarsan were given over a period of fifteen days. The results of this plan of treatment are indicated by the following figures. After Course A eighty-seven per cent. of 125 primary cases gave negative Wassermann reactions and forty-five per cent. of the secondary cases reacted similarly. After the course of potassium iodide in the positive cases in which it was administered sixty-two per cent. became negative among the primary cases and forty-one per cent. of the secondary cases. After the third course of treatment all of the primary cases treated became negative, while only 37.5 per cent. of the secondary cases became so. Out of the entire 200 patients 182 took all three courses of treatment and 100 per cent. of the primary cases showed a negative Wassermann reaction, while eighty-one per cent. of the secondary cases gave the same result.

**Treatment of Tuberculosis.**—C. O. Files (*American Journal of Electrotherapeutics and Radiology*, December, 1916) considers electrical massage the most useful physiotherapeutic measure in tuberculosis. It consists in the application of electricity through the hand of the operator. The negative electrode is held in the patient's hand or applied to any other suitable part of the body, while the operator holds the positive electrode in one hand and practises massage of the patient's limbs with the other, always in the direction of the venous circulation. A faradic current of medium strength or a combined faradic and constant current may be used. The muscles are thus strengthened and the vascular and nervous structures stimulated. The venous blood current is pushed rapidly to the right heart and capillary stasis in the extremities relieved. The value of electrical massage in this direction is manifest in the treatment of varicose veins, the muscular coats of which are rapidly toned up thereby.

**Drosera in the Treatment of Whooping Cough.**—P. Lereboullet (*Paris médical*, February 3, 1917) recommends freshly prepared tincture of *Drosera rotundifolia* in whooping cough and other spasmodic affections of childhood. Large, ascending doses are used, beginning with ten drops to a year of age (maximum, 100 drops) three times daily and increasing by two to five drops at each dose daily until a dose three times the initial one has been attained. The drug is given between meals, and is well borne by the stomach and quite harmless. In infants, in whom it seems especially useful, one drop for each month of age is given three times daily, increased daily by two drops at each dose, sometimes to as high as 120 drops a day. In patients coming under treatment early in the disease, the dose is not increased rapidly at first, the large doses being reserved for a later stage; in those who have already been having paroxysms for ten or twelve days, on the other hand, the doses are quickly increased until the paroxysms show diminution of intensity and frequency, when the dose is maintained or slightly increased up to the fourth or fifth week. After this the amount is gradually decreased. In addition to its effect on the paroxysms, which is clearly apparent in four or five days, the drug brings about cessation of vomiting and marked improvement in the general condition and weight—the latter especially in infants. *Drosera* seems useful also in the cases with intense paroxysms accompanied by spasm of the glottis. In a few cases the disease is apparently aborted in a few days; in others the usual course is run, but in a distinctly mild form. Among several hundred patients thus treated there was but one death. In occasional cases, especially adults, the drug seems without effect. Such drugs as antipyrine, bromides, grindelia, bromoform, and belladonna are therefore at times given with it temporarily. A proof of its action in the average case is that when it is stopped or the dose largely decreased too early, the paroxysms at once resume their initial frequency and intensity. The drug acts well also in bronchitis in young children with raucous cough, in "false whooping cough," and in the frequent, paroxysmal cough of some tuberculous cases.

**Treatment of Severe Frostbite by Active Hyperemia.**—Erminio Ghirlanda (*L'Ospedale Maggiore*, December 31, 1916) reports a case of extremely severe frostbite of both feet where an excellent result was obtained after several months with no other treatment than Bier's hyperemia. This method was then used in many other cases with excellent results and its simplicity greatly adds to its usefulness, inasmuch as all that is required is a wooden box, a zinc pipe, a spirit lamp, and a thermometer. The treatments last an hour and a half and the temperature is at first 80° to 100° C., later increased to from 90° to 110° C.

**Treatment of Hodgkin's Disease.**—Arthur Fenwick Holding and Samuel Brown (*Journal A. M. A.*, March 3, 1917) review their experiences in the treatment of eighteen cases of this intractable disease. They point out that all methods are unsatisfactory and that none has yielded a positive cure, with a few possible exceptions. The best results seem to have been secured by the very early recognition of the disease; the surgical removal of the accessible enlarged glands, if the deep glands were not involved; and the prolonged use of the Röntgen rays. The radiation should include all lymphatic structures in the body, whether involved grossly or not, and should be started with maximal doses of rays from a Coolidge tube and continued with smaller doses repeated at short intervals. The administration of inorganic arsenic, as generally recommended, has proved of little value and no arsenic should be given during x ray treatment. All foci of toxic absorption should be eliminated and special attention should be given to overcoming any intestinal stasis by the use of bland enemas twice weekly and the use of sulphur orally as an intestinal antiseptic continued until hydrogen sulphide no longer occurs in the stools.

**Precipitated Pancreatic Extract in the Treatment of Diabetes.**—William N. Berkeley (*Medical Record*, March 3, 1917) describes excellent results obtained in diabetes mellitus by the administration of capsules containing one third to one fourth grain of the precipitated pancreatic extract combined with one grain of sodium bicarbonate. These capsules are given in doses of six to eight a day and cause a rapid diminution and finally a disappearance of the glycosuria. The best method of procedure was found to be restriction of carbohydrate or the Allen starvation plan until the urine is sugar free; then a slow increase in the quantity of green vegetables, butter, and protein up to 500 calories; then enough carbohydrate or protein to cause the reappearance of twenty to twenty-five grams of sugar in the twenty-four hours' urine; then the administration of the capsules. The carbohydrates employed are mainly oatmeal, white bread, and potato, and it was found that a patient running twenty grams of sugar on three ten gram slices of bread would become sugar free on the taking of the capsules and that the sugar would reappear in three or four days if they were omitted. The use of the pancreatic extract would seem to increase the patient's tolerance of carbohydrate to a degree compatible with reasonable health and comfort.

**Intravenous Injections of Acacia Solutions in Hemorrhage.**—S. H. Hurwitz (*Journal A. M. A.*, March 3, 1917) has used a solution containing acacia for intravenous injection in both man and animals to combat the excessive lowering of blood pressure from hemorrhage. The solution is the familiar Locke's solution containing two per cent. of acacia, which is filtered after the addition of the acacia and sterilized at once in the autoclave in the usual manner. The slight alkalinity of the Locke's solution serves to neutralize the acidity of the acacia. This solution has a viscosity approaching that of the normal blood and, owing to the presence of the colloidal acacia, does not rapidly pass out of the blood vessels. On this account small injections of it will restore a low blood pressure to normal and maintain it there for much longer periods of time than ordinary salines. Since acacia is neither a carbohydrate nor a protein it is a specially suitable colloid for this purpose. In practical use for hemorrhages in man the infusion should be given as soon as possible, at a moderate rate and in amounts small enough to avoid embarrassment of the heart.

**Routine Spinal Analgesia.**—Augusto S. Boyd and Carl C. Yount (*Journal A. M. A.*, February 24, 1917) report the results of the routine use of spinal analgesia for eight years, in 6,229 cases, by twenty-seven different physicians. The patients were mainly native Panamanians or West Indian negroes, although some American and European patients of the better class were included. It was found that the latter were less amenable to the method, seemed more prone to the development of toxic manifestations and unfavorable aftereffects, and in general were less satisfactory subjects for its use. The method was not commonly used in children under five years old, in those prejudiced against it, in very nervous patients, in those with marked spinal deformity or disease of the spinal cord or peripheral nerves, or in those with superficial infection in the region of puncture. The solution employed was made according to the following formula and filled into ampuls containing either a half or one mil each:

R	Stovaine	0.1 gm
	Sodium chloride	0.1 gm
	Distilled water	1.0 mil.

The dose used contained from 0.05 to 0.085 gm. of stovaine, depending upon the length of time over which it was desired to maintain anesthesia. The results of this extensive experience showed that this form of anesthesia was as safe as the use of ether in the long run and had certain advantages and disadvantages which were no more marked than was the case with ether. In operations on parts of the body below the umbilicus it had proved a most satisfactory method and was particularly effective in abolishing all muscular spasm. The method was found of special value in a large number of conditions in which the use of a general anesthetic would have proved decidedly dangerous or would have been absolutely contraindicated. Its chief disadvantage was its danger when the effort was made to obtain anesthesia for portions of the body above the umbilicus. The details of the technic employed are given in the article.

**Duration of Passive Immunity from Tetanus Antitoxin.**—A. T. MacConkey and Annie Homer (*Lancet*, February 17, 1917) have found by a series of carefully planned animal experiments that the immunity conferred passively by a single injection of tetanus antitoxin was not of long duration, although such an injection was capable of modifying the severity and outcome of subsequent administration of toxin for as much as four weeks. These animal observations agree with the clinical experiences with man. It is suggested that either of the two following courses be adopted for the control of tetanus in man: Either give the initial prophylactic dose and keep the patient under the closest observation to detect the very earliest manifestations of a developing tetanus; or give repeated prophylactic doses in order to maintain the passive immunity until the patient is out of danger. The latter seems to be the plan which has been most commonly adopted as the result of the extensive experiences of the present war.

**Treatment of Pain in Locomotor Ataxia.**—Edward Livingston Hunt (*Dominion Medical Monthly*, March, 1917) advises the use of simple external remedies at first, i. e., hot water bags, sand bags, ice, iodine, mustard, and plunging the leg in alternating hot and cold baths. Dry cups, the cautery, chloroform liniment, firm bandaging, vibration, massage, and faradization may be tried. If pain still persists the patient should be put to bed and aspirin, pyramidal, antipyrine, codeine, or sodium salicylate administered. A weak solution of cocaine may be injected into the subarachnoid space. This last method is neither practicable nor free from danger. As a last resort a hypodermic of morphine may be given. The most efficacious form of treatment is the intraspinal administration of salvarsan, neosalvarsan, salvarsanized serum, or bichloride. The dose should be small at the beginning and gradually increased. The treatments should begin with intravenous administration and later become intraspinal. They should not be given oftener than every ten to fourteen days.

**Newer Methods of General Anesthesia.**—Raymond C. Coburn (*Medical Record*, March 3, 1917) states that the insufflation methods of anesthesia will survive the test of time as they have a scientific foundation. In all three forms of insufflation, the tracheal, the pharyngeal, and the buccal, there are common advantages over the usual inhalation methods. These advantages are that the vapor is warmed before delivery to the patient and the rate of administration can be more evenly maintained with consequent smoother anesthesia and a lessened liability to overanesthesia. In the tracheal and pharyngeal insufflation the obstruction at the base of the tongue is automatically removed and therefore there is no devitalization of the patient by forced breathing. The insufflation method is especially indicated in operations upon the throat and the chest. Another method deserving of permanent recognition is the closed method of giving ether with pure oxygen, and also the nitrous oxide oxygen method. Ether is the leading general anesthetic at the present time, but it has many disadvantages, such as its persistent and nauseating odor, long and unpleasant in-

duction, its irritant effect upon the organs of respiration and elimination, its destructive action on the red blood cells, and its general toxic action, as evidenced by nausea, vomiting, and depression. Nitrous oxide has only a few of these undesirable qualities, but the anesthesia is insufficiently deep in many cases if it is used alone. Preliminary medication by morphine and atropine or scopolamine is advisable in all prolonged gas administrations. Ether may be added to deepen the anesthesia in such cases. Anociation anesthesia gives the best results of all with a minimum mortality, a shockless operation, and a painless convalescence. There are four essential factors in anociation: preliminary medication, nitrous oxide anesthesia, perfect local anesthesia, and gentle manipulations.

**Preliminary Treatment for Prostatectomy.**—Hugh H. Young and William A. Frontz (*Journal A. M. A.*, February 17, 1917) lay great emphasis upon the importance of preliminary study and treatment of cases for prostatectomy. They point out the great frequency of renal impairment, genitourinary tract infections, cardiac and vascular disease, and acidosis in patients requiring prostatectomy. The investigation and adequate treatment of these conditions, combined with the perineal operation, have rendered the removal of the prostate a benign operation. Thus in their last consecutive series of ninety-four cases there was only one death as a result of the operation, although the patients ranged in age from forty-six to ninety-three years and presented all degrees of severity of the various conditions previously mentioned.

**Pyelitis in Children.**—William C. Quinby (*Journal A. M. A.*, February 24, 1917) points out that this form of infection is much commoner than generally stated and that its prognosis is far from insignificant, there being a considerable mortality and a great tendency for the condition to run a chronic course with ultimate serious damage to the renal structure. The condition is almost invariably due to infection by one of the members of the colon bacillus group or *Bacillus lactis aerogenes* group. The different strains of organisms in these two groups show wide variations in their resistance to destructive agents and treatment must take these differences into consideration. Thus one of the most important steps is the frequent determination of the reaction of the urine in terms of its hydrogen ion concentration. Coupled with this the requisite hydrogen ion concentration for the growth of the infecting organism should also be determined. On this basis the treatment should aim to render the hydrogen ion concentration of the urine such as to make it least suitable for the growth of the particular strain of organism present. This can be done by the oral administration of citrates or benzoates, as the case may be. In the small number of cases which cannot be controlled by these means the author advocates the injection of the renal pelvis with a solution of silver nitrate of one half to one per cent. strength to provoke a sharp reaction. This can readily be done through the urethra in female children and through a perineal incision in males, combined with dilatation of the bladder sphincter. This latter method is justifiable only in very rare cases.



**Study of Tubercle Bacilli in Feces of Children with Tuberculosis of Respiratory Organs.**—J.

Lefler (*Hygiea*, December 31, 1916) made a study of 110 children in the Stockholm Tuberculosis Hospital, some of which were in advanced stages, as shown by the character of the rales, others being classified according to the röntgenographic changes. Examination of feces for tubercle bacilli by the other method of Reh gave positive result in 16.4 per cent. of the cases, most of these being either among the children of eleven to fourteen years of age or among the nurslings under one year. The author believes that the examination of feces for tubercle bacilli should be undertaken as a routine procedure along with other methods, and accords it a certain diagnostic value, especially in the infiltrating pulmonary tuberculosis of young children, where bacillus holding sputum is only with difficulty if at all obtainable. Regarding the origin of tubercle bacilli in the intestines, as to whether they come from swallowed sputum or from intestinal lesions or from the bile or blood, the author's findings would be an argument against the latter theory, inasmuch as tubercle bacilli are more frequently found in the blood of young children.

**Mechanotherapy in Gout.**—Franz Kirchberg (*Medizinische Klinik*, December 24, 1916) says that in acute attacks the severe pain should be relieved by the administration of analgesics including colchicum or colchicine. Immediately thereafter, however, he recommends the adoption of physical therapy. The intensive use of heat is strikingly beneficial in the further reduction of pain and constitutes an excellent preparation for massage. One of the most satisfactory methods for the application of heat is by the use of electrothermal compresses, which should be applied from the beginning of the attack. Gentle but intensive massage should next be applied in the region of the affected joint and usually gentle stroking over the affected parts can be born without excessive pain. On the following day massage should be repeated twice following the application of heat, which treatment will often have controlled the acute attack. No special form of massage salve is employed by the author, who has not seen any good effects following the use of the various preparations which have been recommended. When tophi are beginning to form much relief can be obtained by very careful massage, so gauged as to avoid the danger of stimulating abscess formation, yet sufficient to promote the local circulation and aid in the removal of the urate deposits. In the marked joint deformities of gout with more or less marked necrosis of cartilage no form of mechanical treatment can be employed with safety except careful, gentle massage. Hot air treatment and massage combined are also of value in the relief of gouty eczema, especially when combined with the use of blue light for the removal of toxic products of metabolism. Since the sites of predilection for gout are those in which the circulation is relatively deficient the employment of general massage, active and passive movements, and gymnastic exercises are all of value both in the intervals between attacks and as prophylactic measures in persons of gouty tendency.

**Treatment of Arteriosclerosis.**—Allen Wheeler Holmes (*Canadian Journal of Medicine and Surgery*, March, 1917) gives as the aims of treatment: 1, To prevent accidents; 2, to maintain circulation; 3, to lower arterial tension. The treatment should be begun early in life. The diet and exercise should be regulated. Milk diet may be necessary. Hot packs may be given in suitable cases. If the patient is an overeater with too much blood, venesection is indicated. In syphilitic arteriosclerosis mercury and large doses of iodides should be employed. For the pain of gangrene morphine may have to be administered. Nitroglycerin stimulates the heart and relaxes the arterioles.

**Glandular Tuberculosis of Childhood.**—D. W. McMillan (*Journal Florida Medical Association*, January, 1917) suggests as prophylactic measures the regulation of hygiene, diet, sleep, nutrition, and the building up of physical development and bodily resistance. All milk should be boiled for from three to five minutes, even if it has been pasteurized. Active treatment includes measures similar to those just mentioned for prophylaxis, but also includes graduated increasing exposure to direct sunlight, beginning with feet, legs, hands, arms, and finally including the trunk. Codliver or olive oil and the syrup of the iodide of iron should be prescribed, but the best single remedy is iodine. This should be given in the form of the tincture beginning with one drop in milk after each meal and slowly increasing the dose to from thirty to sixty drops in a glass of milk three times daily. Tuberculin should also be given in very small doses and administered by inunction. The dose should never be sufficient to cause a reaction.

**Epidemic Nephritis.**—W. Langdon Brown (*Practitioner*, February, 1917) believes that stimulating diuretics are bad as long as there is any degree of acuteness of the disease, and that flushing out of the kidney is not always advisable or practicable. Theocin, caffeine, diuretin, and theobromine have irritant effects upon the kidneys, as well as diuretic actions. Saline diuretics he considers more efficacious. He gives the following instance to show the impracticability of flushing out the kidney: A patient with ascites was drinking four to five pints of fluid a day, while his daily output of urine was from two to two and a half pints. The intake was then restricted to two pints a day and the output rose to two and three quarters pints, the Esbach result remained the same, and the edema and ascites diminished. At the same time the intake of fluid must not be restricted too much because of the inability of the kidney to excrete concentrated fluids, for symptoms of uremia may appear when the edema subsides rapidly. The hot air bath has certain definite limitations. If the output of urine rises after a bath, the case is a suitable one for this treatment. The hot air bath is beneficial only when dropsy is still present. Dry cupping does not seem to him to do any good in relieving the congestion of the kidney, but venesection has been found good in cases that were not doing well, either in output of urine or because of uremic symptoms, and is most effective in the treatment of convulsions occurring in this disease. Great stress is laid on attention to the diet.

# Miscellany from Home and Foreign Journals

**Complement Fixation in Tuberculosis.**—Charles F. Craig (*Journal A. M. A.*, March 10, 1917) reviews his own earlier results, along with those of other workers on the problem of complement fixation for the diagnosis of tuberculosis. The results show that by the method employed by the author as well as by that of Miller and Zinsser complement fixation can be accepted as a valuable means for the diagnosis of tuberculosis and the positive determination of activity of the process. Thus in a series of 209 cases of pulmonary tuberculosis positive fixation was obtained in nearly ninety-seven per cent. of the active cases and in but sixty-five per cent. of those clinically inactive. The proportion of positive results varied slightly in the active cases depending upon the stage of the disease and similar variations were found in the case of the inactive types. The test was found to give negative results in syphilitic patients known to be free from tuberculosis, and in only one out of a group of 200 young, healthy men was the test positive. This man shortly afterwards manifested clinical evidences of tuberculosis.

**Pulmonary Tuberculosis in Infancy.**—H. Barbier (*Paris médical*, February 3, 1917) reports the results of fifteen years' study of this question at the Hérold Hospital, with the assistance of Boudon and Aine. Among fifty-four deaths in infants less than three months old, fourteen, or twenty-two per cent., were due to tuberculosis; among 149 deaths in the first year of age, thirty-five, or twenty-five per cent., and among forty-six deaths from the twelfth to the twenty-fourth month, twenty-seven, or fifty-eight per cent. In a larger series of cases, comprising 770 deaths in the hospital in children less than two years of age, 261, or thirty-four per cent., were due to tuberculosis. In 499 autopsies in the 770 cases, tuberculous lesions were found in 194 instances, or thirty-nine per cent. Barbier disagrees with the commonly made statement that tuberculosis occurs in young children chiefly in the generalized form. In the great majority of cases the lung is the site of election, and the lesions differ from those in the adult only in occurring in a purer, clearer state and in being usually associated with a marked lymphatic reaction, often out of proportion with the initial pulmonary lesion. This initial lesion, inoculation chancre, or portal of entry, may or may not be ulcerative, caseous, fibrocasseous, or fibrous. A distinct power to react against the disease by sclerotic processes is already manifest, latent fibrotic tuberculous foci being not infrequently found in infants succumbing to other diseases. Where the tuberculous infection gains the upper hand, dissemination tends to occur, generalized tuberculosis being sometimes the terminal result. Tuberculous cavities, frequently met with at autopsy in children labeled "atrophic" during life, may result through immediate encroachment of the disease from the initial focus, in which event they occur often anteriorly in the lower part of the upper lobe, the upper part of the middle lobe, or even in the lower lobe;

or they may follow extension and be due to softening of foci of caseous pneumonia or bronchopneumonia, either more or less massive or in disseminated form. In the majority of cases, severe ulcerative lesions are confined to a single lung or even a single lobe. The cavities resulting from softening of secondary foci occur selectively at the apices, especially the right. Cavities were found at autopsy in 220 out of 766, or twenty-nine per cent., of tuberculous children—rarely in the first three months, oftener in the next three months, most frequently (twenty-eight out of fifty-five cases) between the sixth to the eighteenth month, and less frequently up to two years. These figures, which agree with those of other observers, tend to prove that initial tuberculous morbidity in the first few months of life is very high; many children succumbing after six months, having been infected early and having passed through successive stages of the disease.

**Röntgen Ray Diagnosis of Mastoid Disease.**—G. S. Dixon (*American Journal of Electrotherapeutics and Radiology*, December, 1916) reports experiences with this procedure at the New York Eye and Ear Infirmary in 491 cases. Among these 288 were positive from the Röntgen ray standpoint, eighty-eight doubtful, and 115 negative. Positive findings, consisting of great cloudiness throughout, or the discovery of cavities apparently not mastoid cells, were held to indicate an operative case. Doubtful plates were those found hazy, but with the septums still sharply projected, while the negative plates showed either a normal bone or the typical infantile or sclerotic condition. Among the 288 positive cases the x ray indication was confirmed at operation in 201 instances, all the remaining cases remaining unoperated. Of the eighty-eight doubtful cases, thirty-three were positive and two negative at operation. Among the 115 negative cases, clinical symptoms warranted operation in fifteen, eight of which were positive at operation and seven negative. Where clinical symptoms apparently did not warrant operation, repeated x ray examinations were found useful in showing whether the case was clearing up or not, the septums becoming less distinct or new cavities appearing in the unfavorable cases. Development of a perisinus abscess while a patient was still attending to his business and cases of recovery by sclerosis were observed, and assistance in avoiding operations where clinical symptoms were urgent and showing operation to be imperative where symptoms were almost nil was given. In taking the plates a method aimed at superimposing the internal on the external auditory meatus was employed, the patient being placed prone on the table with one arm flexed before the face and the head resting on an incline of about 168°. Plates taken on both sides for comparison are essential. In asymmetrical cases, constituting 14.5 per cent. of the author's series, the reading is much more difficult than when the mastoids are practically the same. Catarrhal mastoiditis or a deeply congested bone produce cloudiness on the plate, but the septums remain sharp.

**Etiology of Epidemic Acute Respiratory Infections.**—George Mathers (*Journal A. M. A.*, March 3, 1917) emphasizes the striking similarity in the general clinical phenomena of the acute respiratory infections, commonly called influenza, in the various recorded epidemics. He points out also that there has been no uniformity of opinion as to the existence of any one organism as the causative agent. Some acceptance was given to Pfeiffer's isolation of the so called influenza bacillus, but this organism has not been obtainable in any considerable proportion of cases in recent investigations and its etiological role has come to be doubted. Many observers have isolated several forms of streptococci, from the secretions of these cases, sometimes in pure culture, and an extensive study of a large number of cases in the most recent outbreak has yielded this same organism in the majority of cases. Mathers recovered hemolytic streptococci in predominating numbers or in pure culture from the throats and nasal passages of forty-six out of sixty-one cases recently examined. Pneumococci were recovered in thirty cases, but were usually of the fourth group of Cole's classification. These observations showed that this virulent hemolytic streptococcus is a very important factor in the causation of respiratory diseases. Many epidemics have been described as occurring among horses during epidemics of this form of disease among men and presenting closely similar symptoms. In these also hemolytic streptococci have been isolated almost uniformly. The close resemblance of the two conditions is striking, but there is no evidence to warrant the belief that the two types of organisms are the same, although their common association with the same clinical manifestations points strongly to their etiological importance.

**Frequency of Urination in Women.**—Henry G. Bugbee (*Journal A. M. A.*, March 3, 1917) says that perhaps a majority of women seeking medical advice have some urinary disturbance and it is of great importance to discover the precise cause of this disturbance. Correct diagnosis can be made only after securing a complete history, making a thorough physical examination, inspecting the bladder and urethra, exploring the ureters, examining the separate urines from each kidney, and often including x ray examination. As giving some indication of the relative proportion of the different causes of frequency of urination in girls and women the results of a study of 1,000 cases are reported. Frequency was found to be one of the commonest symptoms of disturbance in the urinary tract, such disturbances being primarily concomitant complications of the sexual and child bearing functions and secondarily of the sedentary life. In the earlier age periods frequency was much more commonly associated with acute infections than in the later periods. Such infections were usually located in the urethra or trigone and if not adequately treated often ended in stricture formation. Tuberculosis was not encountered in the first decade or in the last four up to the age of ninety years. Intermittent attacks of vesical irritability were common in cases of colon bacillus pyelonephritis. Postoperative catheterization was a relatively common cause of frequency, and calculi

in the kidney, ureters, or bladder were also quite frequent causes. In the gestational period urinary complications were very common. As illustrative of the more common causes of frequency in certain of the nine decades studied the following may be cited. Of sixty-one cases in the second decade, ten to nineteen years, forty-six were due to urethritis and trigonitis, of which twenty-nine gave a history of gonorrheal infection. In the third decade 165 cases of a total of 219 were due to urethritis and trigonitis, the majority being associated with vaginal infection, though several followed catheterization. Of 315 cases in the fourth decade 187 were due to urethritis and trigonitis, thirty-two to pressure on the bladder, twelve to tuberculosis of the kidney, and an equal number were of neurotic origin. Urethritis and trigonitis still caused the majority of cases in the fifth decade, although the relative proportion was smaller, pressure on the bladder, calculi, and neuroses continued to be relatively frequent. After the fifth decade the total number of cases was relatively small, amounting to only 176, and the individual causes were more uniformly distributed, although urethritis and trigonitis led in frequency of individual causes throughout.

**Diverticulitis of the Descending and Pelvic Colon.**—J. W. Keefe (*American Journal of Obstetrics*, February, 1917) points out that while diverticula may occur in any part of the small or large bowel, those in the former are as a rule congenital and those in the descending and pelvic colon usually acquired. Diverticulitis is due to infection in the walls of one or more diverticula; these walls usually show evidence of chronic inflammation in the mucous and submucous coats, the latter abounding in fat. The diverticulum seldom shows longitudinal or circular muscle fibres, but frequently contains hard, black fecal concretions. Hyperplasia of all adjacent glands occurs, and a large inflammatory mass is caused by outward bacterial invasion. Fecal concretions frequently cause chronic irritation, and produce a secondary peridiverticulitis which may eventually in abscess formation. Most cases occur in males over fifty years of age with a tendency to obesity, though cases in subjects aged five and twenty-two years have been reported. The symptoms usually comprise sudden, severe pain in the left iliac region, sometimes followed by nausea but seldom by vomiting, with fever, localized tenderness, a sense of resistance or tumor mass in the lower left quadrant, and leucocytosis. Vesical tenesmus and frequent micturition may be noted. The acute disturbance is likely to subside and to be followed later by recurrent attacks. Intestinal obstruction and abscess formation with perforation into the bowel or bladder or the production of a fecal fistula may result. Blood in the stools suggests carcinoma rather than diverticulitis. Keefe believes the Röntgen examination of decided diagnostic value in the majority of cases. The surgical treatment consists in making a long left rectus or a muscle splitting incision on the left side, through which the abscess may be drained, and in some instances the diverticulum removed and the opening in the bowel closed. The diseased portion, three to eight inches in length, may be excised and an end to end or lateral anastomosis



made, or a two stage operation performed. Where a fistula between a diverticulum and the bladder exists, cystoscopy should be used to determine the size and location of the opening in the bladder, and at operation the two viscera separated and the involved colon resected or a two stage operation instituted. Lateral is to be preferred to end to end anastomosis owing to the greater tendency in the latter operation to leakage at the mesenteric border of the bowel. In some cases it is desirable first to perform a colostomy above the diseased area to permit of subsidence of the inflammation before operating further. Three cases of the condition are reported.

**Multiple Exostoses.**—J. McKail (*Archives of Radiology and Electrotherapy*, February, 1917) reports the case of a soldier who was admitted to the hospital complaining of pain in the left ankle. The x ray pictures showed a rounded tubercle just above the internal malleolus of the left ankle, also the following abnormalities: In the right forearm the outward curvature of the radius is very pronounced. The ulna shows congenital deficiency at its lower end, near which is a prominent spur. A remarkable long, bony spike, bifid at its extremity, juts downward from the head of the right tibia, whence it arises, parallel to the shaft of the bone for a couple of inches. The head of the fibula is thickened and shows an outgrowth, having a frilled appearance below. At the lower end of the femur, just above the adductor tubercle, there is a hornlike projection. As regards the etiology there is a distinct hereditary factor, the father and brother both having abnormalities. Rickets may be a factor in the causation of these exostoses.

**Interpretation of the Wassermann Reaction.**—S. B. Cary and J. D. Willis (*Virginia Medical Semimonthly*, February 23, 1917) protest against what they believe to be a common tendency, viz., to look upon the Wassermann results as infallible, disregarding entirely the clinical history and findings. The most frequent error is that of expecting reliable reports in the primary cases a few days after appearance of the initial lesion; early cases give a very low percentage of positive tests. All primary sores should at once be searched for *Treponema pallidum* with the dark field illuminator, without previous use on these sores of even the mildest antiseptic. A high percentage of early diagnoses of syphilis is thus made and one learns to disregard the so called typical appearance of sores of this character. Many sores, apparently chancroids, show spirochetes and many sores with hard bases prove to be free of them. In early cases where a single Wassermann report is to be accepted as final, this Wassermann should be withheld until seven weeks after the first appearance of the suspected lesion. If, however, it is practicable to have several Wassermans, the reaction should by all means be tested as early as the tenth day; if negative, it can be repeated every few days until the end of the seven weeks, at which time about eighty per cent. of syphilitic cases yield a positive reaction. During the seven weeks no specific medication should be given that might render the test negative. If the diagnosis is made from the initial sore, on the other hand, treatment may

advantageously be started as soon as possible. Since many cases proven syphilitic by the Wassermann have never presented symptoms leading to a diagnosis of syphilis, the writers recommend a Wassermann in all medical cases except those with symptoms definitely explaining their condition, in all neurological cases, in all pregnant cases with even the slightest abnormal condition, and in all surgical and specialty cases not clearly understood. During the treatment of syphilis they advise Wassermann control tests every four months in the first year, treatment being left off two weeks before each test; later, every six months until there have been two successive negative tests in the absence of all treatment; and thereafter preferably once a year. Before discharging a syphilitic patient as completely cured, a normal condition of the cerebrospinal fluid must, in addition, have been determined. The Noguchi is adopted as a control over the Wassermann method.

**Human Anthrax.**—Walter H. Brown and Charles E. Simpson (*Journal A. M. A.*, February 24, 1917) report the analysis of an outbreak of twenty-five cases of human anthrax within a period of four months. Investigation showed that twenty-three occurred in persons handling hides and that twenty were infected from a common source. The infection was confined to workers in three tanneries and it was ultimately possible to trace the anthrax to the handling of dried "China" hides. Further investigation showed that all of these hides reached America in the same cargo and had come from a district of China in which anthrax was known to be endemic. Although the treatment employed in the individual cases varied considerably the majority of patients recovered. It was obvious from this study that anthrax was an important occupational disease and that efforts should be made to discover an efficient means for its prevention.

**Iodophil Substance in the White Blood Cells.**—C. J. Bond (*British Medical Journal*, February 3, 1917) observed that the white blood cells in health normally gave a color reaction with iodine which was closely related to the so called glycogen reaction met with in disease, if not identical with it. He also found that this reaction occurred in many pus cells, some of the cells in granulation tissue, some marrow cells, and in the cells of certain cancerous neoplasms. In health the reaction could be obtained in the white cells by incubation of the blood for one hour and subsequent staining with iodine. It was found to be characteristic of the polymorphonuclear leucocytes. The same reaction was found in this type of leucocyte in aseptic closed wounds, occurring only in the living cells and serving to distinguish these from those which had died. Similar observations yielded like results in the case of pus corpuscles occurring only in those which remained alive. Polymorphonuclear cells from healthy granulation tissue also showed the reaction, as did certain of the myelocytes from normal bone marrow and certain cancer cells from some actively growing tumors. Bond believes that the substance giving this reaction is glycogen or a precursor of it which is split off as the result of emigration of the cells, the exact significance of which is unknown.

# Proceedings of Local and National Societies

## THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Special Meeting, Held January 15, 1917.*

The President, Dr. THOMAS S. SOUTHWORTH, in the Chair.

**Stuttering in a Boy Relieved by Reversal of Manual Dexterity: With Remarks on the Subject of Symbol Amblyopia.**—This paper by Dr. J. H. Claiborne is published in full in this issue of the JOURNAL.

Dr. EDWARD LIVINGSTON HUNT said that there were two points in connection with Doctor Claiborne's paper to which he wished to allude: one is the question whether left handedness is a sign of degeneracy and is always associated with some form of moral obliquity; the other is, will disastrous results follow continued attempts to force a child naturally left handed to use the right hand? He was of the opinion that left handedness was not a sign of degeneracy. It was difficult to explain why the majority of people were right handed. In prehistoric times there may have been some demand, as in fighting, which made the use of the right hand more convenient and the situation of the left hand near the heart may have necessitated its being used as a shield. It was impossible to assign a definite reason; there were perhaps many reasons. Right handedness was the result of environment, circumstances, education, and heredity.

In the great majority of cases the child *in utero* lay in such a position that the left arm was posterior. This position might afford greater facility of movement to the right. Parents universally encouraged children to use the right hand by handing toys to the right hand and, as the child grows older, by teaching him to write with the right hand. The result of generations using the right hand must be a factor of large determining influence. There was no discernible difference in the distribution or in the quantity of the cells and fibres of the two cerebral hemispheres, so that the origin of the dextral impulse must be due to certain fundamental factors. If left handedness was a sign of degeneracy, ambidextrous people would be below par. Ambidextrous people are usually superior mentally and physically. Sir Isaac Newton cited the ambidextrous Scythians as people who have great control over their passions and of prodigious strength. The most striking example in modern time is the Japanese, who teach ambidexterity in their schools and practise it in their acts. They are, as we all know, a wonderful nation.

In connection with the second question, will disastrous results follow continued attempts to force a child naturally left handed to use the right hand? Doctor Hunt said he found it difficult to cite cases, but that the following four have some bearing on it: Dr. C. M. Gould, of Philadelphia, has reported the case of a boy who was compelled to stop writing with his left hand, and after years of torment was made a dextral writer. As a result, for forty years this man has never been able to think and write at the same time. Dr. G. A. Gibson, of Edinburgh, has

reported the case of a medical student who stammered considerably. He had been left handed until he was twelve years of age, when his parents made a determined effort to render him right handed, using such drastic measures as bandaging the left arm, etc. He at once began to stammer. Dr. McNaughton Jones, of Dublin, has written of a sensitive child who was left handed. This child was repeatedly punished for not using his right hand and at once became nervous and apprehensive. In the speaker's experience only one instance was cited. A boy, aged seven, markedly neurotic, was left handed. His parents were greatly disturbed over this fact and used every means to render him right handed. They constantly reminded him and even went as far as to punish him. The result was that he began to stutter. Then, upon the advice of the family physician, the effort to correct the left handedness was abandoned and the stuttering gradually stopped. These cases showed that the effort to correct left handedness is one fraught with considerable strain and one which ought not to be undertaken without great consideration.

Professor Baldwin made 2,187 observations on his five months old baby, and found that when the hands were used spontaneously the right hand was used 577 times and the left hand 568 times.

The amount of will power, control, and concentration of mental effort, required to make the change, is considerable. If this seems doubtful let anyone try it for himself.

The possibility of compensation and recovery after destruction of the speech centres in the dominant hemisphere varied considerably in different individuals. It was much greater in early childhood when presumably the localization of the higher cerebral function was not fixed beyond alteration and when the mastery of the dominant hemisphere in the speech function had not as yet deprived the other hemisphere of its capacity of speech development. Before the age of six, destruction of the spinal centres in the dominant hemisphere never produced permanent loss of the speech function; recovery always occurred if a fair degree of intelligence remained. From the age of six onward the capacity for compensation lessened rapidly and in adult life was a rare exception. From this it was fair to assume that the age at which the reeducation should be undertaken was a factor in obtaining a good result.

This entire problem depended on two factors: the age and the temperament of the patient. If the patient can be seen before the age of six, Doctor Claiborne's plan should be followed, provided always that the child is watched carefully. If he developed any violent or persistent stammering, convulsive movements, or tic, then the plan should be abandoned. If, on the other hand, the child was taken at an early age and was not of a nervous temperament and showed no signs of stammering, the experiment might be tried, persisted in, and no doubt would end in brilliant results.



Dr. S. P. GOODHART said that Doctor Claiborne's paper had brought to scientific discussion a subject that had been in the hands almost entirely of the laity. The literature teems with cumbersome discussion and diverse opinion. Doctor Claiborne had given the subject its place in abnormal psychology, in which light it should be treated. That form he designates as symbol or visual amblyopia is as distinctly a form of stammering in the psychological sense as is the defect in oral expression. Symbol amblyopia is a term properly applicable to the congenital form; symbol amnesia might be suggested for the acquired form. This nomenclature suggested the basic psychology in cases of stammering. It incorporated the idea of memory disturbance as the cause of stammering. Probably ninety per cent. of those afflicted with oral stammering were possessed of that type of memory commonly spoken of as *audito*. They thought by first hearing the words; their ideation and its motor expression through the kinesthetic centre was preceded by auditory symbols.

The importance of the auditory association became manifest by a reference to the faulty mechanism in oral stammering. The stammerer failed, not, as heretofore supposed, in the expression of his consonants, but rather in dealing with the vowels; for instance, he would attempt to say "but" and what we heard was "b-b-b-b-b-"; the "b" sound was repeatedly made, the fine shade of the vowel, however, had been lost to memory. The consonant, dependent purely on the kinesthetic centre for the proper co-ordination of muscular action was clearly ready for enunciation; the vowel, that which in *audito* thinkers must be first clearly heard, failed to appear in auditory memory.

As a rule, the stammerer had a poor ear, so to speak, for music. He had the musical amnesia of which Doctor Claiborne had spoken. If the lesion or the defective development happened to be in the visual memory centre in an *auditif*, he would not stammer orally; if this same person, however, thought and spoke in visual symbols, he would be afflicted with oral stammering. In Doctor Goodhart's opinion the stammerer showed little or no defect in vocalizing in song, because he had the time in which to bring forth the vowel memory. This, too, explained the improvement in speaking by the various treatments or methods, whose fundamental value lay in the development of the time element in vocal productions.

Doctor Goodhart agreed with the rationale of Doctor Claiborne's methods of reversal of manual dexterity, but in appropriate cases only. First, he believed that it was necessary only to reverse the writing centre; that the centres for ordinary manual exercises were quite independent of language centres and their associations. Furthermore, reversal would be of value only in young children, certainly those not over eight or ten years of age. Again, the reeducation of the central speech mechanism would be a very slow process in that it meant reaching the centres and reeducating them through a series of repeated stimuli various in nature. Doctor Goodhart did not believe it wise that individuals congenitally, so to speak, left handed, should be energetically induced to become right handed. Left

handedness in certain individuals was not abnormal, nor was it associated with moral or intellectual deviations.

Dr. EDGAR S. THOMSON said that he had had experience in only one phase of this subject, and had not seen a case of symbol amblyopia; but that he wished to remark on the relation between accommodation asthenopia and stuttering, based upon an experience of two cases. A boy of eleven consulted him in 1908. His mother said that after reading his stuttering was always more pronounced. His vision was approximately normal in each eye, and the refraction error was low— $-1/25$  D; with esophoria of  $8^\circ$ . Correcting lenses were supplied, and his stammering gradually ceased. Six months later, his stammering had entirely ceased. He was seen at intervals several times until December, 1912, and each time he gave a history of increased stammering, which was promptly relieved by correcting glasses. He was a bright boy and gave no symptoms of symbol amblyopia. Doctor Thomson said he did not know whether any other factor entered into this boy's stuttering, but as it was invariably corrected by proper glasses, he assumed there was no other trouble.

The second patient was a cousin of the other, and stammered very badly, and he was only partially relieved of this by correction of his visual error, of hypermetropic astigmatism. However, it was noticeable that in reading the test card he stammered worse than at any other time and that he always spoke extemporaneously with much greater ease than when reading and read with less stammering when he had his glasses on. The patient was seen within the year, and his stammering is not yet entirely cured. It undoubtedly becomes worse under conditions of stress and excitement, and particularly while using the eyes. Whether these cases depend upon a reflex irritation upsetting their ability to co-ordinate or upon some more subtle cerebral change, as suggested by Doctor Claiborne, Doctor Thomson did not feel able to say.

Dr. ISAAC HARTSHORNE said that several years ago he had written a paper on right and left handedness showing that the origin of it in the early infancy is a question of ocular dominance, i. e., whether the right or the left eye is dominant. When the child begins to use his hands he grasps on the right side because the right eye is the dominant one; or if the left eye is the dominant one he grasps on that side, and thereby develops the writing centre on the same side of the brain as the visual centre. This theory was first proposed by Dr. George M. Gould. Doctor Hartshorne said that while he had not seen any cases of stuttering, he had seen a number of cases where the right or the left eye was dominant, the patient being respectively right or left handed, and that these patients had the symptoms and difficulties which Doctor Claiborne had described. This line of treatment seemed excellent for patients who also stuttered.

The fundamental consideration would seem to be largely a question of visual centres and ocular dominance, and the question of deliberately changing the patient's centres a very serious one, for you would be changing the centre of only one



function. In a case of hemiplegia in which the patient had the lesion on the left side with the right hand paralyzed, such a patient is taught to be left handed, he does not at the same time lose his aphasia. Probably the same thing is true in young people. The dominant visual centre cannot be changed except through the education of the other eye by a proper refraction of both eyes. Changing the writing centre does not necessarily change the speech centre, and certainly does not change the dominant visual centre. Stutterers who were improved by a change in dexterity probably originally had the writing centre on one side of the brain and the speech centre on the other side. The change in dexterity resulted in reestablishing the natural contiguity of location between these important centres of writing and speech, and further examination would probably show that the dominant visual centre is also on the same side of the brain as the new writing centre.

Dr. GEORGE H. WRIGHT said that the present time seemed to be appropriate for the study of manual dexterity because an enormous number of persons wounded in the war temporarily or permanently lose the use of the dexterous hand. Each man would probably remember his own experience in this matter. Referring to Doctor Hartshorne's remarks, he said that when it is decided that manual dexterity should be altered, not only should the use of the dexter hand be restricted, but also the use of the eye on the same side, by some such expedient as covering that eye for a part of the day.

Doctor CLAIBORNE said he was greatly indebted to all the gentlemen who had participated in the discussion, and that he had received new ideas from every one. Doctor Hunt had spoken of man's right and left handedness dating back to the habits acquired in primeval savage life. That had never before occurred to him. He said that recently he had observed a cat in his home, where there also was a little dog. Though there is a certain amount of friendship between the two, yet the native animosity will show itself at times, and when there is a disagreement between them the cat always slaps at the dog with the left paw. It would be interesting to know whether all carnivorous quadrupeds prefer one paw to the other in offence or defence. Doctor Goodhart certainly made a new point when he stated that the stutterer does not stop on the consonant, but on the vowel, and that is unquestionably correct. He gets the consonant sound every time, but stumbles over the vowel. It would be interesting to know why that is. Vowels are easy to pronounce, and the consonants are difficult. The peoples of the north use consonants largely, for they do not open their mouths wider to speak, on account of the cold; they speak with their lips and teeth and tongue tip, while the southern peoples of all lands indulge in vowel sounds, opening their mouths wide.

**Treatment of Abortion.**—The paper on this subject, by Dr. G. L. Brodhead, is published in this issue of the JOURNAL.

Dr. HERMAN J. BOLDT said that as far as threatened and inevitable abortion were concerned, he was fully in accord with what had been said. Vaginal tamponade for threatened abortion was absolutely

useless. There was only one treatment—rest and narcotics. Doctor Boldt said he would not hesitate to use at least one quarter of a grain of morphine or more in such cases. It is not at all unusual for a threatened abortion to be averted, even if the cervix is dilated to admit a finger, the patient finally going on to term. With cases of inevitable abortion, if there is no elevation of temperature, the quicker the uterus is emptied the better.

Doctor Boldt said that he was unable to differentiate clinically between a sapremic and a septic uterus. He had always thought that what has been taught to be a sapremic condition is simply a less dangerous form of sepsis. In cases where the patient had not been ill very long and there was reason to believe that it was not a serious infection the quicker such a uterus was emptied the better. Furthermore, the old idea of many, and of which he himself was a strong advocate at one time, the nonintroduction of the curette, no longer holds good. When gestation had advanced to a period of three months or more, it was more desirable to use a blunt curette. A sharp curette should never be used. In septic abortion, instrumental intervention should be abstained from unless there was a profuse hemorrhage. If the hemorrhage was profuse and dangerous, the uterus should be emptied despite all conditions.

Then the question arose, What is a serious form? We had been taught to regard a bacteriemia as most significant. Some years ago we did not differentiate between the varieties of bacteriemia but considered all forms equally dangerous. Since then in the last few years we had learned that there was a decided difference in the various forms of microorganisms which circulated in the blood, and that some patients might recover without much difficulty when bacteriemia was present. Doctor Boldt told of three cases of staphylococci in the blood and another of streptococci in which the patients recovered. Other patients died. The course of treatment for these cases was indefinite. Some extirpated the uterus. We had come to believe that if these patients recovered, they did so despite the operation; and on the other hand that when they died, which was usually the case, the operation was responsible for the early death. Accordingly, in that class of cases he believes it is just as well to let nature take its course unless serious hemorrhage is present. As far as the more serious procedure of extirpation of the uterus was concerned, he had not done that for a long time, and doubted whether he would ever do it again. It is a questionable procedure.

Dr. FRANK R. OASTLER said that Doctor Brodhead's paper was filled with many interesting and serious questions on which there were divergent opinions, consequently he hoped to be pardoned for differing with Doctor Brodhead to some extent. With respect to threatened abortions, the treatment outlined was classical and generally followed. One suggestion might not be out of place—the use of dilute muriatic acid in twenty drop doses every three hours to stop the bleeding. The idea came from Syria, was absolutely empirical but often efficacious. The administration of pituitrin in inevitable abortion had not proved to be of value.

Perhaps it had not been properly used. In incomplete abortion the uterus should be emptied at once, preferably with the finger, otherwise the curette. The use of the finger is preferable for two reasons: The affected area can be better covered, and the danger of puncturing the uterus is avoided. By pushing the uterus down to the vaginal finger there is very little difficulty in covering the involved area.

As regards the question of drainage, packing should never be used. The best drainage is the dilated cervix. If bleeding should continue after curettage and irrigation with hot saline, the uterus has not been thoroughly cleansed and some of the products of gestation remains. The speaker had never packed a uterus and had never had one bleed following operation.

Regarding the induction of abortion: up to about two months dilatation and curettage was the best procedure; after that vaginal hysterotomy. Especially was this the case in the toxemia of pregnancy where the slow process of induction by packing, bag, or catheter was often ineffectual and often resulted disastrously for the patient. The operation of vaginal hysterotomy was not difficult, could be done rapidly, the contents of the uterus could be removed completely with a minimum of shock and hemorrhage, and this procedure would often save a life. The fact that it was not as easy to perform as packing in the hands of the general practitioner was hardly an argument for the use of packing. Antiseptic solutions such as iodine had no place in the uterine canal. Plain physiological salt solution answered the purpose far better.

Regarding sapremia and septicemia, the speaker agreed with Doctor Boldt that he had generally been unable to differentiate between these conditions clinically. The treatment should be the same—remove foreign material from the uterus and wash out gently with saline. If cultures of bacteria could be made successfully then bacterins were of use in subacute conditions.

Doctor FURNISS said he wished to refer to only one point that Doctor Brodhead had brought up—the use of pituitrin. For the last year he had used pituitrin at the Post Graduate. There he did not get the threatened but the incomplete cases. The patients usually came to the hospital several days afterward. Fifteen minutes before curettement one c. c. was given subcutaneously, and the operation was almost a bloodless one. Instead of curetting a poorly contracted uterus, the operation is done on one that is firmly contracted. He believed the danger of perforation was lessened. Only once had he used pituitrin in vaginal hysterotomy, and that was for a dead fetus of three and a half months. The operation was almost bloodless.

Doctor BRODHEAD, in closing the discussion, said he agreed with Doctor Boldt that a septic case which bled profusely should be curetted. He also had seen a number of cases in his Harlem Hospital service where bacteria were demonstrable in the blood and yet the patients ultimately recovered. Bacteriemia, therefore, was not necessarily a fatal condition. Doctor Oastler had spoken of doing a satisfactory curettage with the finger, but in Doctor Brodhead's opinion it was frequently most unsatisfactory, and

he much preferred using an ovum forceps or a blunt curette. He could not agree with Doctor Oastler that bleeding always ceased when the uterus was empty, and he therefore preferred to pack the uterus with iodoform gauze, removing the latter after thirty-four to forty-eight hours. He agreed with Doctor Oastler on the value of vaginal hysterectomy in toxemia and other urgent cases, and expressed the belief that in the years to come both abdominal and vaginal section would be performed more frequently for these conditions. He felt that in the primiparæ with rigid soft parts and a large child, the abdominal operation would probably show better results for eclampsia than the slower ordinary method of delivery, and even were the mortality the same, the infant mortality would necessarily be much lower in abdominal section.

## Book Reviews

*[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]*

*Wit and Its Relation to the Unconscious.* By Professor Dr. Sigmund Freud, LL.D. Authorized English edition, with introduction by A. A. Brill, Ph.B., M.D., Lecturer in Psychoanalysis and Abnormal Psychology, New York University; former Chief of Clinic of Psychiatry, Columbia University. New York: Moffat, Yard & Co., 1916. Pp. 388. Price, \$2.50.

In the present volume Professor Freud has thrown light on the problem of the unconscious and its activities from a new angle, namely, that of wit. That he has been notably successful will hardly be a matter of surprise to the psychoanalyst, but one does not need to be a psychoanalyst to read his masterly exposition of wit with interest, surprise, and pleasure. It is an event in the history of thought. Heretofore the few who have not taken wit at its face value as an artificial means of obtaining a temporary euphoria have had very little success in attempts at its explanation. Freud, after analysis of the various forms of wit, has shown something of the real meaning which lies back of the comic facade whereat we gape and grin—and pass on. He has shown the aggressive tendency which is the purpose of much wit and has pointed out many similarities in wit and dreams. "Dreams," he says, "guard from pain, wit gains pleasure." He has come to the conclusion that the pleasures of wit originate from an economy of expenditure in inhibition, of the comic from an economy of expenditure in thought, and of humor from an economy of expenditure in feeling. The translation, always a difficult matter with Freud, Adler, Jung, and many other such writers, is remarkably good, probably the best that Brill has done. The book is well gotten up and is a valuable addition to the many books on the newer psychology which these publishers have given us. We saw only one typographical error, "with" for "wit" on page 181.

*Military Surgery.* By DUNLAP PEARCE PENNHALLOW, S.B., M.D. (Harv.), Chief Surgeon, American Women's War Hospital, Paignton, England; Captain Medical Corps, Massachusetts National Guard; First Lieutenant Medical Reserve Corps, U. S. Army (inactive list), etc. With introduction by Sir ALFRED KEOGH, K.C.B., Director General Medical Army Service. Original Drawings by the Author. New York: Oxford University Press, 1916. Pp. xvi+432. (Price, \$5.)

Military surgery has developed so rapidly since August 1, 1914, that it is almost a new art. The wounds treated are so much more severe than those ordinarily met with in civil life, they are so generally infected before coming under the notice of the surgeon, and the surgeon's work is so impersonal and hurried that military surgery under the



present day conditions differs materially from surgery in civil life. Doctor Penhallow, who is an American, a captain in the Medical Corps of the Massachusetts National Guard, and first lieutenant in the Medical Reserve Corps of the U. S. Army, has in his capacity as Chief Surgeon of the American Women's War Hospital, Paignton, England, had an opportunity to study a wide variety of wounds, shock, gas poisoning, trench foot, etc. His American conferees will find in this concise, well written volume much that is interesting and informing. The book is intensely practical in its character, and is copiously illustrated with photographs, diagrams, and x ray pictures showing not only the wounds and their treatment but various new forms of apparatus which have been devised to meet special conditions. The author dissents from the view of the British surgeons who have condemned bone plating in septic wounds, and presents a number of cases in which this procedure has been resorted to with success. It is quite possible that the failures which have been reported have been due to errors in technic. One of the most interesting of the many plates shown illustrates the common types of English army field splints. A very instructive chapter on orthopedics is profusely illustrated and contains much that would be of interest and value to the surgeon even in civil life. Several case histories are given which present graphic pictures of the effects of gas poisoning. An interesting chapter is devoted to shell shock.

*The Kingdom of the Mind.* How to Promote Intelligent Living and Avert Mental Disaster. By JAMES MORTIMER KENISTON, M.D., Member of the American Medico-psychological Association, formerly on the Medical Staff of the Connecticut Hospital for Insane. New York: G. P. Putnam's Sons; London: The Knickerbocker Press, 1916. Pp. 242.

Doctor Keniston has written a splendid and timely book, which, as he puts it, tells how to promote intelligent living and avert mental disaster. There have been numerous contributors to the subject of personal hygiene, but none have covered the field of mental hygiene so thoroughly, adroitly, and happily as the author of the present volume. From years of observation and study of the mentally sick he brings a wide knowledge of the mental factors that promote health and happiness. Beginning with the relationship between the body and the mind the author then takes up in separate chapters the different mental processes such as perception, consciousness, memory, thought, judgment, emotion, and will. He then adds chapters on the sources of strength and weakness. The remaining chapters are of a more general nature and abound in genial remarks and practical advice. The chapter on the care of the mind is particularly commendable. The book has a distinctively optimistic tone and is full of choice quotations and suggestions. Not the least of its merits are the simplicity and clearness of its style. This is a book that anyone can read with profit; a chapter a day will act as a mental tonic and help to maintain that sanity and poise that are so much needed today.

*A Manual of Physical Diagnosis.* By AUSTIN FLINT, M.D., LL.D., late Professor of the Principles and Practice of Medicine and of Clinical Medicine in Bellevue Hospital Medical College, etc. Seventh Edition, Revised by HENRY C. THACHER, M.S., M.D., Associate in Medicine in the College of Physicians and Surgeons of Columbia University; Assistant Attending Physician, Roosevelt and Lincoln Hospitals, New York. Illustrated. Philadelphia and New York: Lea & Febiger, 1917. Pp. vi-381. (Price, \$2.50.)

The simplicity and the thoroughness with which Doctor Flint has presented the subject of physical diagnosis needs no comment. Doctor Thacher has retained the best features of former editions of this work, and in addition has introduced a chapter on the physics of the subject which will be of help to the medical student. He has likewise embodied in concise form our recent new conceptions of the various cardiac arrhythmias and their interpretations. The illustrations are for the most part excellent. We could have wished that the diagram on page sixty-two had shown the stomach what we now know it to be, a vertical organ rather than a broad oval one lying nearly horizontal and distended like a football. This may be pardoned, however, as the physical diagnostician is interested mainly in hearts and lungs.

## After Office Hours

For the physician who follows the example set by Oliver Wendell Holmes and S. Weir Mitchell and adds to the income of his practice a stray dollar gathered here and there from excursions into the fields of lay literature the *Editor* is invaluable. It is published every other week at Ridgewood, N. J., and is to writers what the *New York Medical Journal* is to the physician.

\* \* \*

On a page headed "The Office Dog," the *Ladies' Home Journal* for April has an article entitled, "Cancer Is Now Curable." Reading on, we find merely the early operation treatment given as if a new discovery. Read Bulkley, who has recently expressed some views on this subject.

\* \* \*

A graphic picture of the sufferings of a drug addict deprived of his narcotic is drawn in "The Gift Supreme," a continued story in *Munsey* for April. The author has adopted the view of Doctor Jackson of the Harlem Prison that the way to stop the use of narcotics is to stop. He does not withdraw the drug gradually, but lets the patient suffer.

\* \* \*

In the *Smart Set* for April H. L. Mencken tells why women are more intelligent than men and why he is a bachelor.

\* \* \*

For some reason, possibly because its opponents have stressed the sexual features of it, psychoanalysis has made a strong appeal to the popular imagination. Many curious comments are heard about it from lay sources, some of them even justifying the suspicion that the makers of them do not know what it is all about. Although mistakes seldom originate from this source, we have to record that in the magazine section of the *New York Times* for Sunday, March 18th, we saw a book called *Man's Unconscious Conflict*, with the explanation that it was a popular exposition of psychoanalysis, put under the heading "Politics and Economics."

\* \* \*

A vivid picture is drawn of the busy life of a colonel in the medical corps in the *Canadian Magazine* for March. He turns from the scrutiny of accounts to the operating room, where a Highlander pleads that his leg shall not be amputated, saying, "I hae a wife an' twa wee bairnies at hame, an' I were thinkin' as how I'd be better able tae dae for them wi' baith ma legs." Though badly splintered, the leg is saved and the colonel goes from the operating table to his duties as officer of the day, holding summary court on a drunken private, whom he condemns to total abstinence, which the private says "spoils the whole war for me."

\* \* \*

"In some respects," says Francis Hackett, in *The New Republic*, "Mrs. Edith Wharton is a pharmacist in her handling of vital forces. She deals in essences and double distillations. She uses a delicate measure to weigh out what is precious or deadly. She dispenses little that she regards as lethal or valuable outside what would fit on an apothecary scales. She is grave, minute, scrupulous, analytic." Mr. Hackett has hit upon a new and apt simile. Mrs. Wharton will be remembered by some physicians as the author who in her novel *The Fruit of the Tree* condoned the administration of a lethal dose of morphine to a chronic and constant sufferer.

\* \* \*

John Bartram, the Quaker farmer, was an interesting figure in pre-Revolutionary days. He it was who founded the first botanical garden in America on the west bank of the Schuylkill near Gray's Ferry and he was no doubt correct when he said, "I believe I have taken more pains after the study of botany and the operations of Nature than any other that was born in English America, notwithstanding my low fortune in the world, which laid me under the necessity of very hard labor for the support of my family; having now a wife and seven small children, whose subsistence depends on the produce raised on my farm." Bartram's garden after many vicissitudes has come to be a public park in the suburbs of Philadelphia. The old stone house of John Bartram is still standing and photographs of it and of the grounds accompany a charming sketch of the father and his sons in the *House Beautiful* for March.



## Meetings of Local Medical Societies

**MONDAY, April 2nd.**—Clinical Society of New York Throat, Nose and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

**TUESDAY, April 3rd.**—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine; Medical Association of Troy and Vicinity; Broome County Medical Society.

**WEDNESDAY, April 4th.**—New York Urological Society (annual); Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Schenectady Academy of Medicine; County of Rockland Medical Society; Medical Society of the County of Genesee.

**THURSDAY, April 5th.**—New York Academy of Medicine (stated meetings); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society.

**FRIDAY, April 6th.**—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society, Gynecological Society, Brooklyn; Practitioners' Society of New York; Corning Medical Association; Society for Serology and Hematology, New York.

**SATURDAY, April 7th.**—Benjamin Rush Medical Society, New York.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending March 21st, 1917:*

**APPLEWHITE, J. D.**, Scientific Assistant. Directed to proceed to Hillsboro, Texas, for duty in studies of rural sanitation in Hill County.

**AUSTIN, H. W.**, Senior Surgeon. Directed to report to the chairman of a board convened at the Bureau Monday, March 26, 1916, for physical examination.

**BILLINGS, W. C.**, Surgeon. Granted two days' leave of absence from March 16, 1917.

**COBB, J. O.**, Surgeon. Detailed to deliver lectures on Service activities before the various medical colleges in the city of Chicago.

**ESKEY, C. R.**, Assistant Surgeon. Granted four days' leave of absence en route to El Paso, Texas.

**FOARD, FRED T.**, Scientific Assistant. Directed to proceed to Hillsboro, Texas, for duty in studies of rural sanitation in Hill County.

**FOX, CARROLL**, Surgeon. Ordered to proceed to Quincy, Ill., to conduct a study of public health administration.

**GUTERAS, G. M.**, Surgeon. Granted three days' leave of absence from March 11, 1917.

**GUSTETTER, A. L.**, Acting Assistant Surgeon. Granted six days' leave of absence from March 20, 1917.

**KRULISH, E.**, Passed Assistant Surgeon. Granted one month's leave of absence from March 21, 1917.

**LAUGHLIN, J. B.**, Assistant Surgeon. Ordered to proceed to Mansura, La., to investigate suspected case of bubonic plague.

**LAVINDER, C. H.**, Surgeon. Ordered to proceed to Cincinnati, Ohio, for conference relative to the preparation of report on poliomyelitis.

**MARSHALL, E. R.**, Passed Assistant Surgeon. Detailed to deliver lectures on Service activities before the various medical colleges in the city of New York.

**MUSTARD, H. S.**, Scientific Assistant. Directed to proceed to Hillsboro, Texas, for duty in studies of rural sanitation in Hill County.

**PARRAN, Thomas**, Scientific Assistant. Ordered to proceed to Okmulgee, Okla., for duty in studies of rural sanitation in Okmulgee County.

**PERRY, N. V.**, Constructing Engineer. Ordered to proceed to Marine Hospital, Baltimore, Md., for inspection of buildings and mechanical equipment of the station.

**PRATHER, D. J.**, Assistant Surgeon. Ordered to stop en route Okmulgee, Okla., at Obion County, Tenn., to observe results of sanitary survey.

**SAFFORD, M. V.**, Assistant Surgeon. Detailed as a member of a Coast Guard retiring board at Boston, Mass.

**SANDIDGE, R. P.**, Scientific Assistant. Directed to proceed to Okmulgee, Okla., for duty in studies of rural sanitation in Okmulgee County.

**SMITH, F. C.**, Surgeon. Directed to proceed to Framingham, Mass., for investigations of local control of tuberculosis.

**STILES, C. W.**, Professor. Directed to proceed to Wilmington, N. C., for sanitary study of intestinal parasites.

**STONER, G. W.**, Senior Surgeon. Granted three days' leave of absence from March 12, 1917.

**TOWNSEND, J. G.**, Assistant Surgeon. Granted eleven days' leave of absence from March 7, 1917.

**WEBB, JOHN B.**, Scientific Assistant. Directed to proceed to Okmulgee, Okla., for duty in studies of rural sanitation in Okmulgee County.

**WHITE, J. H.**, Senior Surgeon. Detailed to attend the meeting of the Tennessee Medical Association at Nashville, Tenn., April 3-5, 1917.

**WILLIAMS, RALPH C.**, Scientific Assistant. Directed to proceed to Okmulgee, Okla., for duty in studies of rural sanitation in Okmulgee County.

**WOOD, W. L.**, Scientific Assistant. Directed to proceed to Hillsboro, Texas, for duty in the studies of rural sanitation in Hill County.

### Boards Convened.

Boards of commissioned medical officers convened Monday, April 2, 1917, for the purpose of making physical examinations and conducting the mental examination of candidates for appointment as assistant surgeons will meet in Philadelphia, San Francisco, Ellis Island, N. Y., Chelsea, Mass., St. Louis, and Galveston, Texas.

## Births, Marriages, and Deaths

### Born.

**IGNAUER.**—In Cincinnati, O., Tuesday, March 13th, to Dr. Samuel Ignauer and Mrs. Ignauer, a son.

### Died.

**BRADDOCK.**—In Haddenfield, N. J., on Friday, March 23rd, Dr. Charles S. Braddock, Jr., aged fifty-four years.  
**DENEHRINK.**—In Los Angeles, Cal., on Sunday, March 11th, Dr. Francis Denehrink, of Sheridan, Wyo., aged fifty-five years.

**EATON.**—In Chittenango, N. Y., on Monday, March 12th, Dr. John Ryland Eaton, aged sixty-eight years.

**GORDON.**—In Detroit, Mich., on Monday, March 12th, Dr. George G. Gordon, aged sixty-five years.

**HAMPTON.**—In Milton, Ky., on Tuesday, March 13th, Dr. S. E. Hampton, aged seventy-nine years.

**HUGHES.**—In Decatur, Ill., on Saturday, March 10th, Dr. Albert L. Hughes, aged forty-nine years.

**McMORROW.**—In New York, N. Y., on Monday, March 12th, Dr. James P. A. McMorrow, of Syracuse, aged forty years.

**MERRILL.**—In Somerville, Mass., on Saturday, March 17th, Dr. Arthur E. Merrill, aged fifty-one years.

**MINTON.**—In Toledo, Ohio, on Friday, March 9th, Dr. Frederick P. Minton, of Millbury, Ohio, aged sixty-four years.

**OSMAN.**—In Philadelphia, Pa., on Saturday, March 17th, Dr. Joseph Reed Osman, aged seventy-three years.

**VAN VOORHIS.**—In Bellevue, Pa., on Friday, March 16th, Dr. John S. Van Voorhis, aged ninety-four years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 14.

NEW YORK, SATURDAY, APRIL 7, 1917.

WHOLE No. 2001.

## Original Communications

### MODERN CONCEPTION OF INEBRIETY.\*

By MENAS S. GREGORY, M. D.,  
New York.

No more insistent problem presses upon the civilized world than that of alcohol and inebriety. In the industrial world, it has become, a factor for serious recognition and regulated control. Nations, in their sore distress, hard driven by the necessity of conserving every available force of human efficiency, are awakening to an intensely practical consideration of the abolishment of strong drink.

Alcoholism has woven itself into the very warp and woof of human endeavor. Its destructive influence has been so extensive and widespread that it has compelled attention from everyone dealing with community problems. The annals of literature, art, medicine, science, and law are choked with the details of its pernicious influence. The records of its victims from every walk of life lie about us like fallen trees in the forest, while the inadequate capacity of the individual member, due to its deteriorating effects is daily manifested in all the activities of life. Nor have its ravages been confined to modern times. Alcoholism is as old, at least, as our knowledge of the human race, and its baneful effects have been recognized in all ages, among all races, and in every clime. As long ago as eleven centuries before the Christian era, Chinese, Egyptian, and Babylonian records disclose warnings against excessive use of alcohol, indicating that even in that early period it was recognized that alcohol impaired the efficiency of the individual.

The question of inebriety has received an enormous amount of careful study. It has been discussed from many points of view; many theories have been advanced and innumerable remedies suggested for its cure and prevention. Tirades have been poured forth upon the sinfulness of alcohol. As a vice, it has called forth pitying headshakes from the charitably minded over what they term the native degeneracy which drives man to it. It has been called a physical disease or a "moral scourge," for which ancestors were responsible—a heritage, handed down like a bank account.

I do not bring forward any new theory, nor suggest any new magical remedy for the solution of the problem of inebriety. After many years of per-

sonal contact with these cases and much thought, I make the plea for a systematic and correlated study of all the phases of inebriety, and particularly emphasize the mental and psychological side of the problem, without which consideration I am convinced all our efforts would be futile and barren of results. We are accustomed to condemn the use of alcohol in the severest terms, as a blight, a "moral scourge," as a curse of mankind; that it nurtures disease, poverty, and crime—and perhaps justly so when we constantly have before us examples of the appalling ruin and degradation which result from its abuse. Would it not be well, however, to pause a moment, and inquire if alcohol has not rendered some signal service to mankind? If it has not, how has it ever survived the inexorable laws of evolutionary progress? Can it be possible that an agent which has persisted for centuries and which has insinuated itself into every human trait and passion is merely an accident without any basic motive?

Even a cursory investigation of the history of the mental development of the race will at once convince one of the important role alcohol has played in the evolution of man. Alcohol and kindred intoxicants have contributed extensively to those social traits upon which modern civilization rests. Its socializing effects have stimulated and intensified the "herd instinct," thus promoting social impulses. It has widened the social horizon by removing temporarily the natural reserve and suspicions of the mind, cutting down the barriers of tribe or caste and stimulating community spirit and fellowship. Alcohol, again, has contributed enormously to the development of religious faith and consciousness in the race. It produced divine frenzy, during which men saw visions, created gods, spoke in oracles. The divine fluid has been an integral part of religions of all kinds; it has symbolized life, sacrifice, and immortality and has been indissolubly linked with religious rites and ceremonies even to the present day. By its power of inflaming the imagination it has directly or indirectly contributed to the development of law, literature, and art. The story of the service of alcohol to the primitive race is almost as long as that of civilization itself.

However, whatever service alcohol may have subserved in the primitive state, its usefulness has been to a large degree outgrown. The struggle for existence has shifted from the racial to the individual, so

\*Read before the New York Academy of Medicine, February 1, 1917.

that intoxication today survives in those who are unequal to the demands of life. The individual in modern life needs clean eyed and clear brained freedom from his primitive impulses in order that he may adjust his conflicts which arise in twentieth century reality for a control of conduct which is serviceable today. It is necessary, therefore, to save the individual, and in order to do this, inebriety must be properly understood.

What is the dominant force which impels man to alcohol? What is the origin and character of the intoxication motive and its relation to other traits of human nature? As Partridge aptly says, "We can never grasp practically any great problem of morality, social economy, or public hygiene until we understand the nature of the human passions which cause such a problem to exist." Were there not something in human nature that made the use of alcohol a persistent and almost ineradicable habit in society, we should have no problem of intemperance. We must, therefore, try to understand what the impulse behind the habit is.

Various motives, both mental and physical, have been assigned for the drinking habit. Some have pointed out that mental defect, disease, and instability are responsible for drinking, which, no doubt, is partly true. Others have called it a relief from incidental worries, disappointments, losses, and a host of similar difficulties, and this also is partly true. The theory that bodily craving is the foundation of the drink habit may also have a kernel of truth. This line of reasoning, however, seems superficial and fails to explain. It would be begging the question to state simply that the psychopath or mental defective drinks because of his mental shortcomings, as many others with similar infirmity do not express their difficulty in alcohol. The quality of the motive in the insane or defective and the psychopath is the same as in the sane and only differs in degree and intensity.

Similarly it will not aid us to understand the nature of inebriety by simply stating that alcohol is taken for relief from physical pain, unless we can trace these traits to the primordial impulses of the human mind. The complexity of the problem is such that it seems almost beyond human comprehension to analyze the devious route of human impulses. Psychoanalytic psychology, however, with its dynamic theory of transmutation and shifting of energy, has afforded some limited insight into the nature of this intricate problem. The theory of transmutation of energy may be briefly stated as follows: Human conduct is energized by the primal instincts of selfpreservation and reproduction and this is expressed along various paths, such as power, acquisition, fame, ambition, sexual gratification in its broader sense, and many kindred things, which make the struggle for adaptation possible. In the face of a stern reality as these goals are difficult of attainment, giving rise to many conflicts, the process of evolution has brought about additional paths, which may be termed temporary reliefs, or "flights," as Doctor Adler calls them, to facilitate adjustment. As the growing child, in his longing to be like grownups, makes use of phantasy and lives in a world of "make believe," so man, with the difficulties

of adjustment, flies to a dream world of unreality. Thus we have on the one hand, as it were, relief stations along the pathways on higher levels such as religion, altruism, ethical principles, and mysticism and on the other, pathways of a more infantile and primitive nature, such as daydreaming, alcoholism, neuroses, and psychoses. These pathways, relief avenues, escapes, or whatever we may call them, serve to promote the fundamental impulses when in conflict with the stern realities, suppressing the pain or directly intensifying the pleasure principle.

Alcohol and intoxicants, by reason of the peculiar state of mind they produce, have been utilized by men as one of these means of refuge from the realities of life. The action of alcohol on the human mind is that of a great dissociator of function; it reduces man to his elemental principles. It thus changes for man the outside world. It pushes facts and verities away from consciousness. It enables the individual to get away from the realities. It artificially creates a new world in which the pleasure instincts have their full sway unrestrained by the control of intelligence. In other words, alcohol accomplishes this fact by temporarily intensifying the desire of the pleasure principle, first for an abundant and wider life, and, second, by the so called narcotic motive when it suppresses the pain and thus indirectly promotes the pleasure principle.

This hypothesis has the great advantage that it is essentially dynamic. It regards the human body, just as other objects of nature, as a transformer of energy. It recognizes that, just as that energy comes from many sources, so it is distributed in many ways, and a most important corollary of the hypothesis is the interchangeability of these manifestations. One may be substituted for another. Thus, for instance, the pathway of altruism may be substituted by that of mysticism, that of religion by daydreaming. Alcoholism, a neurosis, a psychosis, therefore, may present substitutes of these dynamic motives.

The intoxication motive, then, is closely related to the primal impulses. If this be granted, we must regard alcoholism and inebriety as essentially psychological problems. Further, the intoxication motive may be replaced by higher and nobler impulses. That this is not a fanciful hypothesis and can be substantiated by actual facts, is indicated by the relation of religion to inebriety. The most frequent, lasting, and successful cures of inebriety are brought about by religious influences. About a year ago I was invited by some friends to visit the Jerry McAuley Mission on Water Street. When I came to face the audience, I was amazed to see so many familiar faces, happy and smiling. They seemed to be intoxicated, but not with alcohol. When the testimonies were given, I was thrilled to recognize in many of the converts former frequenters of the alcoholic wards of Bellevue Hospital. Many of them were men who had been regarded as chronic alcoholics and "repeaters," men who had been considered deteriorated, hopeless drunkards, men for whom all our efforts had been vain and fruitless. These men were now bright, happy, cheerful, and successful business and professional men who have remained temperate and



steady for a number of years. Permit me to read the following letter, which I received a few weeks ago and which is quite apropos:

January 6, 1917.

MY DEAR DOCTOR GREGORY.

I take great pleasure in extending to you and any of your friends an invitation to the McAuley Mission, on Friday night, January 12, 1917, when I shall celebrate my first year in the Christian life. You will probably recall the writer of this letter as having been under your care in Bellevue Hospital a year or more ago and whom you met on your last visit to the Mission with Mr. and Mrs. J. L. M. I do not mean in any way to belittle the treatment of your hospital, but this treatment which I have taken is truly remarkable. I am a very happy fellow today, holding a good position and having a wife who is leading a good Christian life, and my five children are well and happy. I am perfectly satisfied to serve God the rest of my days.

Hoping to have the pleasure of your company at this anniversary, I remain,

Very truly yours,

WALTER O. L.

By this reference to the McAuley Mission, I am not advocating religion as a cure for inebriety, but merely endeavoring to demonstrate that inebriety is a psychological problem; that in order to cure an inebriate, we must revolutionize and evolutionize his mind, and, further, we must not only take away the alcohol, but replace it by some other dominating influence which will engross his entire interest. In like manner, other religious organizations, such as the Salvation Army, missions, revival meetings, exemplified in the recent enormous meetings by Billy Sunday, as well as other quieter and deeper religious influences, not dependent upon emotionalism, all contribute to the recovery from inebriety.

When we admit that alcoholism or inebriety is a psychological problem, we do not decry the approach of the question from the physical side. A great deal of valuable work has been and is still being done along these lines, and we should by all means encourage those earnest workers who are investigating the relation of dyscrasias of the ductless glands and various autogenous poisons, or imperfectly understood conditions which we speak of as anaphylactic reactions.

Let us not forget, however, that these efforts after all are being directed to the end products and by-products, and that unless in addition to work along these lines we keep in mind the psychological factors, the fountain head of inebriety, our efforts would be as futile as trying to dip the ocean with the proverbial spoon. If purely physical factors are responsible for inebriety, how can we explain the many recoveries which are brought about by sudden psychological changes in the individual, such as mysticism, altruism, and religious influences?

Because the viewpoint of inebriety has been physical, there have arisen many so called specific cures, which are as varied as they are numerous. Even at first glance the very fact that these specifics are very great in number and based on diametrically opposed principles, and that they all equally claim credit for "cures," should in itself at once make us skeptical of their scientific value. No matter how credulous one may be, it is difficult to see how a certain drug or combination of drugs can change the fictitious personality which the inebriate has created for himself through his long and excessive indulgence. Some

of these are frauds pure and simple, whereas others have some scientific value. The strongest argument in their favor, however, is the fact that their advocates can also point to a percentage of recoveries; almost all of these "cures" have adherents among earnest, honest, and public spirited people, some of whom have perhaps personally or indirectly experienced wonderful results from their application.

Some of these charitably minded people occasionally visit the alcoholic wards of Bellevue Hospital in order to obtain recognition from a public institution. It is quite interesting to observe two such visitors coming to the hospital within a short time and each advocating the wonderful merits of the "cure" which he represents, although each of these "specifics" differs in principle from the other as the night from the day. Both will point to recoveries which they have witnessed from the exhibition of the specific for which they stand sponsor. It is infinitely more interesting, however, to interview these charitably minded social workers six months or a year later when each has given up his own pet specific, to adopt the one discarded by the other because or the failures they have observed in their own and the success in the other.

It must be stated that some of these "specifics" have considerable therapeutical value, not as a cure for inebriety, but as a method of unpoisoning the individual. It is of the utmost significance to hear the explanations offered by exploiters of these various "cures" for their failures—that the patient has no will power, that he has no character, that he is a weakling, that the "cure" will put him on his feet and that if he is a man he will be able to save himself, all of which is a tacit admission that inebriety is a mental and psychological problem and not merely a physical disease.

How, then, are these recoveries, alleged to be due to the most "diverse cures," to be explained? Mental conflicts, which give expression to drinking, are not always deepseated. Many of them are so superficial or so close to the surface that they are capable of adjustment by very slight effort. This explains the mechanism of many spontaneous cures. Again, many who willingly seek these "specific cures" have already unconsciously adjusted their difficulties and are aided by suggestion and the confidence which the psychic factor of these "cures" affords. In others, the recovery might be incidental, especially in periodical drinkers or so called dipsomaniacs. Drinking in these cases is secondary to a short and mild attack of mental trouble, such as manic depressive psychosis, and when this terminates in recovery the drinking ceases and the "cure" is credited with the recovery.

The question is frequently asked, and very properly so, if recoveries occur from such cures, even if indirectly, why not utilize them? It is, indeed, most desirable that we should use every means at our command to save the victims from the ravages of inebriety and its horrifying results, but in our zeal to reclaim the individual let us not sacrifice the all important community problems of inebriety. By giving our tacit approval to such methods of "cure," we are giving credence to the belief that inebriety can be combated by physical measures alone and

thus cloud the real issue and retard the ultimate solution of the basic problem. Perhaps this can be made clearer by an example drawn from the sphere of mental diseases. A distorted conception of the nature of insanity prevailed even up to a few hundred years ago. Insanity was regarded as a demoniacal possession and the logical treatment naturally was to subject the body to torture in order to drive away the evil spirit. As a consequence the insane were flogged, starved, subjected to solitary confinement, and exorcised, as such means were regarded as curative measures. These obviously absurd means were recommended even by physicians, the records of the Middle Ages inform us. It is true that some of the patients recovered and these bizarre remedies were given credit for the "cures," but we now know that those who got well did so in spite of the treatment.

The problem of insanity was not approached along rational lines until the beginning of the nineteenth century, when the true nature of mental diseases was recognized, namely, that it was not a supernatural phenomenon. Our attitude toward inebriety is undergoing a similar evolutionary process. At first it was a vice, a sin, then a physical disease, but now we know that unless we treat the problem psychologically as well, we shall never be able to deal with it in a rational and scientific manner. If, then, it is conceded that the intoxication motive is the driving cause of inebriety, that it is intimately bound up with the fundamental impulses of the human mind, that it is essentially a cry for life more abundant, that it is imperious in its demands, and that this impelling impulse, unless permitted to express itself in alcohol, will manifest itself in some other way, what practical import has our line of reasoning in the treatment of the individual inebriate and in the control of alcoholism in society?

Proceeding along this line, we shall realize how absurd it would be to treat an individual inebriate from the physical standpoint alone and to inform him quite strongly that if he has any character left he will be able to help himself, inasmuch as we know that inebriety is a psychological and characterological disorder from the very beginning. On the contrary, we should realize that the treatment is but only just begun; that his psychology must be delved into, that his conflicts and difficulties must be uncovered and made manifest to the patient himself—be they personal or environmental, inherent or acquired, be they on the surface, such as social maladjustment, ennui, vocational discontent, or more serious and deepseated, as sexual maladaptation, mental defect, instability, and a host of kindred conditions. Moreover, it is evident that it will not suffice merely to take away the alcohol through restraint in hospitals or farm colonies, unless in addition we analyze, reconstruct, and reeducate his personality, attempt to create new healthy environmental conditions and thus teach him safer flights, escapes, and sublimation on a higher plane.

Work along such lines would of necessity require a great deal of time, patient effort, and intensive individualization, but careful medical work of any kind, such as the treatment of the neuroses or even

nephritis or tuberculosis, requires time and patience. Nevertheless, we are not deterred by such considerations from undertaking the treatment of these disorders. The treatment of the inebriate as an individual can never be successful unless the larger issue of inebriety as a community problem is also attacked. The most important question in connection with this is, of course, prohibition. Either partial or complete prohibition must come, as no effort, however systematic and well directed, can ever succeed in the control of inebriety while there are saloons on every street corner. Alcoholic sublimation is so easy, the relief it gives, though temporary, so realistic, that the readiness with which it can be procured makes it impossible to solve the inebriety problem without some restriction of the sale of alcohol.

It is doubtful, however, if prohibition will ever be effective unless some substitute is offered, for in legislating against the alcohol habit, we are attacking a problem which is based on instinct itself. It is not the motive at the root of inebriety that must be done away with, but the inebriety; it is not the intoxication motive that is an accident, but the alcohol; or, more properly speaking, a process of evolution which has been in many ways beneficial, but has outlived its usefulness.

It must be remembered that alcohol is not only an escape from the difficulties in life at high levels, but it also serves as a means of sublimation for potentialities more destructive and ignoble. To express this in a concrete, and perhaps more understandable way, I might say that I have had patients in whom drinking was clearly a substitute for sexual inversion; others have resorted to alcohol in order to suppress some more vicious or antisocial tendencies. In other words, the individuals in this group of cases had consciously and more often unconsciously chosen the lesser evil in adopting alcohol.

Doctor White, of Washington (1), suggests the possibility that alcoholism serves as a substitute for neuroses or psychoses. He quotes the statement of Haycroft, who asserts that in several of our prohibition States, the admissions to State hospitals have increased and that prohibition has contributed to pauperism. It might be said that there is considerable doubt as to the correctness of Haycroft's conclusions, as the increase in the number of the insane and paupers might be to a great extent more apparent than real.

Drinking in mild types of mental disorders, such as dementia præcox, manic depressive insanity, and mental defect, often so masks the underlying condition that it is mistaken for intoxication, and such individuals are sent to correctional institutions. I have frequently found many persons suffering from mental diseases in this city who had been committed to the workhouse and penitentiary as intoxicated or disorderly persons. Under prohibition, however, the antisocial conduct of such individuals, because of the absence of alcohol, is recognized as incident to their mental disease, which then becomes obvious, and they are naturally sent to the State hospitals, swelling the population of them and thus giving rise to an apparent increase in the number of the insane.

The increase may also be partly accounted for in

that prohibition brings with it an increased interest in public and mental hygiene, lessening the prejudice against such institutions. Increased pauperism in prohibition States may perhaps be attributed to the loss of employment of a large number of unskilled workers who have been busied in the various activities of the liquor industry, whose efficiency has been impaired by the very character of their work and who were suddenly thrown upon the community.

These, however, are more or less speculative questions. Time and careful investigation must decide whether the alleged increase in insanity and pauperism under prohibition is real, or whether extraneous factors have partly entered into it. However, despite the objections to these conclusions, I am strongly inclined to agree with Doctor White (1) that alcohol may frequently act as a defence in preventing mental breakdown. I have personally observed patients in whom cessation from drinking was immediately followed by mental depression, and, on the other hand, I have noted many patients in whom the attacks of manic depression, when associated with drinking, were of short duration and that recurrence of these attacks in the same individual, when unassociated with alcohol, in some cases have been of much longer duration. I am not advocating alcohol as a preventive of insanity, but endeavoring to emphasize very strongly the principle that inebriety cannot be overcome simply by withholding the alcohol; it can only be destroyed by being replaced; the intoxication motive must find another outlet.

The inebriate who has been deprived of alcohol without an adequate substitute to satisfy the intoxication motive may, to use the Scriptural words, be visited by seven additional spirits more wicked than the previous one, who, finding it unoccupied, enter and dwell in him, "and the last state of that man is worse than the first."

With complete prohibition it must be admitted that many individuals whose conflicts are more or less on the surface would be able to adjust themselves, but many others with more deeply seated maladjustments and insufficient endowments may descend to lower levels unless we afford some substitute. If the saloon is abolished, something must be offered in its place which can fulfill whatever psychological service it has rendered, its socialization, its flights, its escapes.

Finally, in conclusion, we must enlarge our vision of the complexities of the forces which underlie human activities. Man, as a social being, derives most of his conflicts through the necessary adjustment of his social environment. Just as the dynamic concept regards all of the energy transformations as interchangeable and interwoven, one with the other, so all social adjustments are bound together and cannot be separated. Community problems are individual problems. Prostitution, criminology, child welfare, labor legislation, health insurance, and inebriety cannot be adequately understood nor successfully arranged, if they are thought of as isolated problems. They are interdependent and organically related. They all proceed from the innermost and oldest impulses of mankind which are bound up in the unconscious of each individual, producing this vast conglomeration which we call human life and

human endeavor. It has been the goal and ideal of the physician to prolong life, diminish pain, and prevent individual illness. With the passing of time, the ideal and goal are ever widening, and we seek further to enrich and make full the living of life. Social maladaptation is the prolific source of the most important diseases which interfere with the richness and fullness of life. The greatest achievement of the future must come to those who can see and grasp these larger opportunities of social medicine.

#### REFERENCE.

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## THE MENTALITY OF THE ALCOHOLIC.\*

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The title suggests that there is a definite type of mentality that permits an alcoholic development; that out of a certain mental basis, alcoholism would develop, and that if we could but catch this mental substratum, pin it in our intellectual collection box, subject it to close scrutiny, we would be able to answer the riddle of alcoholism.

The problem, however, is not so easy. There are no such fundaments in human nature. There is no such thing as a mentality of an alcoholic; alcoholism *per se* rests not upon a definite mental type. Like some birds' nests, alcoholism is fashioned of the most diverse materials and is supported upon the most heterogeneous structures. If then there is no such thing as a mentality of an alcoholic, what is the point of my title? By approaching the subject thus I wish to emphasize the fact that, if we are to understand the problem at all, it must be considered from another angle. The problems of the alcoholic are fundamentally individual mental problems; they lie in the psychic sphere, and it will be only through the psychological mode of approach that it will be possible to comprehend those pragmatically philosophical principles which it is the aim of science to formulate. I shall attempt to present a point of view that may be of some service to those who come vitally in contact with alcoholic individuals.

Approaching first from a long way off, science applies to a certain extent the anecdotal method. One tries to find out what the alcoholic himself thinks about it. Why does he drink? The replies are surprising, if not amusing, and rarely are two alike. Only certain resemblances in the responses permit that first hazy grouping which science inevitably attempts in the classification of knowledge to make it available. The method is too crude and unsatisfactory, and were it not for the general information it gives as to human viewpoints, it would better be omitted. I shall quote one of the many studies of this type that have been attempted. Hermann working in the Münch Clinic, had the following responses in answer to the question: Why do you

\*From notes of discussion before New York Academy of Medicine, May 1, 1912, revised and enlarged, 1916.



drink? Expressman: "When one has to work early, one has to take a beer in the morning. Beer makes strength, with water one cannot do it." Typesetter: "I really have no explanation, but everybody's doing it." Why not water? "That is too thin." A worker in asphalt: "One must have strength to raise the pail." A zinc worker: "A zinc worker must drink because it is so hot." A miller: "Drink belongs to this business." A druggist: "Because it tastes good. Water makes a hard stomach." Another, and another: "Others drink." "It helps in the work." "It keeps one steady." "It steadies one's nerves." "It helps the energy." "One must drink." "It belongs to the business." "It helps geschäft." "It keeps one warm." "It keeps one cool." One is reminded of the Frenchman's description of the cocktail—a mixture of inconsistencies—one thing added to make it cold, another hot—one thing to make it weak, another strong—one thing to make it sweet, another sour—"and finally he says, 'Here's to you' and drinks it himself." With this mass of inconsistencies one makes little progress. The answer is not there. It does not lie on the surface, it lies in a part of the individual of which he is less aware than that which this type of questioning will reveal. It is much more intimately bound up in his personality.

Our probe must go deeper; it must go to the root of that personality, and see what effect alcohol has upon it, for, to come to the point, I feel that we can only get at this problem by regarding alcoholism as a character reaction, instinctive and intuitive, and founded on fundamental needs.

The individual gets something from alcohol. "As pants the hart for cooling streams, when heated in the chase"—so exhausted, thwarted, and maimed in life's battle, man seeks relief through the instinctive self—and alcohol is the deliverance found by many. It is first profitable then to inquire, what does alcohol give? Can some pharmacological principles be laid down that will give an inkling of what the instinctive part of the human animal gets from alcohol?

Alcohol is the great mental vivisector. It cuts man into his primary principles. All those successive integrations of nervous functioning that evolution has built up are recessively disintegrated by alcohol. The effort of intelligence to supplant and augment instinct, which is the great new achievement in creative evolution, is thwarted by the action of alcohol, and under its influence man returns by successive stages along the paths he has travelled in his upward evolution. I am directing attention now not upon the deterioration of the chronic alcoholic, but to the analysis of acute alcoholic intoxication from the stage of gradual loss in the higher intellectual coordinations, the gradual loosening of the instinctive repressions, the more or less rapid perceptual numbing with its consequent failure in judgment, the gradual loss of reflex activity from cortical control, down through the phylogenetic scale, to the state where man no longer is man, a highly complex, closely integrated, coordinately working efficient machine, but a decomposed series of organic reflexes, a lower vertebrate, a purely spinal animal, a reversion of type

from the highest to the lowest. This is the picture, perhaps needlessly carried to its ultimate analysis, for even instinctive reactions derive little benefit from the final decomposition of function. To go so far down in the scale robs the instinctive pleasure seeking devices of their goal, at least their conscious enjoyment.

What then does alcohol do for the individual? It changes the outside environment; it pushes fixed laws away from consciousness; it enables him to get away from things as they are. A new world is made in which pleasure instincts unreined by conscious control have unlimited sway. Why does man want to achieve this effect? First let us see what we are. Let me borrow the words this time from Bergson: "The psychical life is made up of that which time brings it. There is moreover no stuff [time stuff] more resistant nor more substantial. For our duration, as human beings, is not merely one instant replacing another. If it were there never would be anything but the present—no prolongation of the past with the actual, no evolution, no concrete duration. Duration is the continuous progress of the past which gnaws into the future, and which swells as it advances. And as the past grows without ceasing, so also there is no limit to its preservation. Memory is not a faculty of putting away recollections in a drawer, or of inscribing them in a register. There is no register, no drawer; there is not even, properly speaking, a faculty, for a faculty works intermittently, when it will or when it can, while the piling up of the past upon the past goes on without relaxation. In reality the past is preserved by itself, automatically. In its entirety, probably, it follows us at every instant; all we have felt, thought, and willed from our earliest infancy is there, leaning over the present which is about to join it, pressing against the portals of consciousness that would fain leave it outside.

"The cerebral mechanism is arranged just so as to drive back into the unconscious almost the whole of this past, and to admit beyond the threshold only that which can cast light on the present situation, or further the action now being prepared—in short, only that which can give useful work. At the most, a few superfluous recollections may succeed in smuggling themselves through the half opened door. These memories, messengers from the unconscious, remind us of what we are dragging behind us unawares. But, even though we may have no distinct idea of it, we feel vaguely that our past remains present to us.

"What are we, in fact, what is our character, if not the condensation of the history that we have lived from our birth? Doubtless we think with only a small part of our past, but it is with our entire past, including the original bent of our soul, that we desire, will, and act. Our past then, as a whole, is made manifest to us in its impulse; it is felt only in the form of tendency, although a small part of it only is known in the form of idea."

This then is why I point the contrast between the reasons which people give for drinking and those causes which actually lead them to do so. It is necessary to go back to those factors in character

formation which Bergson has graphically described but which lie unrecognized by men in general. Only a few isolated facts of the past does man allow to enter into his reasoning and explanation of the present and the future. It is, however, far otherwise in actuality. The emotional force of the past, "all we have felt, thought, and willed," in the value it has had for us as we have reached after selfexpression in both gratification and power, is there "pressing against the portals of consciousness," though we do not realize it. Our rationalizations and our attempts to explain and account for the powers which seem to control beyond our wills show that there has been a vague realization of this and an attempt to defend ourselves against some mighty force concerning which we are in the dark. Devils, temptation, innate evil, original sin—yes, inspiration, possession by a higher power, filled with the Spirit—thus man has cried out against one and the same thing, or accepted it with exaltation.

If the past then has such control, if its force is such an unmeasured accumulation, "piling up of the past upon the past," it is there the determining factors must be found for a habit, a custom which sets conscious logic and conscious purpose at defiance. We must there root out the difficulties which each individual character has to meet in the control of such a past, dating through all the years of his life and the millennia behind them. There alone can be an answer to the question why he seeks forgetfulness of the present and desires to return to the sway of instinct which alcohol can give.

I do not deny that many of these difficulties lie near the surface. It takes very little digging, very little peering, very little analysis to see the major outlines of the difficulties that cause perhaps the majority of mankind to seek forgetfulness and a temporary happiness which the cold facts of the world would deny them. Insufficient endowment, grinding struggle, the fierce contest of selfpreservation in a large social complex, all this may be met possibly with better fortitude, for a time at least, if reality can be left for phantasy. Herein lies perhaps the temporary usefulness of a substance that man has employed as long as we know that man has been.

It is necessary here to call attention to what is meant by phantasy in contrast to reality. This term has been relegated in current thought and speech to child's play or man's castles of an idle hour. The effort to keep the crowding past out of sight has prevented knowledge of the place phantasy actually occupies in life. It exerts a continuous influence upon life and is, moreover, the fountain head of our most highly developed idealizations, ascribed consciously to rationalisms. Phantasy may thus be called the constant effort, mainly unconscious, to realize those instinctive desires which are strivings after selfgratification and selfexpression under the pleasure principle.

I feel it important to emphasize this point, that instinct and intelligence are not the same, nor are they mechanisms which have grown one from the other. Intelligence is not a higher form of instinct. Instinct and intelligence are two entirely different guiding principles in life, and are meant to do the

same work in different ways. Instinct had the start, it was a part of life itself. Intelligence came later and has produced in man the ability to do that which instinct could never do, to make man transcend himself, to make him able to utilize instinct as a tool in the fabrication of a better evolved and more adaptable animal. Had not that which we call intelligence been evolved, man's reactions would always have been truly instinctive. He would never have needed alcohol to rob him of the restraining hand of his more fluid and modifiable evolutionary aid, if he could as an instinctive animal have continued to avoid life's problems and dodge its responsibilities.

What are some of these instinctive reactions with which all have to deal with more or less success, but which drive a large proportion of individuals to seek an ally in the cups? What are the phantasy gratifications which prove too strong for the controlling restraint of reality? Continued investigation of the unconscious convinces us more and more of the universality of these fundamental factors, but certain ones seem to obtain mastery now in this individual, now in that; or even in the same individual now one, now the other acquires control. Indeed I think that we shall see this strikingly in the study of the alcoholic, underlying the apparent vagaries and contradictions in behavior and use of alcohol which are generally accepted characteristics.

Perhaps the most productive insight into the conflict driving to alcohol was opened up when certain thinkers and investigators of unconscious problems, following Freud's work upon the paranoiac conflict and mechanism, attacked the homosexual impulse as an important responsible factor. The pursuing of this line of insight has resulted in some careful elaboration of this phenomenon and its relation to alcoholism, which in so far removes it from the banal acceptance of a direct relation to the concrete homosexuality of blind dictionary definitions. It reveals rather a refinement of this problem which makes of it a subtle and far-reaching influence unrecognized and therefore truly an enemy in the dark.

An understanding of this significant factor requires a consideration of the bisexuality of man's nature to which Freud's psychology has significantly called attention. Juliusburger has given thoughtful, detailed study to this factor, as he has to many others which enter into the question of alcoholic indulgence. He calls attention to the fact that since bisexuality is actually existent in the nature of each individual, both phases of it must be active somewhere. Nature, assisted by culture, has made provision that the homopsychic factor shall have ample opportunity for exercise in the rounded development of character. This finds sublimation paths in friendship and in all forms of social activity, pleasurable, industrial, intellectual, in which men and women naturally gravitate toward members of their own sex. There are all grades of ability to sublimate this tendency and keep the heterosexual factor free for its social purposes.

Any degree of failure may become manifest with a consequent disturbance of the normal order of things. It must be borne in mind that these failures

and the conflicts they occasion are as a rule not in the open. It is this which causes that vague unrest and inexplicable impulse to hasten to the tavern where men may be found. A man may have been normally active heterosexually for a period of time, then he is suddenly aware of a dissatisfaction with home and wife, he rises even from his bed at night, as Juliusburger says, and against his better will, against all resolution and effort he is compelled to seek the place of companionship of his own sex. Is not this a direct homosexual impulse, one may ask, and what part need alcohol play here? This is just the crucial point. The conflict is a hidden one. It has become second nature for men to keep the homosexual trend generally out of sight. All signs and acts of tenderness among men are under social restraint and personal ban. Therefore the society of men, however desired, would only increase the inner tension and strengthen the blocking of the libido, which already produces anxiety. Relief then is found in just one way. There in the society of men, urged on by their presence and good fellowship, resort is had to the cup, in which lies release of these higher cultural inhibitions and return to an individually and racially older freedom in which one may indulge. Still this indulgence is not necessarily a gross one. It manifests itself in hilarity, perhaps maudlin dependence and cringing toward the desired object, or simply pleasure of being in the longed for company without the ordinary restraint of feeling which causes distress. Other unconscious elements here play a part, as will be discussed later.

Alcohol, it may thus be seen, is not at first the cause of failure of sublimation, but its use increases the original disturbance of the higher diversion of the homopsychic impulse and thus reacts to make the path of unrestraint continuously the easier one. Ferenczi cites a case under his close observation which is significantly illustrative of the bisexual conflict. Here the patient was twice married and his resort to alcohol began soon after each marriage while in the interval he remained sober. It seemed that the partial sublimation which he had been able to make in his work gave way when he attempted to yield to the heterosexual life and that the homosexual was then obliged to assert itself.

Further testimony to the strength and actuality of this homopsychic factor lies in the form of delusions and delirium which appear in the acute or chronic alcoholic psychoses. The well known form of hallucinatory terrors in acute delirium needs but a word to recall their identification with the symbolisms employed in dreams and obviously traceable to primitive and ancient acceptance of these, various animal forms, as representative of male sexuality. Meanwhile the investigations of chronic delusions, principally those of unfaithfulness of the partner and of persecution, reveal a justifiable acceptance of the psychoanalytic conclusions in regard to the paranoiac content and mechanism. They are a projection of the same inner psychic tension due to the homosexual element, which finds release also in this defence reaction.

I have said that there is probably no single factor at work, and further study of the complex interaction of unconscious elements of the psychical life

only confirms this. Emphasis may rightfully be laid upon his homopsychic striving, but surely working with it, perhaps in some individuals independent of it, are other of the "polymorphous" instinctive tendencies which attain occasional or periodic control. This they seek in every personality, but some of them are peculiarly fitted to find gratification through alcohol; or shall it be said that alcohol yields itself a ready agent for obtaining these certain infantile forms of activity, adding its own particular element of pleasure? This would certainly seem to be the case in the distinctively autoerotic pleasure which one finds in the analytic material of the alcoholic and which Juliusburger especially has emphasized. Sadger, also following the psychoanalytic recognition of the existence and importance of various erogenous zones, has laid emphasis upon the pleasure sought and derived from the taking even of food and drink as well as from other forms of contact stimulation of the mucous membranes of the oral, nasal, and other cavities. Therefore with the indulgence in alcohol there is probably this distinct form of infantile gratification whether in the solitary or social drinker, and doubtless this is explanatory of much of that "craving" which has been attributed to a physiological condition of cells.

The irresistibility of such a craving will be more convincingly understood if the analogy which Juliusburger has drawn between the solitary drinker, and the victim of masturbation be closely studied. Both struggle to free themselves from their compulsion. Both lay aside ordinary moral considerations and ideals and resort to any amount of lying and concealment in order to deny that in which they are even then perhaps actually indulging. They are equally desirous of reform and determined to leave off, and equally unable to resist. They practise their indulgence in secret and often the social drinker masturbates excessively in the period of remorse which is the sequel to alcoholic indulgence. This experience frequently turns up in analysis and confirms Juliusburger's explanation. Thus in the case cited by him in discussion of the homosexual impulse to drink, the effort on the part of the patient to obtain somatic relief after a period of psychic homosexual indulgence in the presence of the desired male object brought about the masturbatory activity. It is significant that this patient never masturbated except after drinking. The hilarity and singing in which he indulged in the presence of his friend, his wife's uncle in fact for whose sake apparently he had married at all, are ascribed to an autoerotic muscular activity, another common manifestation among drunkards.

Certain other psychosexual components cover a multitude of alcoholic manifestations. These are the ambivalent sadism and masochism. The sadistic tendency arises in part at least out of the longing to exceed the bounds of control, to give way to excitement and violent motor activity. It is the expression of an "alcoholic irresponsibility" which results in lawlessness and uncontrol and may be the occasion of crime or merely of the insult and physical injury tolerated by society. The cringing, whining selfabasement which is met in institutions is part



of the unconscious impulse to attract attention as the centre of interest. The patient considers himself the object of unjust accusations and the victim of cruel circumstances to which his downfall is attributed. Again his seeking of low company and low places of resort manifests the selfbasing masochistic instinct. It has its religious analogues in humiliation, short hair, or other forms of self-abasement. Moreover in the displacement of his own psychic conflict and sense of guilt in projection upon others, his delusions sadistically accuse them of unfaithfulness and the like, while the closely bound masochistic instinct is fed by the tortures of suspicion and jealousy.

The regression toward which alcohol leads, the release of primitive impulses which it grants, makes manifest all those tendencies which belong to the pleasure seeking unconscious. The patriarchal sense of power, the "Jehovah complex," comes to its own. Man feels again his domination, whether over the woman at his mercy or whether in the revels in his cups. He expands in his egotism, assumes a dominating role with his companions or a sense of importance and selfinsistence which makes him both obnoxious and ridiculous. The delusions of greatness which appear in the alcoholic psychoses likewise bear testimony to this. Seeking the prostitute, polygamous tendencies are also expressions of this release from restraint of the "will to power." Infantile exhibitionism and peeping also find their place.

Through alcohol man seeks again a potency which he feel himself to have lost. It becomes, as Abraham has pointed out, a surrogate for sexual power as it supplements and conceals inadequacy in other realms. This is more plainly revealed among earlier races where intoxicating beverages took on actual identification with semen and where also the intoxicated subject entered through inspiration and possession into union with the Deity. Man still attains through intoxication such a sense of his omnipotence and identification with the Godhead.

An interesting illustration of this noted in the Russian press is reported and commented upon by Birstein. One Miropolsky, an old man of eighty years, brutally murdered a young man of thirty-four who had attempted to prove to Miropolsky the nonexistence of God. Why, Birstein asks, should such a crime have been committed by a man against whose long life stood no criminal record, and who was too well accustomed to alcoholic intoxication to have been led into the crime solely on that account? Without going in detail into Birstein's keen analysis of the few known facts of the old man's life I would call attention to the part this God complex plays, upon which in fact the author lays the explanation of the crime. His victim represented individual might directed against the social environment. The latter, for the old man approaching death with a sense of his own inferiority before the powerful unknown, reached its culmination in his conception of God. Therefore his rage against the attempt to overthrow this sense of security, this identification and absorption of his weakness in the omnipotent Being. His own security, as Birstein expresses it, is in the balance. The doubt that creeps into his mind that perhaps the younger man

is right rouses a feeling of anxiety, of unrest. How shall he combat this opposite voice, this exponent of evil, of the devil, the denial of God? There is but one way; to close his ears, in order not to hear the words or the voice of the younger man, and thus to heal the rift in his belief. He must destroy the younger man. Even the sight of the man will be too much and so he murders him and hacks the body into a formless mass. "And the deed is done. One being has annihilated the other, one 'god' has cast the other from his throne, in order in the desperate struggle to save the personal ego, in the midst of the ocean of life's chaos struggling convulsively to clamber upon the lonely rocky peak on which there is no room for two. 'Save himself who can,' in the hope that from somewhere help will come. Only not to go down, not to perish, not to lose the living 'I,'"

And still many another personal investigation of the unconscious of the numerous alcoholics I have often tried to help, too often, I fear, in vain, has revealed to me a still more fundamental basis for the emphasis and expression of all these conflicting tendencies released through alcohol. They are below all upper strata in the deposit of the unconscious which serve as shelving places for a more profound and disturbing conflict. The incest complex is such a tremendous one in racial history or in each recapitulating individual struggle, that it is in the end responsible for failure to adjust and for resorting to such a falsely alluring aid as alcohol.

This is most difficult of acceptance by the patient and usually even more by the patient's family. They too are bound in the same unconscious complex and to see the alcoholic's real conflict would be too unbearable to envisage their own. The instinctive reaching after a defence against revelation of the dark unconscious realities strengthens the adoption of all sorts of superficial and rationalistic excuses and interpretations for resort to drink. This throws up the difficulties in the way of intelligent understanding and effectual treatment of the alcoholic's problem. It drives the alcoholic himself away from insight into this stronghold of his conflict, not into the defences alone but also to occupy himself with these polymorphous splittings of the fundamental problem.

Fixation of the boy upon the mother occurs in the intense love of earliest childhood and with it its counterpart in unconscious father hatred and rivalry. The Jehovah complex touches here its ultimate bottom. Out of this then arise the partial ways of escape from it. The mother image, which is really imprisoning the libido and preventing its freedom and healthful participation in the outer world of active affairs, becomes the picture which dissolves in identification with the individual himself. He becomes a narcissist, enamored of his own image and magnifying self in the ways in which the alcoholic is past master. We have seen him thus exerting his sadistic masochistic tendencies, his exhibitionistic peeping desires, his selfimportance and grasping after selfsecurity.

The shifting libido, incapable in its hampered existence of finding the saving way out, does not remain alone here. It is an easy transition to the

homosexual stratum where the mother image reproduced in the narcissistic self finds now that other self, the being of the infantile phantasy in which mother and son were not so unlike as in reality but more capable of blending in one composite form, and the homosexual object appears as the goal of seeking. Or again the libido, through the path of selfabasement, finds an inferior object toward which it turns.

Out of such a fundamental complex one of my patients, the son of a woman of wealth and social position, had found his stratum of refuge in marriage with a woman of greatly inferior social grade. Here might have been built up a true salutary refuge, for each one of these partial developmental planes has its service to perform and its possible solution to offer even though incomplete. However, the mother, blindly jealous of her position and unconscious of her hold upon the son, refused recognition of the wife. Instead of utilizing this means of escape from the otherwise alcoholic solution of his inner conflict, she wilfully preferred to maintain her position with the son, in reality submitting him to a continued bondage to the mother fixation, and thus to the alcoholic indulgence as the only relief he was permitted from his unconscious struggle. She rationalized her defence into a disbelief in psychanalysis which would have revealed her own unconscious desire and preferred instead to pay for her son's "treatment" by repeated gluteal injections of a "wonderfully powerful" drug. This symbolic homosexual treatment could hardly be expected to form a sufficient libido carrier to provide for a health giving sublimation. There is an element of humor in the situation in the fact that the physician giving the injections pretends to believe in psychanalysis, but, he said "he needed the money," therefore he was "diplomatic."

I might cite another case which reveals the unity of the problem, the attempt at the solution of which leads one to alcoholism, another over some different pathological pathway. The patient here is not the alcoholic, but one of the serious difficulties which has always confronted her is responsibility toward a confirmed alcoholic brother. The patient's mechanism is in large degree a paranoid one. Her present illness is all attributed to a violent emotional precipitation which occurred recently. She has not yet come to see the infantile, incestuous source of her upheaval. Indeed she admits that she attributes far more emotional affective value to the present circumstances than they warrant and yet cannot see why it is so.

Some of her dreams might almost be those of her brother whose unconscious conflict her own unconscious impulse apparently runs to meet. These dreams occur in one night. *My brother has come home and is looking for me. I am hiding, for I do not want him to see me—to know where I am. The house is one in which we lived as children. I hide behind a door, but that is not sufficient. Then I throw myself in the grass. I feel that this is hardly a sufficient covering, but think the grass will conceal me. He at once sees me, however, and says, "Oh, there you are."* One of their plays as children was to roll down the grassy hill together. Notice the only par-

tial concealment, hide and seek, and the symbolism of door and covering grass.

Second dream. *We are in a house with friends, and at the table. There is a bottle of weak brandy upon the table. My younger brother comes in and sees it, and says, "Oh, X"—the alcoholic brother—"has acquired the most dreadful reputation. He has been getting others to drink." My mother was there and I said, "Oh, don't let him come back. We can't stand it." Mother was putting a match to light a fire in an old fashioned cooking stove. She was willing that he should not come, but said, "The Lord has done it. He"—the brother—"was marked. He was burned by matches once when under the influence of alcohol." I said, "What do you mean?" Then I sobbed and sobbed until I awoke.*

The patient's associations do not come readily as her unconscious recedes from the application of the earlier affective life to the present problem. But she has burdened herself with a sense of guilt out of all proportion to the conscious occasion for it. Moreover, in still another dream there is a great fear of disgrace attaching to the really upright father. It is therefore easy upon the basis of the common incestuous bond in the deepest layer of the unconscious to perceive this unconscious groping toward a recognition of the common foundation of the brother's alcoholic problem and her own different mode of reaction, the kindling of the emotional life with its dangers at the domestic stove.

The Jehovah complex, so prominent in alcoholism, absorbs into it much of the reverse side of the mother fixation situation, the father hatred component. I have elsewhere discussed the analysis of a patient whose diet exemplified his fixed infantile attitude toward either parent. It is suggestive also of what we have already said about the autoerotic pleasure in the actual partaking of the alcoholic beverage. His phantasy evidently kept this pleasure for him upon a very primitive level. For fifteen years or more his daily breakfast consisted of "sausages, waffles, and maple syrup." Potatoes were his only vegetable, milk was a favorite food. Free associations disclosed the utilization of these in the mother phantasy. "Nipples," "teats," "colored woman's breasts," "pigs' tits," reveal the very infantile plane on which his controlling pleasure seeking exercised itself. Meats, on the other hand, were freely used because they made him strong and powerful and thus helped him to overcome the father or his representative, the older brother. Evidence of the desire to rid himself of them in his drinking bouts was also plain in the analysis.

I have spoken of the shelving of the struggle upon one and another of these planes of partial development in the attempt to escape or disguise its fundamental basis in the incest complex. It must be remembered, however, that these are all but stopping places on the way toward the full development of the normal life, which can be accomplished upon none of these halting places of the past. Salvation lies not in these partial goals, nor in the consideration of them. It must be constantly borne in mind that we are dealing with a libido, which is an active, dynamic force.



The trench, to change the figure, is well enough when man runs to cover because he has not yet gathered up his forces for successful attack upon life. It is better perhaps to make a compromise with life upon one of these lesser lines of development than to be ingloriously overwhelmed in the open. Yet any effective overcoming of alcoholism must be based only upon the realization that our interest lies not in the trenches but in the living force which temporarily in its misdirection occupies them. Knowledge of the force in this case is knowledge of the enemy, too. For here man's enemy lies only in himself, and, strange to say, is this very effective force. From the lowest and deepest cover, which is the safe entrenchment of the infant, arises the impulse to seek and find oneself in that expression which is the losing and finding again in reality. The safety and security and pleasure of the hiding place, on the other hand, would suck the energy back within itself.

Just so it is with the forward trenches, a little less safe and secure and desirable perhaps, but each one offering a final stopping place. Yet the battle is won, the forces are free only as man learns to abandon one trench after another. He had in each successive one opportunity for a fresh gathering of his power, fed always from the memory of the deepest source furthest back, but vain unless pressing forward. Sadism, masochism, exhibitionism, narcissism, homosexuality, each as he passes along has given some exercise to his selfexpressive power, and in its limited, but appointed way, has contributed toward the full realization of the creative power which belongs to the complete adult rising to the open, thoroughly equipped, prepared for meeting reality.

Such must be the conception with which the alcoholic problem, social and individual, is approached. In order to understand, it is necessary to examine the beginning and the stages of the line of advance and to discover why these have formed places of too great attraction, or compromise positions in life's task. Yet it is the living force, not the cleverly constructed entrenchments, with which the physician or the social helper works. He needs to understand well what these partial stages mean for that force; what enrichment for life, or what lure to detain. But help must be given the sick man to gather his libido out of these lurking places into his full self-possession. Denial of these hidden sources, as well as of the hidden possibilities which have sought to retard and imprison the dynamic power, has worked no cure in the past; it cannot bring out the full and free development which throws creative activity into the future. It is the freeing and redirecting of his dynamic activity of which the alcoholic stands in need. It is this which will make him the servant, not longer the burden of society.

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## THE SURGERY OF THE NASAL ACCESSORY SINUSES.\*

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In discussing the surgery of the accessory sinuses consideration must be given to the pathology of the individual case and a clear conception obtained in regard to the end to be accomplished before the type of operation to be used is decided upon. If the case is an acute one it is obvious that its management calls for surgery of a type different from that necessary for a chronic infection where the cavity, or cavities are lined simply with a pyogenic membrane; and furthermore, the chronic case exhibiting pathological changes so gross that resolution cannot be hoped for without their entire eradication, calls for still more radical work. This latter class comprises those cases where the cells are filled with polypoid degenerations or immense thickenings of the mucosa, necrosis of the bony walls, extension of the infective process to other nearby organs, the imminent approach or actual presence of intracranial complications, or the presence of septa or outlying cells that would make satisfactory drainage by any other than the most radical operation improbable or impossible.

In the determination of the type of operation best fitted to the individual case, much study is frequently necessary before a decision can be reached; and consideration must be paid to the end result hoped for.

What then is this result? Is the operator simply to be satisfied with relief of the pain, or only with complete eradication of the suppurative process? In some instances, of course, as in acute sinusitis, these are synonymous, but in the chronic infections, although a complete cure should always be sought, it is not always possible to attain it and a less perfect result must sometimes be considered satisfactory. Sinus operations may be roughly divided into two groups; those where the aim is simply to establish free drainage, and the most important corollary to this, free ventilation, with the knowledge or hope that the mucosa will regenerate and all symptoms disappear; and those where complete eradication of all diseased structures is called for and the cavity operated upon is to be obliterated to prevent any recurrence. In the first class are included simple operations upon overlying structures, such as the turbinates, which mechanically obstruct drainage and ventilation by the natural sinus ostia, while it is evident that the obliterating operation cannot be applied, as a general rule, to the sphenoid and maxil-

\*Read as part of a symposium on the Nasal Accessory Sinuses before the Section of Otolaryngology of the College of Physicians of Philadelphia, December 20, 1916.



lary sinuses, or even, at times, to enormously large frontal cells.

The question of intranasal versus extranasal surgery is still under argument with the pendulum at this time swinging away from undue radicalism in external operating because of its alleged hazards and deformity, and towards the more conservative, but often more difficult, internal operations, where the end result is often admittedly relief from pressure symptoms and progression of the disease but with an indefinite continuation of the suppuration. Frequently such a result must be considered satisfactory for cases operated upon in this way, where it would not be so if a radical operation had been performed. Of course in the presence of actual or threatened intracranial involvement, or even orbital involvement in most cases, an external operation on the frontal or maxillary sinuses must be considered absolutely indicated, whether the case be acute or chronic.

The surgery of the sinuses in acute infection calls for no further comment at this time other than outlined above, i. e., the most simple operation that will give drainage and ventilation with the least destruction. Nor will time be taken to detail the many operations for chronic suppuration which have become more or less standards of their various types and which are well known to all. Such procedures are, for the frontal sinus, the rasp methods for enlarging the ductus nasofrontalis internally, and the radical Killian externally; for the ethmoid labyrinth, the Håjek, the Ballenger, or the Mosher methods from within; for the sphenoid, the perforation of the anterior wall with the Grayson drill, or the ablation of this wall either endonasally, or through the ethmoid cells from the orbit; and for the maxillary sinus the preturbinal operation of Skillern, the modifications of the Krause-Mikulicz operation through the nasoantral wall, or the external operation of which the Caldwell-Luc and the Denker are the types of radicalism. Necessarily this list is not an index of all procedure tried, advocated, or used, but these are, all things considered, the most popular sinus operations at the present time and as such are well known as to their technic.

During the last two years little has appeared in the literature that is distinctly new in operative measures for the relief of chronic sinusitis, and such as there is has almost all shown the trend toward conservatism. Indeed the trend has been even greater than that toward nonsurgical treatment, as shown by the Coffin, Smith, and MacWhinnie modifications of Stillman's negative and positive pressure treatment. Modifications of technic have recently been brought forward by Lothrop for the frontal sinus, Freer, and also Halle, Watson-Williams, and Tilly for the frontoethmoid intranasal approach, and MacNab for the preturbinal maxillary operation.

The Lothrop operation upon the frontal sinus is new in principle, approaching more nearly the Beck osteoplastic operation, perhaps, than any other. It does not take the place of the Killian radical operation since its aim is simply free drainage and ventilation and not obliteration, and it is therefore confessedly not applicable to those cases where there is

very great pathological change. It appeals to the writer as being an operation of the intranasal type but done from the outside. The main outlines of this operation are as follows: Through an incision through that portion of the brow internal to the supraorbital nerve, and the side of the nose, a small opening is made with a chisel into one sinus just above the ostium, the sinus inspected and a probe passed through the nasofrontal duct. With this as a guide the ostium is enlarged forward by burr and curettes, taking away the mass of dense bone at the root of the nose composed of the nasal process of the superior maxillary and frontal bones. This is accomplished by using the instrument through the nose, guiding it from above through the operative opening, guarded behind by the probe. The reaming is continued until only a thin shell of bone remains anteriorly, the nasal floor of the sinus has been destroyed and the upper, anterior portion of the nasal septum removed by the burr. The sinus mucosa is curetted sparingly, and if sufficient drainage cannot be obtained in this way the interfrontal septum is broken down and the procedure repeated upon the opposite side, thus making but one large opening in the midline which drains through the removed upper portion of the septum nasalis. Through this opening either sinus can be entered for treatment from either side of the nose. Even if the other sinus is healthy, Lothrop considers it advisable to enter and drain it also for the sake of the additional space obtained and finds it impossible to infect its healthy mucosa if free drainage exists. As a last step a small skin flap from the upper eyelid is turned in over the external bony defect to avoid retraction of the scar and consequent deformity.

While this is not an external deforming operation it would seem that its field of usefulness would be limited to that class of cases that can usually be coped with by purely intranasal methods, since the curettage that can be done through the external opening must, in the case of the larger sinuses at least, be far from complete. It would seem to one also that it should only be applicable to cases of bilateral suppuration since it is almost inconceivable to one that in a unilateral infection a direct communication should deliberately be established between a healthy and a diseased sinus, as must occur when the septum between them is destroyed. This could hardly compensate for the free drainage that is claimed to be its chief advantage. Moreover it is an open question if the rather extensive destruction of the anterior superior portion of the septum nasalis is justifiable with its probable subsequent dryness and crusting adding to the discomfort of the patient and necessitating prolonged and indefinite aftertreatment. This operation has, however, achieved considerable prominence in sinus literature and is at least deserving of consideration and comment.

Freer has made a very careful study of the anatomical relations of the frontal and ethmoid bones and from this study has evolved an operation for the free drainage of the frontal sinus endonasally, and the obliteration of the ethmoid cells, particularly of the anterior group, which are so frequently associated with any chronic suppuration of the former cavity. In many essential points this oper-

ation is similar, at least in the results on the frontal sinus obtained, to those of Mosher, Tilly, Watson-Williams, Halle and Ingals; and in brief consists of the removal, through the nose, of that portion of the floor of the frontal sinus formed by the roofs of the anterior ethmoid cells, the fovea ethmoidales. He insists upon a careful x ray study previous to operation, since many anomalies occur such as differences in size and shape or total absence of the frontal sinus, the presence of frontal bulla cells, etc., which made any operation hazardous, and the liability of failure great, without this aid. In compensation, however, there is a great constancy in the surgical approach to the sinus from the nasal cavity that may be taken advantage of, and the fundamental lamellæ of Håjek; the uncinate process, the bullar lamella, and that of the middle turbinate are always present unless removed by disease or previous operation. The older operation of enlarging the frontonasal duct by cutting forward either with a rasp, punch, or burr is condemned by Freer as not in reality being more safe, because the hard bone of the nasal crest makes more force for its removal necessary with consequent danger of injury to the overhanging sinus walls. Furthermore, removal of the internal nasal crest in this manner, will not give the room required for adequate drainage, and will not remain open. On the other hand, ample space is obtained by removing backward the foveal cells from beneath the orbital plate of the frontal bone, thus greatly enlarging the ostium, since it is narrowed into a mere slit by their presence. Little force is required for this operation and only a light curette of special design used. In this way the anatomical obstruction to drainage is removed, the sinus ostium opened to the fullest capacity, which is ample, of the frontal sinus opening in the detached frontal bone and the work is done in a capacious part of the nose and not in the narrowest, as in the forward cutting operation. Islands of mucous membrane left in position enable the mucosa of the sinus to reform, at first with the squamous type of cell which eventually becomes columnar, acquiring cilia, with the restoration of the sinus cavity to an approximation of the normal. Where there are frontal bulla cells extending out over the orbit, presumably intranasal, they are beyond surgical interference, except by drainage if suppurating.

The portion of the orbital process of the frontal bone covering the anterior ethmoid cells is continuous with the posterior cranial wall of the frontal sinus with which it forms a sweeping curve. The curette follows this curve in clearing away obstructing ethmoid cells. The covering is thin but hard and firm, and is in little danger of perforation unless directly attacked. Attention is directed to the thin outer wall of this region composed of the lamina papyracea which is frail and liable to perforation with infection of the orbit, unless the instruments are used in an anteroposterior direction only and little force used.

In contradistinction to the old tortuous and narrow anatomical approach to the cavity of the sinus through the infundibulum and the nasofrontal duct, beneath the middle turbinate, the broad surgical ap-

proach between the orbital wall and the turbinal plate of the ethmoid disregards all ethmoid cells in the way and extends anteroposteriorly from the ascending process of the superior maxillary bone to the lamella of the middle turbinate. The lower limit of this approach is the bottom of the bulla ethmoidalis, and the upper limit, the orbital plate of the frontal bone covering the foveal cells.

The technic of the operation is described as follows: A probe is introduced into the sinus as a guide, either through the natural passage, or by clearing away some of the anterior cells as advocated by Mosher. Freer has designed special probes of copper, with flexible tips and firm shanks. The operation through the agger cell is condemned because of the inconstancy of the latter, and the approach through the turbinal plate because of a possible fracture through the cribriform plate, and the fact that the olfactory nerves lying here may easily carry infection through their perineural sheaths which are direct prolongations of the dura and pia mater. The approach of Williams by cutting with forceps through the anterior margin of the middle turbinate where it is attached to the outer nasal wall and thus opening the anterior ethmoid cells cannot be relied upon, while that of Tilly which removes the anterior end of the middle turbinate, and of Halle, which cuts the anterior attachment but preserves the turbinate entire, are usually unnecessary owing to a flanging outward of this structure giving a satisfactory working space beneath it. It may, however, according to conditions found, be necessary to perform any one of these three.

The next step after probing, and if this cannot be accomplished it is abandoned, is the breaking into the ethmoidal bulla with a curette, which is easily done, the direction of force being upward and outward, and not directly outward as in the Mosher operation, where a plunge of the instrument may do damage. It may be necessary first to resect the uncinate process if this is in the way. The curette is now turned forward and the ethmoid cells swept clear to the ascending process, the forward motion of the curette being regarded as more safe than in the backward direction. It may be vigorously done because the limit is the strong and hard ascending process and the internal crest, rather than the fragile posterior ethmoid cells with their intimate relation to the optic nerve. The complete removal of these anterior cells from the bulla forward gives the maximum passage obtainable between the orbital wall limiting the operation field and the important turbinal wall which is left intact. A strictly anteroposterior direction must be maintained. This procedure at once admits the probe to the sinus, and the remnants of the cells are taken away with a punch. In most cases this cell removal also breaks away the posterior ethmoid cell part of the frontal floor, but there may be a hard firm plate all around the ostium, so that the curette will not enter although a probe will. When this occurs, a special probe curette (Freer) which cuts backward, is introduced and the wall of the ostium chipped away downward and backward, until a large opening is established. These curettes also scrape away all projecting cell walls from the orbital plate, gliding downward



and backward with a single sweeping curve with perfect ease and safety. In case there is an acute angled crista nasalis interior that interferes with the opening it may be removed with advantage, the straight burr of Halle being recommended. The thorough curettage of the sinus as a last step, and as practised by Halle and Tilly, does not appeal to Freer who believes that regeneration of even badly diseased mucosa will take place if it is simply given ventilation and drainage, that polypi and excessive granulations are rare, and that if, after this thorough opening of the sinus, headaches, and discharge continue, it is evidence of pathological changes irremedial by intranasal procedure, and that the external operation, with obliteration of the sinus is then indicated.

Since in some instances the opening thus acquired cannot be maintained permanently, Freer introduces a selfretaining rubber drainage tube, having found the gold tubes of Ingals unsuitable. This tube, which has two flanges and is modeled after the self-retaining urethral catheter, is stretched over an introducer, placed in position and left for six weeks, when it is replaced with a larger one if possible. It must not be of sufficient size to fit closely, which would cause headache and pain in the eyes.

H. P. Mosher reviews his popular intranasal approach to the frontal sinus, quoted by Freer. He has abandoned the agger nasi cell because of its inconstancy, and now makes his initial opening into the anterior ethmoid cells through the upper overhang of the middle turbinate, thence curetting forward, as recommended by Freer until the ostium frontale is freed of its encircling cells, and then backward through the entire ethmoid labyrinth until the anterior wall of the sphenoid sinus is reached. There is, after all, little difference between this operation and that of Freer except in the selection of the point of approach. Mosher mentions two deaths from meningitis following this operation in other hands than his own, but believes that any ethmoid operation worthy of the name will have some mortality. The orbit may readily be entered and if in the posterior portion, grave results may follow, but if anteriorly, where it is most apt to occur, it is a trivial accident. When the entire labyrinth is excised, packing is introduced to control the excessive hemorrhage. Attention is also directed to the facts, experienced by all ethmoid operators, that for several weeks following operation, there is frequently so much reactionary swelling that the appearances would suggest an incomplete operation, and that even a long time after a thorough operation, it seems as if but little had been removed. My own experience leads me to believe that there is often a replacement of the ethmoid cells with fibrous tissue formation, filling up the cavity which formerly contained the ethmoid, and partially restoring the lumen of the nose to its original size, thus avoiding the excessive dryness which the passage of too much unmoistened air would cause. Mosher uses an alkaline wash and argyrol for aftertreatment and finds it necessary to frequently remove recurrences of polypi.

The modification of the preturbinal intranasal approach to the maxillary sinus through the crista

pyriformis suggested by MacNab is to proceed with the original operation as advanced some years ago by Skillern to the completion of his technic. He then freshens the mucous membrane of the floor of the antrum for about a centimetre adjacent to the nasal floor, and carefully polishes down the ridge of bone between the antrum and the nasal cavity. A mucoperiosteal flap is next cut from the lateral wall as in the external radical operation, folded into the antrum and packed in position with bismuth gauze. This modification is in its end result a practical conversion of the Skillern operation back to a Canfield operation, from which it was originally modified, except that the approach is through the crista instead of the lateral wall. MacNab states that in this way needed extra room is obtained for inspection and packing since he found the latter always painful, with a tendency of the opening obtained to close. While this is true of the original preturbinal operation to a certain extent, plenty of room can usually be obtained by reaming with an electric burr or with a rasp for free inspection with an ear speculum or the nasopharyngoscope and for complete curettage, and when the opening thus obtained becomes prematurely narrowed by granulations, it can easily be enlarged again with the curette. The author of the original method has called attention to the fact that when the sinus so operated upon becomes dry, as it does in a large majority of cases, the preturbinal opening closes permanently with an almost invisible scar, thus restoring the integrity of the sinus, a most desirable result that must be foregone when the opening is converted into a permanent one by the successful growth of a mucoperiosteal flap. It has been the experience of most operators, however, that these flap methods are usually unsuccessful in spite of the fact that MacNab claims permanent cure for all of his cases within five weeks.

Brief mention may be made of the causes of failure in operations upon the nasal sinuses. Too extensive operating with traumatism, exposure, and subsequent infection of the dura causing fatal intracranial complications need only be mentioned. Aside from this the most common cause is the selection of the wrong type of operation for the particular case; for instance an intranasal drainage operation for a maxillary or frontal sinus filled with thickened mucosa and polypi, or with carious walls or more or less complete septa. To establish the presence of these conditions careful clinical and x ray study is necessary, study often neglected or hurried through. Another frequent cause of failure to obtain a cure is the performance of an incomplete operation, the leaving of ethmoid cells or cell walls, the presence of orbital ethmoid cells that cannot be reached intranasally, an incomplete opening of the sphenoid, antrum, or frontal, or in a radical operation the failure to remove every bit of mucosa if an obliterating operation is attempted. Many operators, however, now advocate very limited curettage of the maxillary antrum, believing that even badly diseased mucosa may eventually regenerate and become a secreting membrane. Perhaps the aftertreatment has as much to do with the obtaining of a favorable result as the operation itself, as there is always for a considerable period purulent dis-



charge to be cleaned up, granulations to be removed or kept within bounds and the whole process of repair watched and aided by careful treatment. Out-patient hospital patients often are irregular in attendance after an operation has been performed and relief from pain obtained, and in this class incomplete cures are most frequently noticed.

To recapitulate, it would seem to be the present day consensus that the simplest form of operation that gives promise of relief should first be tried unless the type of case under consideration calls for something more radical from the start. Intranasal surgery, properly done and with painstaking after-treatment will cure almost all acute and the great majority of chronic sinus suppurations, leaving a small percentage where the radical external operation must be resorted to. In the case of the sphenoid and ethmoid, all operations are of the intranasal type except when associated with chronic frontal sinus disease when the radical Killian gives the easiest approach. Free drainage and ventilation are the objects of intranasal surgery, while in the Killian, and to some extent in the Denker and Caldwell-Luc, obliteration of the cavity is hoped for. Local anesthesia is preferable for intranasal and general anesthesia for extranasal work, although the maxillary operations can be done satisfactorily entirely under local anesthesia.

1736 PINE STREET.

### SOME PROBLEMS OF URETERAL SURGERY.

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The accidents of surgery often give much concern and frequently cause serious problems. The correct solution of any surgical question involves the methods of procedure that give the best and most satisfactory results to the patient. The question of the best methods to relieve stricture of the ureter and to remove calculi therefrom is easily solved, but the problem of what is best to do when a ureter is accidentally severed or exsected during the operation of panhysterectomy is not so easy or simple. Total hysterectomy for carcinoma and myoma of the uterus results in an injured ureter more often than is determined at the time of the operation.

When the ureter is cut or exsected without immediate repair, urine begins to flow from the proximal end of the tube and accumulates until the pressure forces it externally along the lines of least resistance, either into the vagina or through the abdominal walls, eventually resulting in a ureteral fistula. When the ureter is accidentally ligated in continuity, one of two things may occur: 1, necrosis of the walls and extravasation of urine into the tissues; 2, permanent closure of the lumen by fibrous tissue and the ultimate loss of kidney function on the same side.

It is interesting to observe that in many cases, when the ureter is tied, either accidentally or designedly, the secretion of urine continues until the pelvis of the kidney and the ligated ureter above

the ligature are distended to the point of tension or pressure equal to that of the blood pressure in the kidney. When the tension of urine and blood is equal, secretion of urine ceases in the kidney whose ureter is ligated,

and the urine in the kidney pelvis and ligated ureter becomes aqueous or serous, the urinary salts being absorbed. The question of viability of the renal secreting cells under pressure of urine retained by ureteral obstruction is important. Observations on animals whose ureters have been tied show that the glomeruli of the kidney retain their power of secretion for two years or more, as seen when the obstruction to the ureter is removed.

The very thin lamina of kidney cortex in hydronephrosis has shown secretory activity when the obstruction is removed

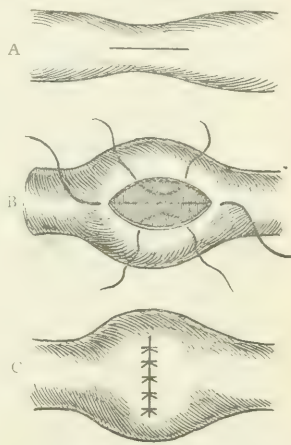


FIG. 1.—Operation for stricture of ureter: a, longitudinal cut; b, sutures passed; c, incision closed at right angle to lumen of ureter.

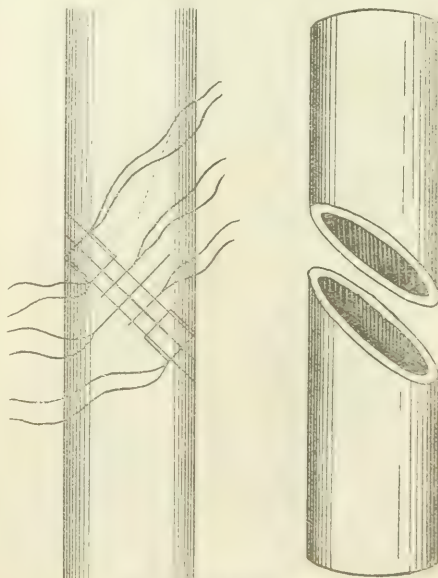


FIG. 2.—Bovee's anastomosis.

eight or ten years after the inception of the complete blocking of the tube. As already stated, injuries to the ureter by cutting,

bruising with forceps, laceration, or ligature are not always perceived at the time of their occurrence, their presence being manifested after the operation

this point to the kidney being high and less frequent. If, during an operation of hysterectomy for carcinoma of the cervix, the ureter is severed in its

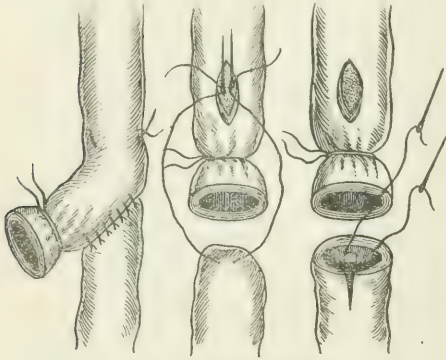


FIG. 3.—Van Hook's operation.

either early or late, depending upon the character of the trauma.

When a urinary fistula follows an operation, it becomes necessary to ascertain whether the leak is in the bladder or in the ureter. This can be done in most cases by catheterization of the ureters, the catheter meeting obstruction in the injured ureter and the urinary flow on the injured side being diminished. Many errors have occurred in this work; the bladder may be the leaking point and the ureteral catheter show an obstruction of an old angulation or stricture or stone; or the catheters may pass up into the pelves of the kidney without hindrance and yet the ureter may have a small hole in it. Thorough cystoscopic examination of the bladder will reveal any opening in that organ.

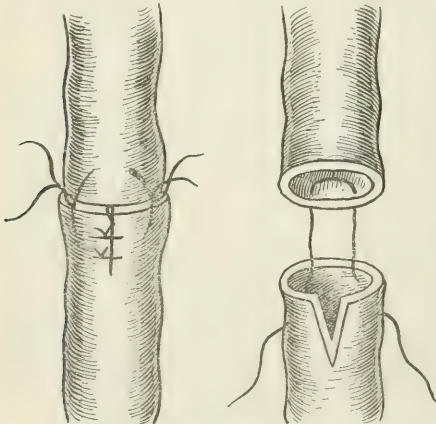


FIG. 4.—Poggi-Robson's operation.

Injuries to the ureter may be classed as low and high; those near the bladder, within six inches of it, being the low and most frequent, and those above

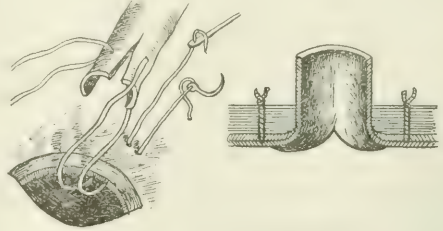


FIG. 5.—Transperitoneal ureterocystostomy.

lower portion, the uterus should be removed before any attempt at repair of the ureter is made. This gives more room and less liability of injuring the repaired organ. The rule is to do an anastomosis, either by the end to end or end to side method. If it is not feasible to anastomose the cut ends, then an attempt to plant the ureter into the bladder is the next step. This may be done by splitting the ureter, opening the bladder, and suturing each half of the split tube to the bladder wall, thus preventing con-

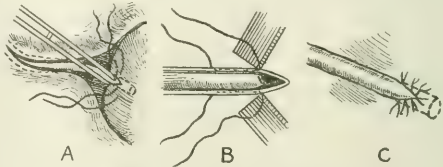


FIG. 6.—Ureterocystostomy.

traction of the orifice of the planted ureter. In some cases where the ureter is too short, either Witzel's operation of elongating the bladder, or Boari's should be done. Boari's operation consists of cutting a strip of bladder tissue wide enough to make a tube and long enough to connect with the end of the ureter above, then sewing the strip into the tube and suturing up the bladder. When so

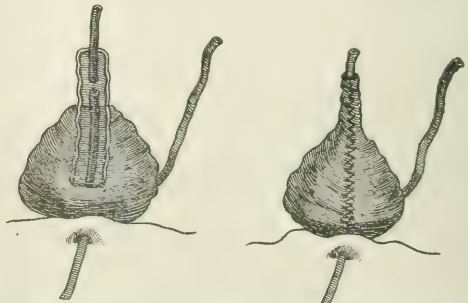


FIG. 7.—Boari's operation.

much of the ureter is destroyed as to make it impossible to do either an anastomosis or ureterocystostomy, then it becomes necessary to implant

the ureter into the rectum—ureterointestinal anastomosis. The mortality of this procedure is very high because of the danger of infection by colon bacilli.

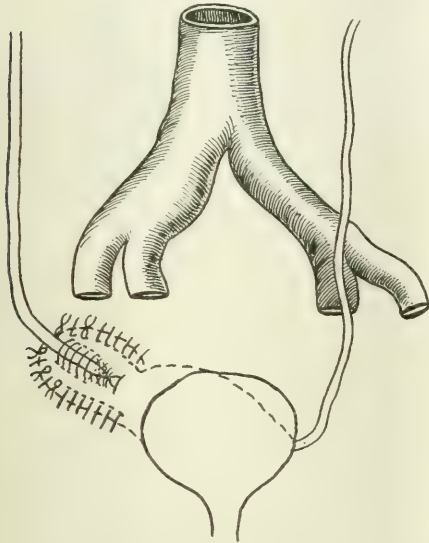


FIG. 8.—Witzel's operation.

By using the flap method, this danger is somewhat diminished.

When the injury to the ureter is high up and it is impossible to do an anastomosis of any kind the choice of procedure will be difficult between anchoring the ureter to the skin of the lumbar region with subsequent nephrectomy and doubly ligating the proximal end and leaving it in the abdomen. Of the two procedures I prefer to doubly ligate the ureter and take the chances of its necrosing and leaking. By using large chromic gut or large soft silk and tying not very tightly in two places, one gets better results than by tying with one ligature. Should the ligatures cut through, a urinary leak will occur soon; then nephrectomy will be indicated, provided the other kidney is doing normal work.

The procedures in order of preference for a severed ureter during hysterectomy are as follows: 1, End to end or end to side anastomosis by any of the methods—Van Hook, Poggi-Robson, Bovee; 2, implantation into the bladder by methods of Witzel, Boari; 3, implantation into the intestine; 4, double ligation of the ureter; 5, anchoring ureter to skin of the abdomen or back, with subsequent nephrectomy. If it develops that the ureteral fistula is not discovered until several days after the operation that produced it, good judgment would dictate that nothing be done to remedy it until the operation wound has entirely healed, unless the patient's life is jeopardized by sepsis from urinary origin. Then the kidney on the affected side should be removed immediately, as a life saving measure.

The following cases will aid in elucidating my subject:

CASE I.—F. C., age thirty-six, was operated on for large fibromyomata of the uterus with the cervix much enlarged. A section of the ureter five inches in length was excised with the tumor. The patient being very weak and much shocked, no time could be devoted to anastomosis or implantation, so a double ligation was done, and the ureter stump retained in the abdomen. The patient's temperature was very high for seven days and a swelling on the side of the ligated ureter in the region of the kidney developed. This swelling remained for one month or more, when it gradually receded or subsided, until no tumefaction could be determined. The patient was perfectly well in three months.

CASE II.—F., colored, aged forty, was operated on for large fibromyomata of the uterus, at which time the ureter, mistaken for an artery, was accidentally ligated and cut. The ligature was immediately removed and an end to end anastomosis was done by the Poggi-Robson method. The patient had an uneventful recovery.

CASE III.—F. W., aged forty-nine, was operated on for carcinoma of the cervix. Complete hysterectomy was done. About two weeks after the operation, the wound being entirely healed, a urinary fistula occurred in the upper part of the vagina. It was a question where the fistula arose. Was it due to injury—bruise—or was the ureter cut or ligated and the urine delayed in its escape externally? Ureteral catheterization showed the injury was in the ureter and not the bladder. The patient refused further operation for the closure of the fistula, which has continued for the past five years.

CASE IV.—E. W., aged forty-nine, was operated on for myomata of the uterus. The tumor together with four inches of ureter was removed, and because of the great shock no effort was made to do an anastomosis, but the ureter was tied tightly with small silk and dropped into the abdomen. The patient developed a urinary vaginal fistula in about three weeks, but declined to submit to further procedure.

CASE V.—F. W., aged thirty-eight, operated on for cervical carcinoma; ureter was excised, four inches in length. Ureter was tied singly with No. 3 chromic gut

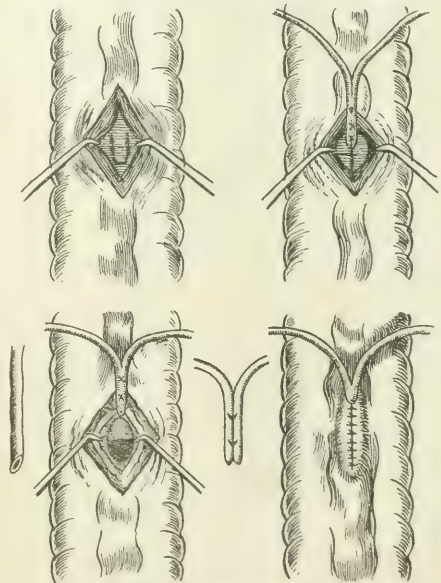


FIG. 9.—Ureterocolostomy.

and left in the abdomen. In two weeks a urinary fistula developed in the abdominal wall. This fistula continued for over a year, when fatal metastasis occurred.



CASE VI.—F. W., aged thirty-four, operated on for large fibromyoma of the uterus. The tumor and three inches of the ureter were removed. The proximal end of the ureter was implanted into the bladder. The patient made a good recovery.

CASE VII.—F. W., aged forty-four, operated on for cervical carcinoma. The uterus with four inches of the ureter was removed. The proximal end of the ureter was doubly ligated with No 3 chromic, forty day catgut, and left *in situ*. The patient was well in two weeks. There was no swelling of kidney on the ligated side.

CASE VIII.—F. W., aged forty-eight, operated on for fibromyoma. The tumor with a piece of the ureter two inches long was removed. The ureter was anastomosed by the Bovee method. The patient developed a urinary vaginal fistula in ten days. Two months later an attempt was made to reanastomose, but the distal end of the ureter was too much contracted to do either an end to end or end to side inoculation. A double ligation was done, the patient making a good recovery.

*Technic.*—The transperitoneal route is easier of performance than the extraperitoneal and is the one of choice when implantation into the bladder or intestine is contemplated. Extraperitoneal procedure, either by the median abdominal or the Pfannenstiell, is less liable to infection.

Always cover the point of anastomosis with a cuff of peritoneum or a strip of omentum to prevent immediate leaking. Fine silk on a round curved needle should be used for the suturing of the ureter. Chromic forty day catgut is used in doubly ligating the ureter, the ligatures being half an inch apart. Drainage of rubber tissue or soft rubber tube should always be used.

#### SUMMARY.

1. Injuries to the ureter during hysterectomy are more frequent than is perceived at the time of the operation.
2. Discovery of the injury to the ureter is more often made several days after operation than at the time of it.
3. Difficulties of repairing the injured ureter are greater than they seem.
4. Injury to the ureter during a hysterectomy often means the sacrifice of the kidney of that side, and sometimes the death of the patient.
5. It is better not to attempt to repair the ureter if there is serious doubt of its accomplishment. Even if the operator is an expert, attempts at repair frequently result disastrously. Removal of the kidney would be better under such circumstances.

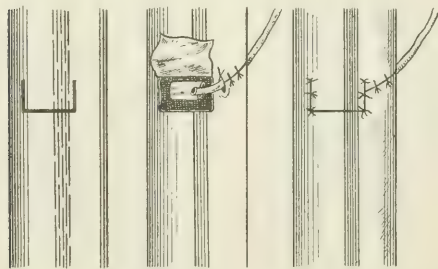


FIG. 10.—Ureterocolostomy; flap method.

6. Do not remove a kidney to cure a leaking ureter until you are sure of the presence of a perfectly sound kidney on the opposite side.

7. It is frequently better to doubly ligate the ureter than to attempt to do an anastomosis. Before ligating, it is well to ascertain if a normal kidney is present on the other side.

8. When ligating the ureter, the tension of the ligature should not be so great as to cut through the walls of the tube, but just sufficient to close the lumen of the ureter. The ligatures being placed half an inch apart, causes the ureter to close and become a solid fibrous cord.

9. When the ureter is tied without crushing its walls, urine is secreted by the kidney on this side until the urinary pressure is equal to the blood pressure in the kidney; then the secretion ceases and the urine changes its composition, the salts being absorbed and the contents of the kidney becoming hydrous or serous.

10. The destiny of a kidney whose ureter is tied is not easy to foretell. Ligating an injured ureter is better than removing the kidney, because the hormones of the kidney are retained when it is not extirpated.

164 ST. MICHAEL STREET.



FIG. 11.—Double ligation.

#### INCONTINENCE OF URINE IN WOMEN.\*

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The urinary bladder is a hollow muscular organ whose function is to receive the urine as it flows from the kidneys and to retain it until it is voluntarily discharged through the urethral canal. The average capacity of the adult female bladder is said to be about 650 c. c. (Kelly).

Frequency of micturition is largely dependent upon habit, but six or seven micturitions in twenty four hours may be considered a normal adult average. The involuntary escape of urine through the urethra is a symptom not infrequently complained of by many women. In a recent study of the histories of 1,006 patients admitted to the gynecological service of the Roosevelt Hospital, Taylor found about fifteen per cent. suffering from urinary incontinence. In its mildest form it consists of an occasional spurt or gush of a very small quantity of urine as a result of fright, coughing, sneezing, sudden rising from the recumbent to the erect position, or taking a high step. The symptom may remain infrequent in its occurrence or it may gradually become more constant.

Normally, the urine is retained in the bladder by

\*Read before the Bronx County Medical Society, December 28, 1916.

the action of two sphincters—an involuntary sphincter derived from the musculature of the trigone and a voluntary sphincter which surrounds or is external to the involuntary muscle fibres and is called the urogenital sphincter.

Dudley speaks of two types of incontinence: active incontinence and passive incontinence. In the former type the urine is involuntarily forced out by the power of the bladder musculature through the urethra, which under ordinary conditions would have adequate sphincteric power. This condition is seen commonly in cases of cystitis where the irritation of the inflammatory condition causes reflex spasmodic contractions of the bladder wall resulting in the escape of small quantities of urine.

Passive incontinence, on the other hand, is due to some sphincteric defect or loss of tone as a result of which the neck of the bladder and the urethra lose their power of retention.

Paradoxical incontinence, also known as false incontinence and overflow incontinence is a condition in which there is almost constant dribbling of urine and yet the bladder remains overdistended. It occurs in lesions of the spinal cord and is met with not infrequently following the radical Wertheim operation for cancer of the cervix uteri. In the latter group of cases this false incontinence is only temporary, but may lead to considerable disturbance unless promptly recognized. It undoubtedly results from injury to the vesical nerves during the dissection. One should therefore be on the watch for it and endeavor to prevent it by resorting to a daily catheterization of the bladder for approximately two weeks. Otherwise its presence will be indicated by the onset of lower abdominal distress, associated with frequent painful urination, and a catheterization will disclose a tremendously distended bladder. Forms of passive incontinence resulting from disease or injury of the central nervous system are not under consideration in this paper.

Clinically, all grades of passive incontinence are seen, from the mildest to the most severe and they may all result from injury to the circular fibres of the urethra by compression produced by the presenting part during labor, or by the tearing away of the urethra and bladder from their attachment to the pubes. In the latter type there is practically always urethrocele and cystocele whereas in the former these lesions may be absent.

Many of these patients, even those suffering from the most severe forms of passive incontinence, are fairly comfortable when in the recumbent position and may void two or three times at night, whereas during the day there is constant dribbling of urine and the bladder is always empty.

The condition is a source of great annoyance and embarrassment to the patient and she is entitled to much sympathy for her condition is frequently pitiable, compelled as she is, to wear a napkin constantly in summer and winter, suffering from itching, chafing, erythema intertrigo, and various forms of dermatitis of the vulva and always conscious of the presence of a urinous odor.

Sometimes the symptoms do not appear until the woman is approaching the menopause and I believe that many of these are not traumatic in origin, but

are dependent upon a loss of tone in the vesical sphincter. According to statistics, the condition is more common in middle life, but may begin in childhood and a certain number of cases occur in women with no history of surgical or obstetrical lesions. Occasionally the condition is postoperative and results from injury to the urogenital sphincter in the removal of a vesical calculus or tumor through the urethra.

*Treatment.*—The prognosis in the majority of cases of active incontinence is favorable for a complete cure as soon as the cystitis which underlies the incontinence is relieved by treatment. As examples of this type I would cite a case of tuberculous ulcer of the bladder, apparently primary, in which the irritation was so great that there were most intense spasmodic contractions of the bladder muscles causing incontinence, and a case of papilloma of the bladder with a severe secondary cystitis from infection. In both instances the incontinence ceased as soon as the cystitis was relieved and before the primary lesion was cured.

The prognosis in passive incontinence is less favorable. Kelly and Dumm (1) state that this form of urinary incontinence in women without manifest injury to the bladder, "is not cured by any known means, and although numerous operations have been devised, no one method of treatment has been preeminently successful."

Some of the procedures and operations proposed for the relief of this form of incontinence are: 1, hydrotherapy, local and general; 2, massage and electricity; 3, vaginal pessaries; 4, periurethral injection of paraffin; 5, torsion of the urethra; 6, plastic removal of portions of the urethra and the anterior vaginal wall and suture of denuded areas; 7, advancement of the urethra after the method of Pawlick, Albarran, and Dudley. 8, operation based upon the cystoscopic picture which in many cases, presents a gaping internal sphincteric orifice which closes sluggishly as the cystoscope is withdrawn. Kelly believed the affection due to a loss of tone of the vesical and urethral sphincter and he adopted an operative procedure directed toward a "mechanical restoration of the sphincter area at the vesical neck." Kelly and Dumm report a series of twenty cases operated on in the above manner over a period of thirteen years of which sixty-five per cent. remain well or improved, twenty per cent. unimproved, and fifteen per cent. who were well at the time of discharge could not be found.

Concerning the above mentioned procedures, massage, electricity, and pessaries give only temporary relief. Paraffin injections are dangerous and moreover are said not to give good results. Torsion of the urethra may overcome the incontinence, but it is apt to lead to sloughing of the urethra.

For the past three years I have been doing the following operation devised and described by Kelly: Insert a mushroom tipped soft rubber catheter into the bladder to enable one to locate the internal urethral orifice and the position of the vesical sphincter by gentle traction on the retained catheter. Then make a longitudinal incision in the anterior

vaginal wall from the external meatus to the cervix, separating the bladder from the vagina in the region of the vesical neck, infolding and suturing over the catheter in the urethra the torn and relaxed tissues at the vesical neck. Kelly closes the vaginal incision and terminates his operation, but I prefer to go a step further at this point, and separate the bladder by blunt and sharp dissection not only from the vaginal walls laterally, but also from the anterior surface of the uterus and displace it upwards; the more or less redundant vaginal mucous membrane, having been trimmed, the flaps are firmly sutured to the anterior surface of the lower uterine segment or the upper portion of the cervix. This adds to the Kelly procedure a vaginal hysterectomy and in this manner is secured a more firm and permanent support for the urethra and bladder.

The extent to which the bladder is separated from the vagina, and more particularly from the uterus and displaced upwards will depend upon the degree of cystocele present, if any, and the age of the patient. For example, in a young woman or any woman in the active childbearing period of life one would naturally avoid a high attachment of the uterus to the anterior vaginal walls because of the danger of dystocia in subsequent pregnancies, whereas in women at or beyond the menopause, one may free the bladder entirely from the uterus and opening the peritoneal cavity through the vesico-uterine pouch, brings the fundus uteri forward and fix it by sutures to the anterior vaginal wall, thus doing an interposition operation and lifting up the urethra and vesical neck by means of the fundus uteri.

Experience with the operation as done by Kelly or as modified above will show it to be a very satisfactory procedure for the relief of cases of passive incontinence of the urinary bladder. The immediate results are usually surprisingly good and the ultimate results nearly always show a marked improvement.

#### REFERENCE.

1. KELLY and DUMM: *Surgery, Gynecology, and Obstetrics*, April, 1914.

46 EAST EIGHTY-THIRD STREET.

## THE CONDENSER DISCHARGE—ITS USE IN DIAGNOSIS AND THERAPEUTICS.\*

By FRANK B. GRANGER, M. D.,

Boston,

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The use of the condenser discharge originated in France. In 1913 Dr. Lewis Jones, having modified the original apparatus, brought it before the attention of the Royal Society of Medicine. He said: "The principle upon which the testing of muscle by condenser discharges is based is quite simple. A condenser of known capacity is charged from the main, or from a battery, to a constant voltage, and is then discharged through a muscle. The electrodes

used are those we are familiar with. . . . If we apply to a healthy muscle a series of discharges, using condensers of increasing capacity, the contractions all appear very much alike, except that the larger capacities produce stronger muscular contractions. But if we do the same to muscles which are more or less damaged we find that they do not respond to the smaller capacities, but that they will respond to the larger capacities, and the process of testing with condensers, therefore, consists of ascertaining the magnitude of the least capacity which is required to produce a visible contraction in a given muscle."

The original apparatus consisted of twelve condensers arranged in series, each condenser being joined to a stud on a circular ring provided with a switch contact arm so that any desired capacity could be used. The condensers are charged from the street current and discharged through the patient as follows: The metronome, operated by clockwork, is provided with three cups insulated from one another and containing mercury. Cup one is connected to the street supply, and cup three to the patient, cup two is merely for bringing the current to the moving balanced arm, and could be replaced by a flexible piece of wire. Three silver pins, all connected to a horizontal metal balance beam, dip into these cups. When pin one dips into cup one the condensers are being charged. When pin three dips into cup three the charge rushes through the patient—the quantity depending upon the capacity of the condenser expressed in microfarads, i. e., on the position of the switch in the ring of studs. This was all right as long as the current strength was just 100 volts, as the capacity of the condensers and the discharge time were all based on that. Hence the next modification was the addition of a lamp, sliding contact resistance, and voltmeter for use with higher voltages.

The latest modification was suggested by Dr. H. Johnson, in which the clockwork metronome is replaced by a motor driven one, so arranged that its speed can be varied to give from one impulse every two seconds for testing, up to about six hundred impulses per minute for treatment purposes. The other modification consists of the addition of three studs, which brings the capacity of the condensers up to two microfarads. The table of capacities is as follows:

Stud No.	Capacity in microfarads.	Discharge time. (seconds)
1	0.016	1/24000
2	0.025	1/16000
3	0.05	1/8000
4	0.062	1/6000
5	0.08	1/4800
6	0.125	1/3200
7	0.25	1/1600
8	0.33	1/1200
9	0.05	1/800
10	0.66	1/600
11	1.0	1/400
12	2.0	1/200
*13	0.66	1/100
*14	1.0	1/66
*15	2.0	1/33

\*Additional studs on Hernaman-Johnson modification.

"It is essential that the condensers be of firstclass manufacture so that they will hold their charge without leakage for the time needed, and the insula-

\*Read at the twenty-sixth annual meeting of the American Electrotherapeutic Association, New York, September 12, 1916.



tion of the whole arrangement must be high or the testing will degenerate into a less scientific method in which the tests made at different times and places can not be compared. Condensers connected in series should be used. They are much safer than if arranged in parallel." There is no difficulty in accurately calculating the length of time for which the discharge of a condenser lasts, and by arranging a series of known capacities and charging at a known voltage, we have at once a system, by means of which muscle testing can be conducted and results accurately recorded in terms of the discharge times necessary to give a response in any particular case. Its first great use was in muscle testing. We are all aware that the time honored method of determining the reaction of degeneration by means of the faradic and galvanic currents has many disadvantages. Faradic coils are not standardized. The duration of the discharge time is very variable and often disagreeable to the patient. The interruption of the galvanic current is often unpleasant. The resistance of patients varies. There is a personal equation as to what constitutes a slowing of the reaction, and what the quantitative change is. We have to set down a description of what takes place. The physician in New York may not agree with his findings with the physician in Boston. The degree of degeneration, especially, in the more lightly affected muscles is hard to state.

The condenser discharge because of the shortness of the discharge time is much less unpleasant to the patient, and also because of its brief duration the resistance of every patient is nearly uniform—about 1000 ohms. We do not have to consider whether reaction is quick or slow. The smallest condenser which will cause any muscular contraction indicates the reaction, and we have a numerical equation to set down instead of vague terms. The man in New York ought to duplicate the results obtained in Boston; the personal equation is lessened, and a much more precise determination of muscular weakness is obtained. In fact, frequently, muscles which have been pronounced healthy by the faradic current will be shown to be slightly weaker than normal by the condenser discharge. Because of these advantages, and the fact that the R. D. can be determined more rapidly, it is being used to a great degree in the war zone to determine the extent of the nerve injuries. Several thousand cases have been checked up by the two methods, and the neurologist is turning more and more to the condenser method. In treatment it has been advocated wherever the interrupted galvanic, or the faradic current is employed. In the *Journal of the American Medical Association*, May 13, 1916, there is an editorial article on "Muscle Wasting in Nerve Lesions." Rabbits were used in the experiments and various therapeutic measures employed to determine the question of their efficacy. I will quote the last portion of the editorial: "The electrical treatment was most efficient. The stimulus consisted in condenser shocks of from 0.016 to 0.025 microfarads. The treated muscles showed a loss of weight of 12.9 per cent., while those untreated gave a loss of 18.5 per cent. in the same time. Aside from the clinical observations of neurologists, these

experiments furnish the first definite proofs of the efficacy of electrical treatment in muscles which are undergoing atrophy. Orthopedic surgeons have long been skeptical of the use of electricity in nerve lesions. The neurologists, on the other hand, have been zealous advocates of its use. Conclusive evidence by appeal to experiment has at last been adduced."

In regard to the value of the condenser discharge in therapeutics time enough has not elapsed to determine whether it will displace the older modalities; it certainly is more pleasant, even in the higher capacities, than the faradic current, and many patients prefer it to the interrupted galvanic. Its main advantages over the sinusoidal is that it will cause muscular contractions in those muscles which fail to respond to the sinusoidal. When longitudinal action of the muscle is wanted one electrode is applied to the distal tendon. It has been used in infantile paralysis, in muscular atrophies following nerve injuries, and has also been recommended in certain cardiac conditions, instead of hydrotherapy and exercises (Schott method).

In conclusion, we may say that for muscle testing it bids fair to supplant other methods, as we have an exact numerical equation, instead of vague terms, and thus, the improvement of the patient can be determined readily and rapidly. In therapeutics more work must be done, more cases tabulated and compared before we can assign it its place in our therapeutics.

591 BEACON STREET.

## SOME PHASES OF INTESTINAL STASIS AND ITS TREATMENT BY PHYSICAL MEASURES.\*

By WILLIAM MARTIN, M. D.,  
Atlantic City, N. J.

During the past few years literature has been teeming with papers upon this interesting condition, so common, now that it is recognized; yet withal its importance merits all the attention that it is receiving. It is not the writer's intention, however, to enter into a detailed description of its symptomatology, but instead to cite a rather unusual case that will embody some features that are not commonly seen in these cases.

CASE.—B. W. C., age forty-three years, married, early in 1913 was brought to my office with the following history: About a year previously his health became poor and various joints of both extremities became swollen, tender, and stiff. This condition became so extreme that he could not turn in bed without assistance, nor get up from a chair. He was at this time under the care of a prominent internist who was treating him for rheumatic gout. At the end of two months' treatment without improvement, his physician sent him to a mineral spring sanitarium for a course of baths. This proving of no avail, he returned to his home and placed himself in the care of an osteopath, still without benefit. At this juncture he made a complete change of physicians, as a result of which he was put through a series of laboratory tests and a study was made of his chest by roentgenographic methods. Wassermann and other tests were negative, but the x ray determined the

\*Read before the American Electrotherapeutic Association, annual meeting, September 12, 13, and 14, 1916.

diagnosis which was decided to be tuberculosis of the mediastinal glands.

During these months he had steadily lost flesh, which at the time he was seen by the writer amounted to fifty pounds. He suffered a great deal from pain in the stomach and abdomen as the result of flatulence, had lost his appetite, and had little or no power of digestion. For his constipation he was taking mineral oil, but the stools were principally of the nature of a bloody colitis. The nervous symptoms were most pronounced. Formerly of a cheerful disposition, he had become impatient and irritable and resented any disturbance or interference. He usually sat with head bowed, hands spread upon his knees with fingers stiffly extended, giving the impression of abject depression. His wife was forced to answer all questions, as he was entirely unresponsive. His feet and hands were cold all of the time and he complained bitterly of this fact. His face was covered with a mass of acne, the irritation of which caused considerable distress.

My examination disclosed a moderate amount of irregular hypotension, the highest systolic being 112 lying down against 102 sitting up. The diastolic was 62 lying against 50 sitting. His pulse was weak but regular and 96 sitting while in the lying down position it was 100. There was considerable spinal hyperesthesia over all the dorsal vertebrae, but exaggerated over the area of the fifth to the tenth. The heart showed a moderate soft presystolic murmur, weak and abbreviated first sound, with an enfeebled pulmonic second sound. Percussion showed the heart outline to be well beyond the right sternal edge, with a moderate extension toward the midclavicular line, and the apex beat ill defined and slightly displaced.

The lungs showed some coarse bronchial rales, but no areas of percussion dullness. Expansion was very poor. Upon inspection, with the patient lying upon the examination table, the abdomen presented a remarkable sight. Instead of sinking down below the ribs, as is usual in the normal thin subject, it rounded out to an elevation of from two to three inches above the rest of the body. This was all the more striking because of the extreme emaciation of the chest, each rib showing prominently. This rotundity extended to the pelvic chest with the hips and legs showing equally the loss of flesh. Palpation over the abdomen elicited tender spots over the course of the colon and gallbladder. To the sense of touch there was a boggy, or the feeling of pressing in dough or putty. The percussion note was flat or dull all over the whole abdomen.

The knee reflexes were slightly exaggerated, but the other reflexes were normal. The feet were swollen and clammy, pitting under pressure as well as all along the tibiae. The same applied to the condition of the hands and forearms.

There were no further roentgenograms made at this time as the evidence of stasis were sufficiently clear to warrant immediate treatment without further delay. The hepatic engorgement was evidently the most urgent symptom, therefore it was at once decided to start diathermic treatment for this condition and later, as the need was shown, to make whatever changes that were indicated as well as further examinations by the x ray and other methods. As the previous diagnosis of mediastinal tuberculosis was in mind, it was decided to use the diathermy also for this area. Each part received daily thirty minutes of from 1,200 to 1,500 ma. of current, the patient's condition being carefully watched during the treatment. Following the diathermy, the high candle power lamp was used over the chest and abdomen to a full surface hyperemia. In addition to these measures, intervertebral vibration of the interspaces of the seventh cervical and first dorsal and fifth to the tenth dorsal was instituted.

At the end of three weeks' treatment the liver engorgement had very materially decreased and the patient was feeling enough relief to consent to have another study made roentgenographically, so he was referred to Dr. W. C. Wescott, of this city, for that purpose. His report is as follows: "Examination of chest made March 10, 1913, shows a great increase of connective tissue throughout the lungs, with here and there old calcified areas about the size of buckshot, these being particularly noticeable in the lower lobe of the right lung. Considerable widening of the hilus shadow. The whole appearance, in the absence of clinical evidence to the contrary, would indicate an old,

healed, tuberculous process. The broad shadow in the neighborhood of the arch of the aorta, which appeared in the examination taken some months previous, has entirely disappeared, the aortic shadow at present being of abnormal width, the heart shadow which in the plate taken some months ago showed increase in total width and considerable increase to the right of the midline, now shows marked decrease in total width and very little increase above the normal to the right side.

"Abdomen: Examination of the abdomen shows a large, dilated ptosed stomach, with poor peristalsis, the lowest point of the lesser curvature below the crest of the ileum; the greatest curvature about four inches above the symphysis; pylorus opposite the fifth lumbar vertebra; duodenal cap well filled out; stomach practically empty at the end of six hours; otherwise normal. Slight residue in the duodenum.

"Colon: Complete ptosis of the hepatic flexure lower portion of cecum opposite acetabulum; hepatic flexure level with the crest of the ileum. Transverse colon opposite body of the sacrum. Splenic flexure slightly ptosed with sharp angulation. Descending colon, from the splenic flexure down to and including the pelvic colon, markedly spastic. Marked delay throughout the whole colon, there being considerable bismuth retained at the end of seventy-two hours, this retention probably being due to the spasticity in the descending and pelvic colon, having a calibre of about three eighths of an inch.

"Hands: The hands show a beginning atrophic arthritis in the first and second joints of all the phalanges.

"Conclusions: Patient presents a typical case of colonic stasis, principally due to ptosis, but partially to the spasticity of the descending colon. This, however, in my opinion, is an effect rather than a cause. The joint changes are the toxic arthritis so frequently seen in the victims of intestinal and colonic stasis."

This report conclusively demonstrates the fact that the shadows that had been taken for enlarged mediastinal glands were really shadows of a cardiac dilatation with some broadening or beginning aneurysmal enlargement of the aorta. The fact that this shadow disappeared at the end of three weeks' treatment by the diathermic method also demonstrates the value of this treatment for engorgements of this character.

At the end of three weeks, resonator sparks were added to the treatment and were applied to the spine and extremities with the blue pencil effluve to the fingers. A few days later the wave current was applied to the liver area with a short spark gap which was gradually increased until about a six inch spark was used. About a month later the wave current was alternated with the slow surging sinusoidal, the thermal penetration being continued also.

With the reduction of the hepatic engorgement, there was a marked improvement in the mental condition of the patient, which, at the end of two months, became almost normal. By the addition of agar to the mineral oil, the colitis lessened and the constipation was practically eliminated and, as the digestion improved, weight was gradually added. Further improvement was noted by the increasing motility of the joints and the elasticity of the skin with a material reduction of the abdominal boggy. At this stage, a properly fitting abdominal belt was applied in order to adjust the intraabdominal pressure, and this added much to his comfort. Dietary care had been carried out from the start in the elimination of all animal proteins and the inclusion of large quantities of bulky vegetables and fruits with some cereals. For the acne stock vaccines were used with great benefit, the actual eruption gradually disappearing, but leaving the face rather abnormally red. Exercise was taken systematically, chiefly by walking, which was graduated. At the end of three months the frequency of treatments was lessened and the patient was sent home, well, at the end of a few days over four months. At the present writing, over three years later, he remains as well as ever.

The writer has gone into this case with more detail than may have been necessary, but this seemed warranted from the fact that most cases of intestinal stasis do not show so prominently the several features that have been shown in this case, and the



citation may be of value to some in the future when a diagnosis may be doubtful. There are many theories of the causation of intestinal stasis and the end is not yet, as none of the theories so far advanced can be accepted as final. Keith (1) ascribes the fault to defective innervation.

To quote from an editorial of the *NEW YORK MEDICAL JOURNAL*, July 15, 1916, "he describes six nodal areas of the gastrointestinal tract corresponding to certain 'definite aggregations of myenteric plexus.' These nodal regions he locates at the junction of the esophagus and cardia, the pylorus, the third portion of the duodenum, the junction of the jejunum and ileum, the lower extremity of the ileum and the distal colon." The section of the plexus corresponding to each node, Keith believes, regulates the rhythmic contraction of its musculature. A disturbance of the rhythm in one zone is capable of producing similar disturbances in adjoining zones.

On examination of specimens from operation and autopsy, Keith found that there were gross pathological changes in the nerve fibres of Auerbach's plexus corresponding to his nodal areas. He considered these structural changes sufficient to account for the intestinal disorder and stasis. He states that the stasis occurs in parts adjacent to the nodal zones. Quoting further, "McClure has discussed the subject and is inclined to consider Lane's peritoneal bands and Keith's structural changes in the plexus of Auerbach alike as late events in the process and secondary to a low grade of inflammation caused by the bacteria or toxins passing through an atonic intestinal wall."

While none of the theories so far advanced can be accepted as final, each has some measure of truth and, if confirmed by further observations, will contribute much to our understanding and offer ideas toward improvement in the therapeutics of the condition.

#### REFERENCE.

1. KEITH: *Proceedings of Royal Society of Medicine*, July 15, 1916, MARYLAND AND PACIFIC AVENUES.

## CONTRAINDICATIONS TO THE USE OF HIGH FREQUENCY CURRENTS.\*

BY FREDERICK DE KRAFT, M. D.,  
New York.

So much has been said during the last twelve years about the utility of high frequency currents in the treatment of diseases that one might easily be led to believe their use unlimited. Inasmuch as every diathermic application is productive of an arterial hyperemia, it is distinctly contraindicated in all those conditions where a tendency to hemorrhage exists.

For instance, in case of pulmonary tuberculosis, one must not resort to the diathermic method if there is a history of recent hemorrhage, nor in those cases where the condition of the lung might lead us to suspect an ulcerative process. The secondary hyperemia might easily cause a bloodvessel, already weakened by the destructive process, to give

way as the result of an excessive dilatation and lead to alarming, perhaps fatal, hemorrhage. The same thing must be borne in mind wherever an ulcer exists—in the stomach, intestine, or bladder. If there is a history of hemorrhage from the bladder or kidneys, it would be very unwise to apply diathermic currents. And one must carefully avoid applying diathermy to the pelvic organs, uterus, and ovaries if bleeding has occurred recently.

So many good reports have been made of the treatment of papilloma of the bladder by means of the high frequency spark, that one cannot help but think of the consequences of an ordinary diathermatization of the prostate in an old case of prostatitis, if a papilloma of the bladder wall should happen to coexist. The secondary hyperemia following such an application might easily stimulate a papilloma whose existence had not been suspected to rapid growth and result shortly in alarming hemorrhage.

In diathermy, we have a powerful remedy which not only produces hyperemia, but is capable of stimulating cell function, of increasing the secretions of glandular organs. It would be manifestly improper to employ this method in hyperthyroidism; the x ray, being exactly opposite in its effects on secretions, is here the more appropriate remedy. For this reason, also, the x ray should be preferred in glandular swellings, such as those of Hodgkin's disease, leucemia, etc. In such cases, high frequency currents of the type referred to would do positive harm.

Staphylococci and streptococci are easily stimulated to more rapid multiplication and growth by mild diathermic currents. Hence one should not use it in any of those conditions where an infected part is walled in by surrounding structures, as the formation of pus might thus be stimulated, which, not finding a ready exit, might easily induce a pyemic state.

It would be highly improper to apply diathermy to boils and carbuncles. The resonator spark and spray, vigorously applied, are capable of killing the cocci if the wound is a freely open one. The primary vasoconstriction, produced by the spark and spray, prevents the possibility of dissemination of the germs, under these circumstances, and the secondary hyperemia increases the natural defenses of the part. The application of the x ray in cases of furuncle and carbuncle, previous to the stage of pus formation, has frequently yielded good results. A more rapid method, particularly in those cases of frequent sequence, is through desiccation by means of a fairly long spark from an arsenic point.

As a rule, the use of the diathermic method is not advisable in the treatment of tuberculous glands. The application of the x ray, with a view to sterilizing the tubercle bacilli, seems the more rational method. The use of diathermic currents for improving the nutrition of the surrounding structures, preceded by the x ray, has frequently effected good results.

Mild and also heavy diathermic applications are distinctly detrimental in acute articular rheumatism. There is apt to occur a following rise in temperature, increase of pain and swelling and a very decided

\*Read before the American Electrotherapeutic Association, annual meeting, September 12, 13, and 14, 1916.



aggravation of the general condition. Salicylic ionization, on the other hand, by means of the galvanic current, is a method of great value. It deserves to be more generally known and used.

Not all cases of gonorrheal rheumatism are favorably influenced by local diathermy. Some are even made worse temporarily. Radiant light and heat to the joint, when applied subsequent to the diathermy, are quite generally useful, providing the local condition, whence the infectious material comes, receives appropriate treatment.

An attack of gout can be aborted, as a general rule, in a few applications. However, there are cases where the inflammation in the affected joint assumes a very violent character and the heat in the joint is intense. Therefore, it sometimes happens that the pain is very much increased by any degree of diathermy and, sometimes, even by the blue pencil brush discharge. In these cases, it is not wise to attempt any application of high frequency currents for one or two days, or until some elimination of the offending urates has begun and some of the tenseness of the skin over the joint has been reduced by means of appropriate local treatment.

It is seldom wise to apply high frequency currents during menstruation. There has been a suppression of the flow in a number of instances where the current was applied without the knowledge of the operator that menstruation had begun. There has also been a very decided increase in the flow. Diathermy of the pelvic region should not be employed in cases of menorrhagia nor during pregnancy.

There is a class of obesity where mild general applications of high frequency currents have increased the weight surprisingly. This, of course, must be avoided.

In the writer's report of 1909, attention was called to the fact that a rise in blood pressure frequently resulted from an ordinary autocondensation, with moderate amperage, in cases of disease of the glandular organs of the body. Currents of large amperage, of longer duration, usually lower the pressure in these cases, for the time being. The patient, however, is not benefited thereby. Faintness, cold, drenching sweats, nervousness, great shortness of breath, sleeplessness, and muscular soreness may result from such an application in this class of cases. If this happens, it will be days before the unfortunate effect disappears. It is better to apply the current directly to the organ which is the cause of this high blood pressure. For instance, the kidney in chronic nephritis, or the heart in chronic myocarditis should be diathermatized. No matter what organ or part we wish to treat, in a case of parenchymatous nephritis, as little general diffusion of the current as possible should be permitted. These patients can receive a great deal of comfort and help by strictly localized diathermy, but they can also be made miserable by general application.

In advanced arteriosclerosis, it is advised that great care be exercised. If military aneurysms of the cerebral bloodvessels should exist a hemorrhage in the brain might occur as the result of an autocondensation, with a heavy current. These old people must be studied with care and both the physiological effects of the current and the peculiar degenerative

processes and frailties of the organs of the aged must be borne in mind. forcible application, with glass vacuum electrodes and heavy resonator effluves and sparks, tend to raise the blood pressure. Gentleness and great moderation of these powerful agents should be the rule in treating old people.

Great care should be exercised when applying diathermy to the frontal sinus, the antrum of Highmore, the middle ear, the gallbladder, and the region of the appendix, if there is an acute inflammatory process. While not absolutely contraindicated in all cases, it may nevertheless be a two edged sword. If pus should already exist, or if free vent could not be secured for pus, or for serous and other secretions, a more or less serious accident might follow the misguided effort. In chronic cases, the danger would be less, but should nevertheless be borne in mind.

148 WEST SEVENTIETH STREET.

#### A FEW WORDS ABOUT LIQUOR OF MAGNESIUM HYPOCHLORITE.

BY DOUGLAS H. STEWART, M. D.,  
New York.

The question has been asked: Why did not the present writer, after furnishing a preliminary paper upon Mayer's solution, proceed to elaborate a statement based upon further experience with laboratory and clinical tests? There is at least one good reason for his so doing, and that reason is that the workmen's compensation people, the employers of labor, and the taxpayers are all interested in the return of an injured workman to his labor, in the briefest possible time. The position of affairs, however, is this: A certain gentleman, somewhere in France, has prepared a paper that embodies information along the lines suggested. This is to be submitted to the NEW YORK MEDICAL JOURNAL upon his return. In view of this fact ordinary courtesy compels silence during his absence.

This may be said, however, without entrenching upon the province of another man. Should anyone desire to experiment with the solution it may be made extemporaneously by adding a heaping teaspoonful of good calx chlorinata to a half tumblerful of vinegar, and by adding two heaping teaspoonfuls of Epsom salts to a half tumblerful of water. The two solutions should stand for fifteen minutes, then should be mixed, shaken, and filtered through gauze. A six per cent. acetic acid will answer quite as well as vinegar, but the different strengths of the domestic variety of the latter seem to be stumbling blocks to exact scientific minds. It need not be so, because the vinegar is merely a solvent or a means of getting the almost insoluble chlorinated lime into a solution, therefore whether its acetic acid strength is four per cent. or ten per cent. is a matter of no moment. An eighty per cent. acid is the best to use when bulk and portability are in question. As long as the terminal result is not less than two per cent. nor more than six per cent. after the solutions are mixed, anything more accurate is a refinement not obtainable in an emergency nor essential for any practical reason.

All the strengths aforesaid may be doubled or halved. An efficient solution is obtained in any case if the proportions are maintained; an excess of strength gives a waste of material for its chief result.

Any one may experiment with the following technic and determine for himself whether it does or does not give him better results than he is now obtaining. 1. Let the physician use the acid magnesium solution for cleansing, for irrigating, or for other proper purposes. 2. Let him give to the patient sublimine in liquid paraffin one to 3,000. This is strong enough, but a saturation is about one to 1,500, therefore if one puts sublimine into a bottle of the paraffin until some remains as a precipitate and shaking is avoided, this will answer perfectly well. Here also it is simply a question of waste. Let the bandage be changed once or twice every eight days, let the patient use a medicine dropper and soak through the bandage fifteen or twenty minutes of the sublimine paraffin every two hours, when he is awake. Let him do this in such a manner that the solution runs down upon the wound, the bandage over which is not to be displaced or handled save by the attendant, who is usually surprised at the readiness with which this solution penetrates gauze almost like oil running up the wick of a lamp. Altogether this is quite a different matter from the behavior of the watery or alcoholic solutions to which he is accustomed. Shortly after a trial or two he discovers what a beautiful lubricant for vaginal work it is. As to the advantages, the patient will state those, and if the doctor has the least doubt as to them this method is not good enough for him. Negative virtues are the absence of stain, of adherent dressings, and of torn off scabs.

In using liquor magnesii chlorinatæ in the vagina just before or at the time of parturition it should not be used with a douche bag. The introduction of the nozzle seems to infect the vagina. Place the patient on a bedpan, open the vulvar lips by hand, have someone pour a pitcherful of the warmed solution over the mons veneris, vulva, etc., and fill the vagina brimming full while the hips are elevated by the pan. Do not wipe dry, let what will drain out, and the culture tube will reveal sterility for one hour and a half, at which time the maneuver should be repeated. It is ideal when rubber gloves are to be employed, because it prevents the sterile glove finger acting as does the nozzle, i. e., carrying infection from the vulva into the vagina.

A patient confined to bed with an infected wound does remarkably well with any sort of constant drip irrigation of the wound. A half strength (i. e., equal parts normal salt solution) liquor magnesii chlorinatæ is sufficient for this purpose. Statements from France have already had their abstracts printed in the JOURNAL, therefore the matter of wound irrigation and its rapid good results may be passed over with a mere mention. The relief of pain that follows the use of the method suggested, for physician and patient, is as incomprehensible as is the improvement of anemia through the administration of Bland's pills. However, since every patient insists that the pain is relieved, the present writer is obliged to follow the dictates of colloquial parlance and "let

it go at that." Finally it may be said that a long contact with any aqueous solution produces water-logging on maceration. A similar contact with an alcoholic tincture results in hardening or a species of tanning; but the Mayer's solution and the paraffin used in the aforesaid manner result in neither the one nor the other.

128 WEST EIGHTY-SIXTH STREET.

## Contemporary Comment

**An Expert's Opinion.**—Dr. Michael P. Conway, of Auburn, N. Y., a fellow of the American Medical Association, who appeared as an important witness in a recent trial, testified as follows, as reported in the *Journal of the American Medical Association* for March 31, 1917:

Q.—And, now, doctor, from the standpoint of a physician, isn't the *Journal of the American Medical Association* considered one of the best periodical publications in the United States of America?

A.—Yes, it is one of the best.

Q.—And the best, isn't it?

A.—No, I should not want to say that.

Q.—What is that?

A.—I should not want to say that.

Q.—The best weekly periodical publication?

A.—In my opinion it is not the best.

Q.—It is not the best. But it is one of the best?

A.—It is one of the best.

Q.—Would you say that it was second, in your opinion?

A.—Why, I don't know where to place it as to its value.

Q.—Well, will you name what you consider the best publication?

A.—I think the NEW YORK MEDICAL JOURNAL is far superior to it in the character of the papers which are presented there and they bear what I might say a more unbiased view to the advance of new ideas.

**Legislation to Control Venereal Disease.**—Definite and active measures are being seriously contemplated in England, says the *British Medical Journal* for February 24, 1917, for legislation to control venereal diseases. In a bill to amend the law with respect to the punishment of sexual offences it is proposed to punish a person who, knowing that he or she is suffering from venereal disease in communicable form, has or solicits sexual intercourse, and to prohibit advertisements relating to venereal disease or the producing of miscarriage or abortion. The efficiency of these provisions will depend on the degree to which magistrates make use of the powers and the impartial efficiency of the police. The British Medical Association expressed its strong approval of legislation of this character.

The provisions with regard to the practice of venereal quacks are not so strong as was hoped and it is recommended that the Government should introduce a bill to suppress the quack treatment of these diseases. As persons who engage in these particularly offensive forms of quack practice depend entirely upon advertisements to make themselves known to the public, the prohibition of such advertisements, accompanied by the offer of skilled free treatment, under the scheme now being put into operation by local authorities, must go far to diminish, if not altogether to abolish, the opportunity of preying upon the credulity of the public now afforded to venereal quacks and abortifacient mongers.

# Our Readers' Monthly Prize Discussions

## Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CLXXX.—How do you treat ringworm? (Closed.)

CLXXXI.—How do you treat thumb sucking and nail biting in children and adults? (Answers due no later than April 15, 1917.)

CLXXXII.—How do you prevent infantile diarrhea? (Answers due not later than May 15, 1917.)

The award will be based solely on the value of information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

*The prize of \$25 for the best answer to Question CLXXXIX has been awarded to Dr. Moses Scholtz, of Cincinnati, Ohio, whose paper appears below.*

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### PRIZE QUESTION NO. CLXXXIX. HOW DO YOU TREAT ECZEMA IN CHILDREN?

By MOSES SCHOLTZ, M. D.,  
Cincinnati.

Clinically eczema can be considered from various angles and be classified accordingly in different types, but some of these types are not sufficiently differentiated from a therapeutical standpoint and can be ignored. Such, for instance, is the regional classification of types of eczema of the face, hands, feet, etc. Morphological classification of eczemas into erythematous, papular, vesicular, etc., also can be ignored, as it represents only different stages of the same inflammatory process and is to be treated according to general principles. On the other hand, a division of eczemas into acute and chronic types, or into idiopathic eczemas, due to local irritants, and symptomatic eczemas produced by systemic irritants, is very important. To idiopathic eczema, i. e., local forms of eczema, belong erythema intertrigo, impetiginous forms due to staphylococci infection, dermatitis venenata produced by different chemical irritants, parasitic forms produced by scabies and ringworm, and seborrheic dermatitis. All these forms yield readily to local treatments.

The general principles and guiding rules in the local treatment of eczemas are as follows: In acute forms use bland, cooling, and protective applications; in chronic cases stimulating and absorbent substances. Acute forms of eczema are notoriously intolerant of water and soap, and washing in the acute stage should be avoided. Softening and cleansing of the crusts and exudative accumulations can be well effected by oily applications such as liquid albolene, olive oil, vaseline, etc. As the case proceeds from the acute stage to the chronic, washing is allowed more and more liberally, with a precaution of softening water by addition of sodium bicarbonate, borax, starch, bran, etc. In weeping eczemas lotions are to be preferred to ointments. Among lotions the most serviceable are Burow's solution, one tablespoonful to a glass of water, one to two per cent. solution of alum acetate, zinc calamine lotion, *lotio nigra* (N. F.), ichthylol three per cent. solution. The number of soothing ointments is legion. The best of them all is the original Lassar's paste. In impe-

tiginous eczemas after painstaking cleansing white precipitate, mercury ammoniate five per cent. ointment, acts as a specific. In seborrheic dermatitis white precipitate ointment is also excellent as well as sulphur from two to five per cent., resorcin from one to three per cent., and salicylic acid one to three per cent. in ointments.

In eczemas secondary to scabies and ringworm do not be misled by an apparently eczematous, inflammatory aspect of the eruption and do not hesitate to use Wilkinson ointment half strength or betanaphthol two to four per cent. ointment. In chronic eczemas, as mentioned before, stimulating and absorbent applications are indicated. Tar is a drug of choice in chronic infiltrated forms, the most commonly used preparations are *oleum rusci* and *oleum cadini* cautiously increasing the strength from one to six per cent. in Lassar's paste as a base. Crude coal tar as recommended by C. J. White from five to twenty-five per cent. is much less irritating and can be used even in subacute forms. Betanaphthol one to four per cent. is a very clean, efficient application, as well as salicylic acid and resorcin in an ointment one to five per cent. Phenol as antipruritic had better be avoided in eczema in children both in acute and chronic cases, particularly in extensive cases, and usually can be dispensed with.

When all local remedies fail do not forget our best weapon, x ray treatment from three to five minutes each, three times a week. It is surprising what mild exposures and how few of them are necessary to clear up many stubborn cases resisting all kinds of constitutional and local treatments. Constitutional treatment consists in the elimination and correction of the underlying systemic factors responsible for eczema. It may be constipation, intestinal putrefaction, fermentation, any metabolic disorder or diathesis, acidosis, gout, etc. Purgation with calomel or castor oil, increased elimination through the kidneys, and alkalization of the system are the most frequent remedies. Dietetic correction is all important. The writer strongly objects to a routine, indiscriminate restriction of the diet down to the point of caloric starvation, and urges a systematic restriction of fats, carbohydrates, or proteins to determine which of these groups or which particular food is responsible for the eruption. The correction of the cow's milk in bottle fed babies and



the correction of the mother's diet in nurslings should be done gradually after the nutritional irritant is determined. The mechanical prevention and restraint of children from scratching is of importance and should not be omitted. It should be remembered that the value of constitutional treatment lies more in the prevention of the relapses in the future than in the clearing up of already existing patches, and that the local treatment is necessary in all cases.

*Dr. Louis Hubert, of New York, states:*

The successful treatment of eczema in children depends on our ability to find the cause of the trouble. Eczema may be due to external causes alone, internal causes alone, or to a combination of internal and external causes. The skin in many children is very sensitive and an external irritant may cause a severe inflammatory reaction. Woolen garments, excessive perspiration, application of strong soap, also discharges from the ear or navel, or parasitic diseases may cause an eczematous reaction on the parts exposed. Prompt relief can be gotten by removing the source of trouble and by the use of protective dressings, soothing or stimulating in character, using the soothing in the more acute and the stimulating dressings in the more chronic stages of the disease. The most difficult to treat is a severe case of intertrigo. Exposing the buttocks for a few hours to the air and to moderate sunlight we get a drying of the skin and then it is advisable to put on a soothing ointment. In severe cases the child should lie on a ring with absorbent cotton on the bottom of the ring, so that the discharges are all below the child and do not in any way irritate him. Internally potassium citrate, five grains, given every four hours, is useful.

Eczema due to internal factors may be caused by faulty processes of food utilization, and by a reaction against specific food substances. The successful management of this kind of eczema depends on the ability to discover the food at fault, to eliminate this particular food, or to immunize the patient to it. It has been found by a process of elimination that the most frequent foods at fault are butter fat, protein of the milk, cane sugar, eggs, orange juice, and occasionally starch. The study of the feces and the cutaneous food inoculations are helpful in finding the cause. When there is neither an excess of fat or of starch in the feces, try the cutaneous inoculations of the various food substances. If no cause is found, think of a diminished thyroid secretion. In such cases thyroid extract given in very small doses, ten grains three times a day, does very well. The management of eczema in breast fed infants is very difficult and usually not very satisfactory. We increase the intervals and diminish the time of each feeding. We examine the mother's milk, and if some fault is found try to remedy it by dietetic means. The child may thus be improved, but rarely cured. Almost always the baby can be cured by weaning and suitable bottle feeding, but it is not advisable to wean a thriving baby because of the eczema. In bottle fed babies the treatment is more satisfactory. We should tell the parents that during the treatment the babies will probably not gain weight, and that they should be satisfied if the babies hold their weight. This can usually be done by putting them

on skimmed milk without the addition of sugar or diluent. At the seventh month of age we should add stewed carrots, squash, and mashed potato. The salts of these fresh vegetables possess an undoubted value in these cases. In children past the bottle age everything given is largely sugar free. We give skimmed milk, all cereals but oatmeal, and all vegetables. If the child is constipated, we regulate the bowels with a mild cathartic, as cascara or sodium phosphate. Besides, we use external applications and internal administration of potassium citrate. Not all cases of eczema admit of cure; i. e., we could produce by rigid dietetic means a clear skin, but it would cause faulty growth and some degree of malnutrition. Proper growth and development are more important than a slight degree of eczema.

*Dr. Charles A. Sparrow, of Worcester, Mass., remarks:*

Any successful treatment of eczema in a child must be based on a thorough and systematic study of the individual, and a thorough searching into the cause of its symptoms. It seems impossible to explain the various manifestations of this disease on a purely pathologicoanatomical basis. Present opinion now leans toward the hypothesis of a predisposition, or some underlying tendency, probably systemic, which the eczematous child possesses for this disease, the symptoms of which may be increased to varying degrees by concurrent disorders of the nervous or gastrointestinal systems. With this in mind it is necessary to divide eczema into two classes, basing the classification on the response to treatment. Thus there are the obstinate and the tractable cases. Obstinate cases are those which do not respond to local or dietetic measures. In such cases it is necessary to find the exciting cause which may be disturbing the natural balance of the nervous system. These cases may show signs of increased nervous irritability in spasmodic, laryngospasm, and increased reaction to the galvanic current. Bromide of calcium may here be useful in the relief of the hyperirritability and helpful in the calcium metabolism. Removal of the external sources of irritation such as adenoids, pediculi capitis, or adherent prepuce may aid the nervous system until it steadies with increasing age, with the abatement and eventual disappearance of symptoms, uninfluenced by other measures.

The tractable cases may be divided into: 1, cases influenced by dietetic treatment; and, 2, cases amenable to local treatment. Indigestion occupies an intermediate position in the mechanism of the prevention of eczema, and metabolic intolerance for any food element may be evidenced by this disease. Two types of indigestion are commonly associated with eczema in children: a variety of fat or carbohydrate indigestion, and a grosser form, the chief evidence of which, found in the stools, is the presence of undigested particles of solid food. In these cases it is essential to have a thorough examination, both macroscopical and microscopical, of the stools, to determine whether there is fat, carbohydrate, or protein indigestion. The correction of excess fat or carbohydrate as determined by this examination is usually of great value in the treatment of eczema.

Microscopical examination of the content of meat fibres, cellulose, and vegetable detritus found in the stools is also helpful. We also have now at hand the various skin tests, either from direct inoculation upon scarified areas, or from intradermal injections, which throw a good deal of light on the ability of the child to digest certain kinds of food. By this method we may clear up an obstinate case of eczema by finding some food idiosyncrasy which proves to be the exciting cause. Thus under dietetic treatment there is need of correction of excess in amount of food given or in kind of food given.

Volumes have been written on the *local* treatment of eczema, and innumerable classifications made of the kinds of eczema to receive special treatment. The indications for local treatment come under one rule, namely, that those lesions which are acutely inflamed require medication to soothe or reduce the inflammation. Here we use the bland ointments and powders, such as stearate of zinc, boric or zinc oxide, and Lassar's paste. Those lesions which are of a chronic nature require stimulation from such drugs as tar. In general, the avoidance of all external irritation from scratching, crust formation, and indiscriminate use of water or soap, is absolutely essential, as is also thorough knowledge of the individual child's skin reaction to the various external applications mentioned above. It is always necessary to make all changes slowly and in accordance with the indications derived from the various tests and examinations mentioned above. It is impossible to lay too much emphasis on the *individual* treatment as the only successful method in cases of eczema.

*Dr. Frank J. Williams, of Albany, writes:*

Eczema in young children is more than an inflammation of the skin. It is not enough to designate it as merely a digestive disturbance. The complex pathology of this disease is not covered by either of the above terms. It is rather a combination of the two, together with some underlying systemic condition which is evidently peculiar to eczematous children. The treatment, therefore, must be broad in its scope and should be carried out along three lines: local, dietetic, and systemic.

The fact must be borne in mind that in a very young child too rapid a cure of a severe case may react on the nervous system, producing cerebral symptoms and causing sudden death. In cases of universal eczema the safest course is to apply local treatment to a limited area at a time. Irritation from scratching is avoided by placing cardboard cuffs on the elbows or the metallic mitts on the hands. No water or soap is applied to the affected areas.

Local treatment serves to protect the inflamed surface, also to soothe the irritation and allay itching. In the exudative form with thick crusts present an excellent application is a starch poultice made by mixing starch flour in a little warm water to a jellylike consistence and spreading on muslin. This serves to soften and remove the crust. Carron oil or olive oil may be used in like manner. The moist surface may be touched up with a two per cent. silver nitrate solution and then powdered with boric acid or stearate of zinc. The application of oint-

ments to a large portion of the surface of the body in universal eczema is exceedingly dangerous. This would naturally cause a corking up of drainage products, and many cases thus treated have resulted fatally. In the presence of considerable discharge and bleeding a lotion of two per cent. calamine, or a one per cent. solution of aluminum acetate, may be applied as moist dressings. Strong metallic drugs should be avoided because of the possibility of absorption through the shattered epithelium. Itching is best relieved by a one per cent. solution of carbolic acid.

For the dryer stages one of the following ointments is indicated: Ten per cent. alum acetate in vaseline, three to five per cent. boric petrolatum, or Lassar's paste to which a small amount of carron oil or olive oil is added to prevent its hardening and adhering to the surface. A face mask should be used in facial cases. The dressings are removed daily, the ointment carefully removed with absorbent cotton dipped in oil, and fresh ointment reapplied. In the subacute and chronic forms an ointment containing tar in the form of tincture picis liquidis is indicated. This should be discontinued after an acute reaction occurs and milder pastes applied.

Dietetic treatment aims at the correction of any form of digestive disturbance that may exist. An examination of the stools should be made in every case of eczema in an infant or young child. Frequently a fat indigestion will be found, indicating either a fat intolerance or an excess of fat in the diet. The excess of fat appears as soap in the stools and when found in excess this element must be reduced to within the range of the digestive capacity. In some cases the carbohydrate element is at fault, and less frequently the proteins. A judicious restriction of the disturbing food element as determined by a careful study of the digestive function is the indicated remedy. In altering the diet of these children care must be exercised to maintain the needed food balance in order that the processes of growth and development are not impaired. Because an excess of fat is found it does not follow that this element is to be entirely eliminated from the dietary, thus predisposing the child to physical weaknesses. If the patient is one of the overfed type, as are so many in whom this condition is seen, a lengthening of the feeding intervals is indicated.

After insulating the line of therapy outlined above the physician should turn his attention to systemic treatment. Patients have died quite suddenly after a period of apparently successful local treatment, having, just before death, convulsions and a temperature of 105° F. or over, suggesting sepsis. Efforts should be made to prevent an accumulation of poisons in the system. The bowels are to be kept freely open. A dose of calomel is advisable at weekly intervals for a limited period. The child should be given plenty of water to drink. It is well to give sodium citrate in doses of five to ten grains morning and night for its diuretic effect as well as to neutralize partially the highly acid urine which is invariably present and which tends to irritate the skin about the genitals and thighs.

(To be concluded.)

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

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Address all communications to  
A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transporta-  
tion through the mail as second class matter.

Cable Address, Mediour, New York

NEW YORK, SATURDAY, APRIL 7, 1917.

### WAR.

After many months of discussion and of efforts to avoid hostilities the Government of the United States has been compelled to admit the existence of a state of war with the German Government. In the moderate, measured, but forceful address of the President of the United States to Congress, it is clearly pointed out that the American people have no quarrel with the people of Germany, but only with the Government which has overborne American rights on the high seas, has sunk American vessels, and has killed American citizens. Much as all thinking people deplore war and all that war means there can be no question but that the people of the United States as a whole are convinced that the time has come when the existence of a state of war must be acknowledged; when they must begin to resent the attacks to which they have been submitted during the past two years.

It is most unfortunate that these two years have not been devoted to an active preparation for an eventuality which the majority of the Americans have long foreseen. We have learned much by observation of the trials which England has gone through in organization for war. Our position is quite analogous to that of Great Britain. We have,

within its limits, an efficient navy, we have an excellent and well trained regular army, though, like that of Great Britain, it is a very small one, but beyond this we are totally unprepared. We have no trained reserves to fall back on. We have to contend with all the faults inherent to democracy at war. We lack the centralized authority, the one man power which makes an autocracy such an efficient war machine. We should profit by the example set by the British and early accord to the President the full measure of authority just as he must bear the full measure of responsibility for the conduct of the war.

War cannot be conducted in any halfway manner. We must bring to bear every ounce of energy, every drop of blood, and every dollar that we possess, and must have this directed by the best brains in the country that this bloody business may be brought to an early and successful close.

Our regular army now numbers 125,000 men, and the National Guard about 160,000. If recruited to full war strength they would number 280,000 and 440,000 respectively, or a total of 720,000. For this army some 5,000 medical officers would be required. In addition to this we have another army of 500,000 called to the colors for training, making a first line defense of 1,220,000 men. In addition, it is expected that at least a million and a half more troops will be called out during the year for training, making a total of 2,720,000 troops under arms. Such an army would require 19,000 medical officers. We now have in the regular army about 1,200 medical officers, and in the National Guard about as many more, making about 2,400 officers, and leaving a deficiency of 16,600 medical officers to be supplied from civil life. In view of the fact that we have in the United States only 145,000 registered physicians it will be seen that the new army will face a deficiency in a direction in which it will be difficult to improvise aid.

We have repeatedly published the appeal which has been made for medical reserve officers. That appeal still stands, and every qualified medical practitioner should weigh well his obligations and decide whether he is in a position to offer his services to his country and help fill this deficiency in a most important arm of the service.

Besides the need for medical reserve officers, there are at present 230 vacancies in the medical corps of the regular army. Under the staff bill for universal service 1,811 additional medical officers would be required for the permanent establishment, making a total of 2,041 openings for appointment in the per-



manent force. Here is a very attractive field for young physicians who have had the required year of hospital experience. Steps are already being taken by some of the State and county medical societies to safeguard the interests of those practitioners who are willing to give up their practices temporarily for service in the army. This work should be pushed rapidly and organization effected, so that those who wish to serve their country can do so with the least possible pecuniary loss.

#### THE PHYSICIAN AND ALCOHOLISM IN THE NEED OF TODAY.

With war at our doors the alcoholic problem flings out an unmistakable challenge to medical co-operation in national preparedness. Not only has the imperative call for fitness and efficiency in the present stress sharpened concentration upon a practical handling of the drink question, but prohibition is also extending its sway, and even remote Peru, in spite of its economic demands, is bidding for a textbook for teaching temperance in its public schools. Pressure is being brought to bear from all portions of the world upon the seriousness of the alcoholic situation.

It is indeed a problem from which the physician least of all can turn away. To him the public come for facts and for intelligent methods which take account of actualities and thus build up effectual action. For whether the measures undertaken are autocratic, legislative, educational, social, or distinctively religious, they must be based upon individual reactions which arise out of fundamental demands. These are physical and psychical, and as such belong first of all for their understanding and treatment in the realm of the fully equipped physician.

We attempt therefore to present in this number of the NEW YORK MEDICAL JOURNAL some comprehension of the fundamental factors which demand attention, if any real headway is to be made against this which has become a destructive curse to mankind. Doctor Gregory's discussion of this problem grants us that broader viewpoint from which an effective campaign must start. As he points out, a valuation of the hold of alcohol upon mankind can only be understood and combated if one appreciates the historical value which intoxication, and narcotization also, have had in the development of mankind and the persistence of these when they no longer render a true service in the society of today.

This is the basis upon which the question must be worked out in physical effects, mental disturbance and degeneration, and social disorganization. On this alone is it discoverable why certain cures are effective, one measure for this one, another for that

one, and why religious emotional reconstruction occupies so large a place in temporary or lasting efficient aid. There is not only room for all these measures in the wide extent of man's psychical nature, but its complexity and variety of reaction make necessary a more detailed understanding of this problem and an appreciation of the variety of reasons for the different modes of help.

We have endeavored on this account to give at the same time a review of the results of psychanalytic investigation into the controlling "complex" factors which underlie alcoholism. The work of several authors and investigators of the psychanalytic school abroad has furnished us with much illuminating material, which is substantiated and amplified by our own clinical matter. No one can enter closely into the individual alcoholic problem—and it is of this in its aggregation that the social problem consists—without coming at once upon just such an intricacy of psychical factors which must be solved, and which must constitute the guiding line toward a solution of these problems. It is that transmutation of energy which Doctor Gregory has discussed that leads along such lines and an understanding of which alone can discover the energy, seek it where it is going astray, and then redirect it into lines of usefulness and salvation for individual and society.

#### PSYCHOLOGY RIGHTLY OR WRONGLY APPLIED.

The determination to approach things as ready made seems to be an obstinate one. It yields but slowly even before the prevailing acceptance of evolutionary growth and adaptation. This it is that holds back our static psychologists from real service in industrial, economic, and all forms of welfare investigations.

Yet the sincerity of purpose and effort to help is actively manifest. A recent monograph presents a work of this kind. [Stecher: *The Effect of Humidity on Nervousness and on General Efficiency*. The Science Press, New York, 1916.] It describes a part of an investigation undertaken by the New York State Commission on Ventilation appointed by the Governor of the State of New York at the request of the New York Association for Improving the Condition of the Poor.

The manner of investigation is presented in detail as it was carried out in a series of tests upon young graduates of the commercial department of one of the city's schools. Under various percentages of humidity or dryness these subjects were tested for efficiency in such mental performances as addition and subtraction and in motor control and coordination, while their own opinions and feelings of com-

fort in relation to the experimental conditions were recorded.

Can one expect more than the barrenness of result which the monograph reports? The painstaking labor of these efforts of a static psychology seeks thus to reckon with a plasticity and adaptability of the human being quite out of proportion to the more measurable quality of environmental conditions. It is but another of those well meant but futile attempts of laboratory psychology.

An old, old nursery classic describes a sincere expenditure of effort: "And when he saw his eyes were out, With all his might and main," and a still older Book points out the result of even the well-minded blind trying to lead the blind. Most thinkers have started thus, blind to the way the race has come, back through the bramble bush in order to set two presumably static factors side by side, expecting a measurable action the one upon the other. They forget that one of these factors at least is filled with potential values and adaptive possibilities always at work in individual adjustment to environment and constant moulding of environment to individual striving.

These mechanistic psychologists, groping blindly over the ditch, sense the approaching light of a genetic understanding. This suggestive clause occurs in the report of their unilluminating results: "Whether this is due to a real absence of harmful effects, or to the marvelous power of the human organism to adapt itself to a changed environment." Psychology must indeed learn to go round by another way to reach these potential factors and really understand human reactions. Its purpose we know is true. Only the deeper vision, however, like Bergson's, into the continuous movement of duration, can bring it to pass.

#### THE MEDICINE DROPPER FROM VARIOUS ANGLES.

Most of us at one time or another in our careers have had occasion to give instructions to nurses, either the personal, bedside, individual sort of teaching that has so often resulted in matrimony, or by means of the classroom lecture. At any rate many of us have had occasion to point out the difference between minims and drops, emphasizing that the drop as it comes from the medicine dropper varies with the kind of fluid used. Perhaps we are not so well aware that besides this obvious variation there is another factor which is just as important. A dram of fluidextract, for example, may make 130 drops from a medicine dropper at one time, 110 at another, and only ninety at still another.

The factor causing this variation, as Dr. R. P.

Garrow has recently pointed out (*Lancet*, November 18, 1916) is the angle at which the medicine dropper is held. He tried the experiment of delivering at a uniform speed into a test tube 100 drops of normal saline solution by means of a vertical test tube and a dropper, withdrawing the solution and delivering it again with the dropper held at a slight angle. This procedure was repeated at a greater angle each time and the number of drops obtained from the same quantity of fluid was found to decrease steadily. At fifty degrees it was eighty-two drops, at twenty degrees sixty-eight drops and at zero degrees forty-eight drops. Garrow then repeated the experiment the same number of times with the dropper held vertically and the number of drops remained 100, with the exception of a drop or two lost by evaporation in the later tests.

Doctor Garrow made this series of experiments as a contribution to accuracy in laboratory technic, particularly in agglutination tests, but the internists may learn from it. It is comparatively easy to call to mind instances where the physician must be able to rely upon the drops of medicine he prescribes being uniform, for example, with drugs which are given in increasing doses, as arsenic, or opium in melancholia, and others; and if he impresses upon his nurses the importance of the angle at which the medicine dropper is held he can place more confidence in his therapy.

Doctor Garrow also found that for an equal variation of angle, e. g., ten degrees, the dilution error tends to be greater the further the angle is from the vertical. This is due of course to the fact that the size of the drop increases with the circle or oval of contact; the long axis of the oval increasing roughly as the secant of the angle of declination from the vertical—in the first eight degrees at only one sixteenth of the rate at which it does in the sixth eight degrees. Thus the difference between seventy and eighty degrees was only five drops; between ten and twenty degrees it was eight drops. He concludes that the only correct position in which to hold a medicine dropper is the vertical one, this being the easiest to adopt and maintain accurately and least liable to cause an error from slight alteration of angle.

#### MORE PHYSIOLOGY.

There has been a complaint of late that the recent graduates in medicine do not know their physiology, and it has been suggested that special courses, supplemental courses, as it were, on this subject, should be added to the curriculum. Such an announcement seems the more disappointing when it is considered that in these last few years so much expense and

time have been given to the laboratory courses in physiology.

It would be too much to say that the decline in physiological knowledge, if it is real, and the rise of the elaborate laboratory course in this subject have any relationship, but, at least, they are coincident. Laboratory work in some subjects is of more value than in others, and we doubt whether that in physiology deserves all the importance which has been attributed to it. All sciences require, for their largest grasp, a fine training—a scientific training—of the imagination. Many discoveries have been stumbled upon accidentally in the laboratory, but the scientific imagination has done most to advance knowledge. William Harvey, with all his practical investigations, never saw the blood circulate. Then laboratory work in physiology has been spent, to a great extent, on matters having little bearing on clinical work. The frog's muscle has served to pass away a large proportion of time, though for practical benefit to the student of medicine, the phenomena of muscle or of nerve stimulation by electricity could as well be grasped from the statements of the book. The essential thing, the cellular phenomenon of the muscle twitch or tetanus, cannot be seen or measured and must perforce be left to the imagination.

It is true that in the physiological laboratory the student receives some technical training leading to research—and nowadays everybody, whether at all fitted for that task or not, must do some original investigation—but it is a question whether less repetition of the work of others and some more personal problems might not be of more service in scientific training and ultimate practical use. Laboratory work in physiology is by no means to be neglected, according to this view, but it should not be overdone or misapplied.

Another reason why the recent student of medicine in some schools does not know his physiology is because his teacher presumably is a research man, little interested in sick people and less able to teach in that direction. There is no reason why the good teacher should not also be an excellent investigator, but there has been a tendency to employ men with an eye only to their efforts toward discovering new truth rather than for their ability to impart what is already known.

Modern physiology fills a ponderous volume, but so much of it is made up of unverified hypotheses, or of description of experiments, that there seems little excuse for the student's not knowing his subject, provided he is properly taught and the laboratory is not too much relied upon to furnish him all of his information.

## WASSERMANN FRAUDS.

The Health Department of the City of New York states that a number of unscrupulous physicians in the city, apparently for the most discreditable reasons, have deliberately altered the free Wassermann reports furnished them by the department's laboratory and have exhibited such false reports to their patients, although it was expressly agreed that such reports would be given only to physicians and under no circumstances to the patients. In one case the physician changed a plus minus report to read four plus. In another case four plus was changed to read plus minus, and similar changes were made in reports furnished in still other cases. The department announces that it will take drastic action in the next case of this sort which comes to its attention. No condemnation can be too severe for the physician who would resort to such practices. It would seem incredible that such things could be done, but we have the assurance of the department that the proof is in its hands. The department will have the unanimous support of the physicians of the community in taking the most drastic action against any physician guilty of such contemptible practices.

## News Items

**The Italian Medical Society of New York.**—At the April meeting of the society, which will be held on April 10th, Dr. A. Scaturro will present a paper on Prostatectomy with Spinal Anesthesia in a Case with Pulmonary, Cerebral, and Cardiac Lesions.

**New Medical Society Planned for New Orleans.**—Irish physicians of New Orleans are considering plans for the founding of a medical historical society. Dr. John T. Callan brought up the subject in annual session and a committee was named.

**New Maternity Hospital in the Bronx.**—The cornerstone of the building for the Bronx Maternity Hospital was laid Monday, April 2d. The structure, which was made possible by a ten day campaign for \$100,000, will be four stories and built of stone, and will have fifty beds.

**Maine Men for Medical Reserve.**—A selected list of 150 names of Maine physicians has been sent to Washington is reported by the Maine branch of the Committee of American Physicians for Medical Preparedness. Maine medical examiners will shortly be appointed, which will do away with the necessity of applicants going to Boston for examination.

**St. Luke's Hospital Auxiliary for Home Defence.**—In the plans for the enlargement of St. Luke's Hospital, for which Columbia University has donated part of its South Field, the personnel of the various boards and committees has been announced. The members of the medical board are as follows: Dr. Walton Martin, Dr. Samuel W. Lambert, and Dr. Francis Carter Wood.

**The Nathan Lewis Hatfield Prize and Lectureship.**—The first lecture will be delivered at the College of Physicians, Philadelphia, by Dr. A. B. MacCallum, professor of biochemistry in the University of Toronto, Monday evening, April 9th. The subject will be The Ancient Factors in the Relation Between the Blood Plasma and the Kidneys. Physicians and medical students are cordially invited.

**University of Pennsylvania Urges War Training for Students.**—Resolutions urging that three months' medical service in a military training camp be made a requisite part of courses in medicine in all first class colleges to secure a diploma were passed at a meeting of the medical council, composed of the faculty of the medical school of the University of Pennsylvania. The resolution will be presented at a meeting of the board of trustees for confirmation.



**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Tuesday, April 10th, Pediatric Society; Wednesday, April 11th, County Medical Society, Thursday, April 12th, Pathological Society; Friday, April 13th, Northern Medical Association, Atlantic County Medical Society.

**Philadelphia Hospital Units.**—Complete hospital units, including commissary as well as surgical equipment, have been formed in the Pennsylvania, the German, the Episcopal, and other Philadelphia hospitals, and are ready to take the field at once. The unit from the Pennsylvania Hospital numbers 190 persons.

**Hurrying Doctors for Service in War.**—Announcement has been made that the College of Physicians and Surgeons, Columbia University, will graduate its senior class of over one hundred men in January instead of in May, the college being kept open all summer with this end in view. It was at the suggestion of Dr. Samuel Lambert, dean of the college, that this decision was made.

**Medical Society of the State of New York.**—The 111th annual meeting of this society will be held in Utica April 23d, 24th, 25th, and 26th, with headquarters in the Hotel Utica. Dr. Martin B. Tinker, of Ithaca, is president of the society, and Dr. Floyd M. Crandall, of New York, is secretary. A preliminary program has been issued which is of unusual interest. Dr. J. M. T. Finney, of Baltimore, will deliver the Oration in Surgery at the opening session on Tuesday evening, April 24th.

**Philadelphia Orthopedic Hospital Opens New X Ray Department.**—A new x ray department has been opened at the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases. The new department has been equipped throughout with new and modern apparatus, part of which having been provided through a memorial fund to the daughter of the late Dr. S. Weir Mitchell, who was one of the founders of the hospital. Dr. Ralph S. Bromer has been installed as röntgenologist.

**Philadelphia Physicians Discuss Medical Preparedness.**—A special meeting of the Philadelphia County Medical Society was held on Wednesday evening, April 4th, for the purpose of explaining to the medical profession of Philadelphia the necessity of medical preparedness and how and why every physician should join the Medical Reserve Corps. Ways and means by which one may prepare himself for usefulness in the event of hostilities were discussed, and the measures which will be taken to take care of the practices of those physicians who may be called away from the city for service.

**Red Cross Service Ready.**—Preparations for expert nursing service for an army of 1,000,000 men are being rapidly brought to completion by the American Red Cross. The Red Cross has now enrolled for active service 2,970 nurses and more than 1,000 physicians and surgeons, while Red Cross certificates in elementary hygiene and home care of the sick have been issued to 4,450 women, who will be fitted to act as nurses' aids, making a total nursing personnel of more than 7,000. The organization has also prepared twenty-six base hospitals, each with 500 beds, at a total cost of about \$400,000. Twenty of these are completely equipped and ready for service.

**State Health Officials for Military Service.**—Dr. Herman M. Biggs, State Commissioner of Health of New York, has placed the health officers of the State, numbering about 1,000, at the disposal of the military authorities to make preliminary medical examination of the troops, with a view to preventing congestion at recruiting stations. The department is also preparing a mobile laboratory unit for diagnostic service wherever it may be required in connection with the mobilization of troops. Large supplies of bacterial and smallpox vaccines, antitoxins, etc., have been provided by the State Health Department, the surplus of which, above that required for the State troops will be available for Federal authorities. Doctor Biggs directs attention to the fact that the State Department Laboratory furnished a large supply of antipneumonia serum for the Texas border service, over four hundred cases having been treated with excellent results.

**Health Campaign among Negroes.**—To combat the high death rate among the negroes of New York the Department of Health, in cooperation with the National League on Urban Conditions Among Negroes, will conduct an educational campaign the last two weeks in April. Figures prepared by Dr. W. H. Guilfoyle, director of the Bureau of Records, show that the general death rate among negroes in this city is almost double that of the population at large and that colored babies born in this city have only half the chance of living through the first year that white babies have.

**Civil Service Examinations.**—The United States Civil Service Commission announces an open competitive examination for assistant curator, Division of Medicine, for men only, on May 2, 1917. A vacancy in the National Museum at Washington, D. C., at a salary ranging from \$1,500 to \$1,800 and future vacancies will be filled from this list. The commission also announces an open competitive examination for medical interne for men and women on June 6, 1917. A vacancy at St. Elizabeth's Hospital, Washington, D. C., the Government hospital for the insane, at \$900 a year, and future vacancies, will be filled from this examination. For information about the examination apply to the Civil Service Commission, Washington, D. C.

**The Rockefeller War Hospital** will be established by the Rockefeller Institute under the supervision of Dr. Alexis Carrel on the grounds of the institute at Avenue A and Sixty-sixth Street, New York. The entire plant will be ready within twelve weeks and will furnish one hundred beds. Dr. Carrel will return from France with Dr. Henry Dakin to conduct this hospital for the teaching of the proper technique and the application of the Carrel-Dakin method of the treatment of wounds. Groups of military surgeons will be assigned successively to study this method under Dr. Carrel's supervision. The project has received the endorsement of the army, the navy, and the public health service. An appropriation of \$200,000 has been made for the hospital by the Rockefeller Foundation.

**Orthopedic Surgeons Organize.**—At a meeting of orthopedic surgeons and the heads of several orthopedic hospitals of New York, held at the New York Hospital for the Ruptured and Crippled on Thursday, March 29th, at the invitation of Dr. Virgil P. Gibney, an organization was formed for the surgical care and treatment of orthopedic patients in the event of hostilities. A canvass among those present at the meeting disclosed the fact that the orthopedic hospitals of New York were in a position to receive and care for several hundred extra patients. A committee was formed to devise ways and means for the further enlargement of the plans and scope of the organization, with the following members: Dr. Virgil P. Gibney, chairman, Dr. Henry Ling Taylor, Dr. Russell A. Hibbs, Dr. Reginald H. Sayre, and Dr. Henry W. Frauenthal. Doctor Gibney was unanimously elected president of the new association and Dr. George Barrie secretary.

**Columbia University Proposes a Huge Base Hospital.**—The trustees of Columbia University have adopted plans, originated and submitted by Dr. J. Bentley Squier, professor of urology in the university, providing for an emergency base hospital of 1,000 beds from which mobile field units may be despatched. President Nicholas Murray Butler and the finance committee have been authorized to begin a campaign for subscriptions to the necessary fund of probably a million dollars. While the hospital is intended to fill an immediate need it will be made a permanent institution available for use in any emergency requiring the treatment of a great number of persons. It will become the centre of the College of Physicians and Surgeons, the medical department of the university, and will be open to those seeking instruction in medical and surgical work under any system of universal training adopted by the government. All future students graduating from that college will have received military surgical training and these men will be of incalculable value to their country in case of war. The plan provides for the erection of a model field unit to be operated as an instruction hospital at once so that in a short time men properly trained for field work can be equipped for service.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 611.)

Since the first installment of this series was written, an unusual scarcity in available supplies of opium has been manifest, with a corresponding rise in price not only of the crude drug but also of its various alkaloidal derivatives. In the case of morphine and codeine the increase in cost amounts to about twenty per cent., and in the case of diacetylmorphine, or heroine, to about thirty-three per cent., over the prices prevailing a month or six weeks ago. At present, comparing morphine, chloral hydrate, and sodium bromide as regards ratio of cost of hypnotic power—disregarding for the moment the differing indications for the three drugs under varying circumstances—we find morphine sulphate for hypodermic use slightly more expensive than chloral hydrate as a sleep producer, while sodium bromide, even in a dose three times as large as that of chloral hydrate, is now but one half as costly as the latter. As already pointed out, advantage may be derived through the mutual potentiation of morphine and chloral hydrate to reduce the cost of an hypnotic action by combined administration of the two drugs in amounts less than one half the ordinary doses.<sup>1</sup> Again, the action of alcohol in accentuating the sedative effect of chloral hydrate is well known, and according to Mansfeld and Hamburger, 1915, both chloral hydrate and morphine are reinforced by ether, which, in their estimation, facilitates the distribution of these drugs in the nervous system. The administration of chloral hydrate with a suitable dose of spirit of ether and, possibly, the internal use of spirit of ether before an injection of morphine, thus suggest themselves as measures permitting of reduction in the amounts of chloral hydrate or morphine given, although probably, in view of the high cost of ether, no expense reduction through such combinations is to be expected.

The last important hypnotic drug requiring consideration is scopolamine, or hyoscine, which has increased in value about fifty per cent. since the beginning of the European War, yet by virtue of the smallness of the dose required has remained a relatively inexpensive somnifacient. Although different samples of commercial hyoscine are liable to considerable variation in their rotatory property when examined with the polariscope, Cushny has shown that these variations are reflected only in the peripheral actions of the drug, the hypnotic action remaining approximately the same whatever the degree of rotary power, provided the sample is almost or quite free of impurities. In the official average dose of 1/200 grain, hyoscine hydrobromide is but one third

as costly as one quarter grain of morphine sulphate or fifteen grains of chloral hydrate, and is therefore on a par with sodium bromide among the least expensive hypnotics. Though less certain than chloral hydrate, it is advantageous compared to morphine in being practically free of the habit forming tendency and, in small doses, obviating any depressant action on the respiratory centre. Dryness of mucous membranes, pupillary dilatation, and impairment of accommodation may, however, follow its use, and in a few instances more severe toxic manifestations have been noted after administration even of doses smaller than 1/100 grain. In relation to the undesirable peripheral actions of hyoscine in these cases and considering the findings of Cushny as regards the influence of varying degrees of rotatory power on the effects of the drug, the preparation of a purely dextrorotatory hyoscine, which would be almost free of the peripheral actions, yet preserve the central hypnotic action and be used exclusively for the latter purpose, would seem advantageous.

Some reduction of outlay could undoubtedly be effected by combined administration of the relatively inexpensive scopolamine hydrobromide with the more costly drugs. Especially does this apply to the combination of scopolamine with morphine, a distinct potentiation being known to occur when these alkaloids are simultaneously given. As Sollmann states, small amounts of scopolamine, e. g., 1/300 grain, may be employed to heighten the somnifacient property of morphine. The amount just referred to, costing but one ninth the customary full dose of morphine, would, if combined with the latter, probably more than pay for itself by permitting of a considerable reduction in the amount of morphine used. The smallness of the dose of scopolamine employed would largely obviate the risk of an unexpectedly severe sedative action, even in cases of idiosyncrasy to this alkaloid, and the well known analgesic power of the combination would probably be found of advantage in the very cases in which morphine is particularly used as a hypnotic, viz., in those associated with pains of inflammatory and organic origin.

As regards simultaneous use of scopolamine and chloral hydrate, probably little or no potentiation is to be expected from such a combination, though the combined cost of half doses of each of these agents would be somewhat less than that of a full dose of chloral hydrate. Nor does potentiation occur in the use of scopolamine with sodium bromide. Such a combination, however, in which the chloral hydrate of the popular chloral bromide mixture would be replaced by the less costly scopolamine, would afford an appreciable reduction in outlay, and apparently represents the least expensive way in which a fairly strong hypnotic action is, under present conditions, procurable with drugs. To obviate the disadvantage of employing two routes of administration, the scopolamine could be given with the bro-

<sup>1</sup>In the issue of March 24, 1917, on page 562, second column, twenty-fifth line, "one fifth" should have read "one half."



mide by mouth, in a dose slightly larger than that one would intend to administer hypodermically. Gastric irritation from such a combination would be less than from the chloral bromide mixture, though the latter would be somewhat more certain in its hypnotic action.

Considering artificial sleep production as a whole, it should be borne in mind that in many instances very small doses of drugs will prove sufficient, at least in the beginning, sleep often persisting indefinitely when once the influence hindering its onset has been overcome. Expense reduction may also be facilitated by complete attention to simple nonpharmaceutical means of inducing sleep, such as the taking of a warm general bath, sitz bath, or hot foot bath before retiring; a running cold foot bath for a few minutes, followed by drying with a rough towel (Broadbent); the eating of a few crackers; exercise to the point of slight fatigue; application of cold or heat over congested tissues in the event of local discomfort, etc. Discovery and successful correction of a cause of the sleeplessness will remove further need of hypnotics. The action of hypnotics themselves is hastened and accentuated, thus reducing the necessary dose, by their administration well diluted in some hot fluid.

(To be continued.)

**The Transfusion of Blood with Reference to Pernicious Anemia.**—O. Leyton (*Practitioner*, March, 1917) considers that, at present, massive transfusions of blood offer the greatest chance of improvement to sufferers from pernicious anemia. He employs a very elaborate apparatus and gives warning that any error in the technic may be followed by a fatal result. The procedure is one which should be attempted only by those who have had considerable experience in intravenous injections and are well acquainted with the physiological teachings about clotting of blood. The apparatus and solutions required are: Six all glass twenty c. c. syringes. To the nozzles of these, pieces of thick walled rubber tubing are fixed. The lumen of the tube should be such that ten centimetres in length has a capacity of one c. c. To the end of these tubes nozzles are fixed which will fit the needles. A selection of hollow needles, the lumens of which are considerably greater than that of an exploring needle, with so called intravenous points. Each needle is fitted with a series of cannulae, which are blunt ended and of a length to project just beyond the point of the needle. There are two armlets similar to those used with a Riva-Rocci blood pressure apparatus. Two vessels to contain normal saline, fitted with tubes to which nozzles to fit the needles are attached, and controlled with single handled clips. Sterile normal saline made with quite recently distilled water. A solution of sodium citrate, five per cent., in half strength normal saline. Liquid paraffine. Tincture of iodine. Sterile towels, gauze, etc., and very large quantities of sterile water. The one and only difficulty to contend with is clotting of the blood, which occurs most frequently in the needles. To meet this difficulty a double needle is used, the inner cannula of which can be removed when blood has

clotted in it. Clearing the cannula with a stylet and then replacing it is almost useless, because a fresh clot forms very quickly. A fresh cannula well coated with liquid paraffine should be used, if necessary a third and fourth. This clotting will occur in the needle in the vein of the donor as well as in that of the patient. No attempt should be made to clear a needle when the clot from it would pass into a vein. Every precaution must be used to prevent injecting either air or liquid paraffine into the patient. Everything is boiled that can be sterilized that way, except the needles, which are heated in liquid paraffine. The syringes with their tubes and nozzles are rinsed out with liquid paraffine, all excess is drained away, and the tubes and nozzles are then filled with the sodium citrate solution. The armlets are applied to the upper arms of the patient and the donor loosely so as not to compress the arms. The flexor surfaces of the elbows are painted with iodine, the armlets inflated, and the needles inserted into suitable veins. While the first syringe is being filled with blood normal saline is allowed to flow into the patient. The filled syringe is disconnected from the cannula placed in the needle in the donor's vein and connected with the cannula passing to the patient. The blood is injected at the same rate as it is withdrawn from the donor, so that the time during which the blood remains stationary in the needles shall be reduced to a minimum. If any hitch occurs the interval is filled by injecting saline into donor or patient. Another syringe is then used while the first used is being washed. When the blood in a cannula clots, the cannula must be replaced by another. The transference of 600 c. c. of blood can be carried out in this way quite rapidly. Even with perfectly matched bloods reactions may occur, but they may be prevented by the administration half an hour before the injection of 1/150 grain of hyoscine methyl bromide along with a sixth of a grain of morphine.

**Renal Functional Tests.**—J. T. Gerachty (*Southern Medical Journal*, March, 1917) says that the three tests of renal function more or less in general use today are the water, or polyuria test, the phthalein test, and the estimation of the blood urea. The first is the simplest and can be carried out as follows for an estimation of combined renal functions: The patient is given a limited quantity of fluid to drink in the evening and the urine is collected in the morning. The patient then is given 400 to 500 c. c. of water to drink, the urine is collected at the end of one hour and again at the end of the second hour. The specific gravity of the first morning urine is taken, or better the urea concentration is estimated. Then the specific gravity of the two succeeding specimens is taken, or the urea concentration in each specimen is determined. The determination of the specific gravity really furnishes for practical purposes the information desired. If the kidneys are normal the specific gravity of the concentrated early morning urine will differ considerably from that after the ingestion of a large amount of fluid, but when they are diseased the variation becomes less and less as the renal lesion is the more severe.

The phthalein test is nearly as simple, but gives



more information and is more reliable. One c. c. or 0.006 gram of the drug is injected intramuscularly, and the urine is collected for one or two hours, each specimen being collected separately. The amount of phthalein which is excreted in that period of time is estimated by means of a simple colorimeter and the quantity excreted compared with the amount excreted by normal kidneys, which should be from fifty to sixty per cent. for one hour following an intramuscular or intravenous injection. In cardiorenal cases combined functional and clinical studies are necessary in order to determine relative responsibility of the heart and of the kidneys for the existence of the symptom complex. In the presence of severe clinical symptoms the findings of a good phthalein output along with the absence of phenomena point to the heart as the responsible factor. Low phthalein output with cumulative phenomena indicates a severe lesion of heart, or kidneys, or both, in any case a serious prognosis. A low output persisting after marked improvement in the cardiac condition indicates serious renal disease. This test is surprisingly good except in the severest cases of congestion. In cases in which the output is low it rises with the first indication of cardiac improvement. This test has also been found to be of considerable value in differentiating cases of hypertension in which the renal condition is secondary, from cases of hypertension in which the renal condition is primary. If the excretion shown by the phthalein test is nearly or quite normal, no other functional studies are necessary, but if the output is low a blood urea estimation is usually made, because a low phthalein with normal blood urea has a more favorable prognosis than a low phthalein with markedly increased blood urea.

**Results of Treatments for Fractures of Carpal Bones.**—Herman W. Marshall (*Boston Medical and Surgical Journal*, March 8, 1917) says that the very large majority of injuries to carpal bones are fractures of the scaphoid. Early fractures of scaphoid bones without displacement of the fragments should be protected for from one to four weeks, after which passive and active movements should be resumed until painful symptoms subside. Such early fractures resulting from slight injuries should not be operated on, because many wrists regain food function with very little medical care. Old ununited fractures of scaphoid bones without displacement of the fragments should be operated on if soreness persists for a long period, or recurs frequently enough to cause a serious disability. Occupational elements are important ones in determining subsequent disabilities. Workmen whose occupations compel constant severe use of their wrists will be incapacitated longer than those whose work requires only intermittent light use of their wrists, other factors being equal. The length of time which should be allowed to elapse between the injury and the time of operation differs widely according to different occupations, different degrees of initial injuries, and varying constitutional conditions of the patients. Decisions as to surgical intervention should be made by comparisons of the existing degrees of incapacity with probable results of surgical treatment and its attendant sequelæ in the

form of repair from surgical trauma and the disturbing of the normal bony relations of the wrists. Factors, with accompanying irreducible dislocations of the semilunar bones should be operated on soon. Perfect restorations of wrist motions after operations appear to be rare, but fairly serviceable wrists ultimately should be expected. Protecting wristlets are useful for patients who are in intermediate stages, or for brief recurrences of symptoms in old cases, if supports are made movable so as to be used to regulate more accurately changing proportions of exercise and rest which have to be made in restorations of normal functions. Wristlets can be employed easily in a way to furnish too much protection and thus prolong recovery.

**Acidbase Equilibrium and Carbohydrate Metabolism.**—Frank P. Underhill (*Journal A. M. A.*, February 17, 1917) cites the results of animal experiments which seem to show that disturbance in the acidbase balance in the tissues in the direction of acid excess leads to glycosuria and hyperglycemia. Change in the opposite direction seems to diminish both glycosuria and hyperglycemia. These animal observations can be transferred to human diabetes as shown by two cases here reported. In the one, an extreme diabetes, the continual administration of sodium bicarbonate in amounts up to 120 grams daily kept the patient's urine nearly sugar free after the strictest dietetic limitations had failed. In another less severe case a pronounced increase in sugar tolerance was caused by bicarbonate so long as it was continued. Such enormous amounts of sodium bicarbonate are best given in six or seven equal doses throughout the waking hours, dissolved in a plain carbonated water if nausea and vomiting are to be avoided. The effect of the bicarbonate is attributed to the neutralization of the endogenous and exogenous acids of the organism.

**The Treatment of Bony Defects of the Lower Jaw.**—Clarence A. McWilliams (*Annals of Surgery*, March, 1917) says that the main lessons to be learned from patients suffering from bony defects of the lower jaw are as follows: 1. Infection from the mouth at the time of making the grafts is absolutely fatal to the entire graft. 2. Infection appearing weeks after the grafting, not dependent on immediate connection with the mouth, is by no means fatal to the entire graft. A part only of the graft may necrose away. 3. No grafting should be made in the presence of a sinus or into a granulating cavity. 4. Grafting should be performed any number of times until a successful result is obtained. 5. In view of the great liability of bone grafts into the lower jaw to infection, the author is inclined in his next cases to use costal cartilage as grafting material, since this is more viable than bone grafts and is not so apt to become infected. 6. Absolute immobility of the lower jaw is a *sine qua non* to a successful result. Wiring the teeth has proved, in the author's experience, more successful than splints. 7. The inlaying of the graft, always with the periosteum, into grooves cut in the sides of the fragments would seem to be a more scientific procedure than an end to end grafting.

**Septal Hemorrhage: Its Cure by Submucous Elevation.**—John Leshure (*American Journal of Surgery*, March, 1917) summarizes this subject as follows: The object attained by incision and elevation of the mucoperichondrium is free surgical access to the bleeding area, and the rational treatment of a bleeding vessel is compression, causing obliteration of its lumen. Compression *en masse* with a flat bladed forceps reaches all parts of the membrane and if thoroughly done results in permanent cure. It is one of the most satisfactory methods of managing cases of septal hemorrhage in children, since the operative treatment is completed at one sitting, and no prolonged aftertreatment is required. Although the number of cases reported is comparatively small, the evidence adduced, is so favorable to this method of operation that it is recommended as a routine procedure in appropriate cases.

**The Etiology and Treatment of Varicose Ulcer of the Leg.**—John Homans (*Surgery, Gynecology, and Obstetrics*, March 1917) comes to these conclusions: 1. Varicose ulcers take origin in profound nutritional disturbances attributable to varicose veins, but their incidence and development are profoundly influenced by trauma and infection. 2. Varicose ulcers arising from the familiar type of surface varix run a chronic course and are generally healed by adequate removal of varicose veins. 3. Varicose ulcers dependent upon postphlebotic varix are characteristically different from the first class in appearance, rapid in development, always tractable to palliative treatment, generally incurable by the removal of varicose veins alone, and must be excised to be cured. 4. The lower leg, once the seat of phlebitis, must be most carefully dissected, and every means should be employed to improve, during a protracted convalescence, the circulatory conditions in the leg. 5. Chronic ulcers originating in trauma and infection should, if well defined, be excised and grafted.

**Treatment of Barber's Itch.**—Oscar L. Levin (*Medical Record*, February 24, 1917) states that the cure of tinea sycosis depends upon the destruction of the microorganisms. When the infection is superficial direct application of parasitocides will suffice, but where there is deep infection of the follicles a reaction is produced in the skin thus making it a poor medium for the growth of the organisms which are thereby indirectly destroyed. The patient should shave daily, and twice daily the infected areas should be washed with soap and water to remove debris and fungi, then ointments are thoroughly rubbed into the lesions. Where the incidental discoloration is not objectionable Jackson's formula may be used consisting of one dram of iodine crystals in sufficient goose grease to make one ounce. Another good combination is the following:

R Unguenti sulphuris, ..... 3iii;  
Hydrargyri oxidi rubris, ..... 5jss;  
Unguenti zinci oxidi, ad q. s., ..... 5j.

Other methods of treatment are the application of moist bichloride dressings while the patient is indoors with use of five per cent. ammoniated mercury ointment when going outdoors. Cataphoresis or x ray applications may be required in stubborn cases.

**Removal of Drug Stains from the Skin and Clothing.**—O. Mankiewicz (*Medizinische Klinik*, December 24, 1916) says that iodine stains can be removed by moistening with ammonia or a solution of sodium thiosulphate. Silver nitrate stains may be removed by washing with a ten per cent. solution of potassium cyanide or a ten per cent. potassium iodide solution, the yellow silver iodide being washed away with sulphurous acid. A solution of bichloride of mercury and ammonium chloride, equal parts, in the proportion of ten grams of each to eighty mils of water is also effective. Benzol will remove chrysarobin stains and weak citric acid those of resorcin. Picric acid can be removed by the application of potassium sulphate for a minute or two followed by the free use of soap and water, or by vigorous rubbing with a suspension of magnesium carbonate in water. Fresh stains from pyrogallol can be removed with a warm ten per cent. solution of the sulphate of iron, applied until the stain turns bluish black; washed with an abundance of water; followed by a solution of acid potassium oxalate; and in turn by free rinsing. Old pyrogallol stains cannot be removed. Alcoholic solutions of soap are effective in removing tar stains.

**The Bladder in Gunshot and Other Injuries to the Spinal Cord.**—J. W. Thomson Walker (*Lancet*, February 3, 1917) points out that cord lesions are almost invariably associated with disturbances of the bladder function which may be urinary retention, retention with overflow, periodic reflex micturition, or paralytic incontinence. In over ninety per cent. of the cases serious infection of the urinary tract has been present as a complication and has been the commonest cause of death in cases not promptly fatal. The first step in either prevention or treatment of infection is the provision for the removal of the retained urine. This may be accomplished by the repeated use of the catheter, by the use of the tied in catheter, or by suprapubic drainage. The bladder itself should be irrigated with large volumes of bland, nonirritating fluids, introduced through a small catheter from a low elevation so as not to overdistend it. The wash used should be such as to counteract the extreme acidity or alkalinity of the urine, as the case may be. Extreme alkalinity is the most common and an excellent wash is acetic acid in water in the proportion of one to 125. If thought necessary solutions of potassium permanganate, one to 8,000, or silver nitrate, one to 10,000, may be used. Drugs should be administered internally to counteract the reaction of the urine, such as bicarbonate of soda, potassium citrate or acetate, or the alkaline diuretic waters, for cases with hyperacid urine, or acid sodium phosphate or sodium benzoate for alkaline ones. The intense inflammation of the bladder mucosa may be ameliorated in its early stages by the administration of sandalwood oil. Vaccine treatment is also of value in the control of the infections. It is further suggested that suprapubic cystostomy may be used in selected cases, either as a prophylactic measure to relieve the tension on the bladder and prevent infection, or as a therapeutic procedure to combat the severe cystitis so common in these cases.



**Action of Pituitrin on the Surviving Human Uterus.**—F. J. Charteris (*Glasgow Medical Journal*, February, 1917) reports experimental observations on the action of pituitrin on strips of human uterine tissue immersed in Tyrode's modification of Ringer's solution, kept at 39 to 41° C. A stream of oxygen was kept bubbling through the solution, and in from forty to sixty minutes the uterine strips began to show regular contractions. The material used included nonpregnant uterine tissue, tissue removed after early abortion, and tissue removed by Cæsarean section at full time. No essential difference was noted in the response of pregnant and nonpregnant uterine tissue to pituitrin, both promptly showing increased activity. The contractions under pituitrin were more numerous, the individual contractions shorter, the relaxation somewhat quicker, and the tonus markedly increased. The stimulation appeared within a minute after the addition of pituitrin and usually lasted from fifteen to thirty minutes. A subsequent additional dose either renewed the stimulus or intensified the action if the previous effect had not entirely passed off. Various other uterine tonics were tested—adrenalin, ergotin, fluid-extract of ergot, and quinine, but none of these produced the prompt effect of pituitrin. Fresh standardized preparations of ergot were fairly active, but old preparations inactive. When pituitrin was tested in conditions analogous to those in which it is used clinically, e. g., when the uterine contractions were failing in strength or ceasing, its stimulant action was well shown.

**Minor Injuries to Joints.**—Frank Romer (*British Medical Journal*, February 10, 1917) emphasizes the common practice of not paying sufficient attention to the care of the minor injuries to joints and the ill aftereffects and delay in complete recovery which are likely to ensue. The proper treatment is to begin at once with massage of the gentlest type, a daily seance of twenty minutes' duration being given. This may be combined with the application of heat if desired, and as the swelling and pain begin to subside the massage should be increased in force and some active motion of the joint encouraged. This plan materially hastens the disappearance of edema and fluid in the joint and serves to diminish greatly the degree of muscular wasting which attends any joint injury. In the case of sprain of the ankle the best results are to be secured from the immediate application of adhesive plaster strapping according to the method described by Hood, in such a way as to give support to the joint while permitting normal movements. The patient is then encouraged to use his ankle and the plaster acts as a massaging dressing. After three days the plaster should be reapplied to conform to the less swollen part. It should never be applied tighter than a snug fitting glove, but should also not be so loose as not to give adequate support. Dislocation of the shoulder joint is best treated by the application of an adhesive plaster strap to encircle the joint over a pad of cotton placed in the axilla. The patient should be instructed not to raise his arm above the level of the shoulder for a week, but he may use his arm in other positions. More elaborate dressings than this are not needed and tend to have the disadvantage of promoting the

formation of adhesions. In the case of sprains of the knee massage suffices for the milder cases, while repeated tapping of the joint should be added in those in which there is much fluid in the cavity. In the knee joint injuries weaken the muscles which are the chief supports and it is necessary to begin exercises of the joint as soon as the acute symptoms have passed. These should throw the least possible strain on the joint at first and should be increased very gradually, as overdoing tends to provoke recurrence.

**Vaccination by Puncture.**—H. W. Hill (*British Medical Journal*, February 10, 1917) describes an extremely simple and rapid method of vaccinating against smallpox. The arm is washed with soap, alcohol, and ether in turn and three or four small drops of virus are placed upon the skin about two inches apart. With an ordinary sewing needle six punctures are made through each of these drops. The punctures should draw no blood and should not extend below the epithelial layer. Immediately after this is completed the vaccine can be wiped from the arm and nothing further should then be done throughout the entire course of the process. By this method vaccination is rapid and simple and all danger of infection from the production of an open abrasion is avoided. The scabs should be left alone to fall off of themselves and no dressing whatever should be applied at any stage of the development and drying up of the pustule.

**Seminal Vesiculitis.**—A. C. Stokes (*Journal A. M. A.*, March 10, 1917) reports upon a series of fifty-two cases in which this condition was present. The conclusion is reached that seminal vesiculotomy is rarely indicated, and should not be performed except in cases of empyema of the vesicle with general sepsis and no tissue destruction. The operation for drainage cannot remove the disease in chronic cases and the pathological condition will return when the wound has healed. General medical and mechanical measures should be instituted and vasotomy performed. If these measures fail to relieve the condition it is far better to do a vesiculectomy and shell out the entire organ than a vesiculectomy, which is almost as serious an operation. Along with any form of treatment adopted for the vesicles adequate attention should be given to the other annexa of the urethra, which are almost invariably more or less involved.

**The Carrel Method of Wound Sterilization.**—William O'Neill Sherman (*Surgery, Gynecology, and Obstetrics*, March, 1917) states with regard to this method as follows: 1. Infection can be aborted if the treatment is begun within the first twenty-four hours. 2. Suppuration, when well established can be controlled if the focus can be reached. 3. The success of the treatment is dependent upon the perfection of the Carrel technic and the acceptance of all the details. 4. The effect of Dakin's solution is entirely local; there being no danger of toxemia from absorption, regardless of the amount used. 5. Carrel's technic, using Dakin's solution, is a specific against infection of wounds. 6. Deaver's dictum: "He who drains well, does surgery well," must be revised to, "He who does Carrel well, does surgery well."



# Miscellany from Home and Foreign Journals

**Early Diagnosis of Insanity.**—Max A. Bahr (*Western Medical Times*, March, 1917) illustrates some factors in the early diagnosis of insanity by a few cases and presents the following summary. A mental diagnosis should be made with a view to represent disease entities, rather than purely symptomatic phenomena. The differentiation between sanity, mental disorder, and insanity is more or less arbitrary. Alcoholic intoxication or drunkenness is to be differentiated from those cases in which distinct structural changes are brought about in the brain in consequence of long continued use of the drug. In postinfection exhaustion psychoses it is necessary to eliminate the immediate effects of such autotoxic factors as uremia, or the immediate response of a septic toxemia of an infection. The early development of hallucinations with early progressive mental deterioration, with greater disturbance of the emotions and delusions less elaborated and connected, speaks for paranoid dementia præcox rather than a true paranoia. In all suspected cases insist on an early laboratory examination to determine a psychosis of an organic nature of unfavorable outcome from a recoverable, so called functional disease.

**Significance of High Pulse Pressure.**—Louis M. Warfield (*Journal A. M. A.*, February 17, 1917) points out that a pulse pressure between thirty and fifty mm. Hg may be considered as normal; that one which is below thirty mm. is seldom found to continue over a long period of time, being incompatible with the maintenance of a sufficient circulation; and that one of 100 mm. Hg or over may occur in persons with good health and considerable bodily and mental vigor. A study of the subject of high pulse pressure has shown that there are four correlated factors which are present in all cases. These are: 1, an increase in the size of the left ventricle with an increased volume output in a unit of time; 2, an actual and permanent increase in the diameter of the aortic arch, occurring as a compensatory response to the enlargement of the ventricle; 3, breath sounds varying from bronchial to intensely tubular over the lower half of the manubrium; and 4, an increase in the size of all of the large distributing arteries, such as the carotids, brachials, femorals, celiac axis, etc. Fibrous sclerosis of the larger arteries causes them to enlarge, become tortuous, and lose much of their elasticity. They conduct the blood less efficiently and a greater volume is required for the supply of the organs. More force is required to send the blood through such vessels and as a compensatory process the pulse pressure increases through dilatation and hypertrophy of the left ventricle. The next step is the development of fibrosis in the ventricle itself which involves the myocardium. In chronic interstitial nephritis the arterial sclerosis may be a secondary process to the hypertension. In aortic insufficiency the pulse pressure is abnormally high. The pulse pressure is the really important part of blood pressure determination, and is of great prognostic value.

**Rectal Anesthesia by Means of Ether.**—J. B. Montoya y Florez (*Surgery, Gynecology, and Obstetrics*, March, 1917) concludes with respect to this means of anesthesia: Rectal anesthesia with an oil ether mixture, in a quantity proportional to the weight of the patient, is simple and sufficient; tranquil, deep, and prolonged sleep follows the dose. Its disadvantage is the predisposition to diarrhea and enterorrhagia by which is caused the irritation of the rectal mucosa. Postoperative morbidity and mortality with rectal anesthesia appears to be greater than with the methods commonly used. It seems contraindicated in infections and in tuberculous cases; also in the aged. At present and until some means are found to suppress the irritation which ether produces on the rectal mucosa, rectal anesthesia will be an exceptional procedure which ought only be employed in operations on the nasopharyngeal cavities, face, and some parts of the neck, especially when the surgeon lacks a competent anesthetist.

**A Simple Method for Locating Projectiles in the Tissues.**—E. Albert-Weil (*Bulletin de l'Académie de médecine*, February 13, 1917) describes a procedure involving both radioscopy and radiography and consuming but little time. The initial radioscopy is effected with the aid of an accurately centred x ray tube placed under the table, which should be transparent to the rays. The part containing the foreign body having been placed on the table in a position which can be easily resumed for subsequent examinations, the normal ray, perpendicular to the table and passing through the foreign body is determined and the point at which it emerges from the upper surface of the wounded part marked with ink and later by light cauterization. The second stage of the procedure consists in securing two x ray plates from different angles by means of a tube placed above the examination table. A sensitive plate is slipped under the wounded part and the landmark previously ascertained by radioscopy covered with a small piece of metal. An x ray tube is then placed with its anticathode precisely sixty centimetres above this landmark, and the first x ray exposure made. The tube is then displaced horizontally six centimetres from its original position and a second exposure made, using the same plate in the same position. Before dismissing the patient the distance from the surface landmark to the x ray plate is measured, for control purposes. The plate obtained contains two images of the landmark and also two images of the foreign body. The distance between the two images of the latter yields, upon appropriate calculation, the distance which separated it from the plate, while the separation of the two images of the landmark yields the distance from this landmark to the plate. A special, inexpensive, graduated ruler has been devised from which a rapid estimation of the depth of the projectile can be made. By using several surface landmarks, the depths of several foreign bodies embedded in the same part can be simultaneously ascertained.

**Chronic Amebiasis.**—Paul Ravaut (*Presse médicale*, February 8, 1917) lays stress, after referring to the increasing number of cases of amebic dysentery met with in France since the beginning of the war, on the frequency with which, in cases of amebiasis now met with, the initial acute stage seems to have been attenuated or completely absent. Most of these cases have been erroneously labelled gastro-enteritis with anemia, chronic enteritis, diarrhea with general weakness, etc. Generally the initial symptoms consist merely of glairy and bloodstained stools for a day or two, followed by simple diarrhea, rapid impairment of digestion, anorexia, weakness, a yellowish tint of the skin, and after a time, a sub-icteric appearance of the conjunctivæ. Colicky or needlelike pains are experienced during the digestive periods, with or without toxemia, and palpation reveals tenderness in the epigastrium and over the colic flexures and iliac colon. The stools are exceedingly copious and pasty and at times may be so bloody as to suggest internal hemorrhoids. Rheumatoid pains are sometimes noticed which, however, are chiefly osseous—purely articular disturbances being absent—and are uninfluenced by salicylates. To these symptoms are frequently added those of hepatitis or inflammation of the suprarenals. The condition runs a slow, insidious course. There is always danger of hepatic abscess, too often recognized only at the autopsy. If beginning hepatitis is actually detected, further hepatic trouble can be constantly ward off by antiamebic treatment.

**Radium Applicators for Malignant Diseases of the Mouth and Pharynx.**—Charles H. Bubb (*Archives of Radiology and Electrotherapy*, February, 1917) states that he uses an appliance which consists of a vulcanite plate with an extension carried backward corresponding to the area of the growth, but not in contact with its surface, a space of three sixteenths inch intervening. On the palatal or upper surface of this vulcanite extension is fashioned a series of anteroposterior and lateral grooves. The grooves are lined with lead and serve to accommodate one or more tubes of radium. The tubes are prevented from slipping by two metal flanges, working on a swivel at one end and notched at the other end to allow the flange, in the closed position, to embrace a screw, inserted into the vulcanite. This screw can be tightened when necessary. By this means the radium tubes are securely retained in a known position. The lead lining screens the surrounding tissues sufficiently. This applicator was used in a case of endothelioma of the soft palate. Another appliance was adopted in a case of recurrent epithelioma of the pharynx in which the patient had a solitary canine tooth standing in the upper jaw. This apparatus consisted of a shell crown, divided on its buccal surface, to which was attached a screw and threaded bolt so that a firm grip was always maintained on the tooth. From this gold crown an oval wire extended backward to give attachment to a vulcanite block, corresponding roughly in size to the area of the growth. The block was lined with lead on its palatal and pharyngeal surfaces and permitted the insertion of a lozenge shaped radium tube as well as a circular one.

**Heart Disease Among Elementary School Children.**—John Priestley (*British Journal of Children's Diseases*, December, 1916) asserts that forty per cent. of the children attending elementary school show some cardiac abnormality, either trivial or otherwise. In four successive years school inspectors examining approximately 20,000 children annually found that 6.2 per cent., 5.9 per cent., 7.17 per cent., and 7.15 per cent. of the children had some heart affection. The group of functional cases is larger than the organic. Among the organic cases those showing a mitral regurgitant murmur are the most frequent, 83.1 per cent. Simple dilatation was present in 0.5 per cent.

**Colloidal Gold Reaction in the Spinal Fluid in Poliomyelitis.**—Lloyd D. Felton and Kenneth F. Maxcy (*Journal A. M. A.*, March 10, 1917) state that they applied the colloidal gold test to the spinal fluid in fifty-seven cases in different stages of the disease. They found that the reaction was positive in dilutions from one to forty to one in 160 in all cases in the acute stage. During the second and third weeks the reaction remained practically the same as in the acute stage, but with some tendency to clear up in certain cases. During the fourth to the eighth weeks the reaction ran parallel to the globulin albumin content of the fluid, but often occurred in dilutions from one to forty to one to 160. Throughout the disease, when the fluid reacted to the gold test the reaction occurred almost constantly in the same zone, namely the so called "luteic zone," and was therefore of help in the diagnosis of the disease.

**Altered Electrical Reactions Resulting from Lowered Local Temperature.**—H. Bordier (*Bulletin de l'Académie de médecine*, February 6, 1917), observing evidences of the reaction of degeneration in muscles the motor nerves of which had in no way been injured, and having noticed that these abnormal reactions disappeared in numerous cases at the end of April, was finally led to the conclusion that exposure to cold may be the cause of peculiar findings of this character. The small muscles of the hands and feet were those chiefly affected, exhibiting both a sluggish contraction to the galvanic current, polar inversion, and a more or less marked lowering of faradic excitability. Occasionally, where the reduction of temperature had taken effect as high as the ulnar or median nerve at the wrist, the nerve also exhibited a reduction of galvanic and faradic excitability. Experimentation showed that these phenomena could be reproduced by merely placing the hand in a mixture of cracked ice and water for about fifteen minutes. Clinically, the interosseous and hypothenar muscles most often showed the peculiar reactions, the thenar muscles being better protected against exposure. The same reactions were observed in wounded men with contracture of the flexors of the foot, in the absence of any alteration in the external popliteal nerve. Warming the extremity by diathermy at once caused the reactions to disappear. In electrodiagnostic examinations conducted in the winter the examiner should make sure that the parts are not in a chilled condition; if they are, they should be warmed with hot air, hot water, or preferably, diathermy.



**Chronic Multiple Arthritis Due to *Bacillus mucosus*.**—George F. Dick (*Journal A. M. A.*, February 24, 1917) reports two cases almost exactly alike in which there was chronic arthritis largely limited to the hands, especially the first interphalangeal joints, and causing hernias of the synovial membranes through the joint capsules from distention by thick mucoid fluid. There was some absorption and proliferation of bone, but this was insignificant. Cultures from the joint contents were sterile, but both patients gave almost pure cultures of *Bacillus mucosus* from their throats. The organisms isolated from both belonged to the same group of the Perkins classification and both produced typical arthritis when injected intravenously into rabbits. Tonsillectomy and vaccine treatment produced great improvement in the patients' conditions.

**Etiology of Trench Foot.**—V. Raymond and J. Parisot (*Presse médicale*, February 1, 1917) present evidence in support of their view that the affection resulting from prolonged exposure of the feet to cold in trenches, which they have termed "trench foot," is in reality due to a mycotic infection. Among the African native troops they have observed, in conjunction with severe local forms of the condition, generalized forms of septicemic type, with the mycelial organisms in the blood. At autopsy mycelia were found in various organs and inoculations of aseptically collected bile caused characteristic lesions in experimental animals. Several species of mycelial organisms were found among the various cases. Prolonged standing in cold water evidently allows of penetration of the organisms from the ground into the tissues. Originally ectoparasites or simple saprophytes, the organisms then become pathogenic endoparasites. By appropriate treatment the disease can be stopped among the European subjects and limited among the colored African soldiers.

**Hematuria.**—Herman Louis Kretschmer (*Journal A. M. A.*, February 24, 1917) has studied 238 consecutive cases of blood in the urine, excluding those due to gonorrheal urethritis, the passage of sounds or instruments, idiopathic renal hemorrhage, etc. All cases had blood visible to the naked eye. A correct diagnosis was made in 197 of the cases and the results showed that the presence of a tumor was the commonest cause, occurring in about fifty per cent. of the cases if prostatic enlargement and carcinoma were included. Tuberculosis was the next commonest cause, followed by renal calculus, and colon bacillus infections. Other causes were numerous, but none was found in more than two cases. In fourteen cases the source of the bleeding was determined, but not the cause, either cystoscopy or ureteral catheterization showing the origin of the blood. In the remaining twenty-five cases neither the source nor the cause could be determined, but five of these refused instrumental examination and the others were seen when the bleeding had stopped. The very frequent occurrence of tumor formation as a cause of hematuria pointed to the great need for proper investigation at the earliest moment of all such cases. The investigations showed the dangers of the doctrine of essential hematuria and the harm which it has worked, for none of these cases could be classed as such with certainty.

**The Blood Pressure Test in Life Insurance Examinations.**—Francis Ashley Faught (*Medical Record*, March 10, 1917) gives the formula of the normal relation of the systolic, the diastolic, and the pulse pressure as 3:2:1, for example, systolic 124, diastolic 82, pulse pressure 42. A simple work test, such as bending the body at the hips, keeping the knees rigid, and extending the arms over the head, done ten times rapidly will frequently give valuable information. The blood pressure test should be employed in every life insurance examination, and if possible an average rather than single readings should be obtained; furthermore, a closer restriction should be placed upon the maximum systolic than on the minimum systolic variation.

**Bacteriology of Spinal Fluid in Poliomyelitis and Scarlet.**—Harry Gauss (*Journal A. M. A.*, March 10, 1917) reports a patient suspected of scarlet fever from whose spinal fluid the micrococcus described by Nuzum was isolated. The case subsequently proved to be one of poliomyelitis, and was confirmed at autopsy. In a second case of poliomyelitis the same organism was also readily isolated from the spinal fluid. The ease of isolation of this organism led to the suspicion of contamination and cultures were therefore taken from the spinal fluids of fifty cases of scarlet fever in children ranging from one to fourteen years of age. Although the cases included all stages of the disease and although several other culture methods than those of Nuzum were used no organism was obtained from any fluid even after five days of cultivation.

**Spasmodic Asthma.**—Robert Hall Babcock (*Journal A. M. A.*, February 10, 1917) states that no effort should be spared in searching for and removing every diseased process which may serve as a focus for protein absorption. It has been especially demonstrated in persons suffering from so called hay fever, or hay asthma, that more than one such focus may exist, and that sensitization of an individual may result from proteins absorbed from different situations within the body. It seems to have been determined that the focus or foci are generally found within the nares or accessory sinuses, but diseased tonsils and suppurative processes about the gums or teeth roots may be the source of disturbance. In cases of long standing, with frequent asthmatic attacks, the resulting chronic bronchitis may furnish the bacterial protein after other foci have been eliminated by operation. It is also possible that a focus of infection outside of the respiratory tract furnishes the cause for the asthmatic attacks, as was proven in a patient who was free of asthma as long as an infected gallbladder drained freely, but suffered when drainage was faulty. An autogenous vaccine prepared from the sputum is usually of some aid in the management of the case, but beneficial results can hardly be expected from this mode of treatment so long as some other focus of infection is left unremoved by operation. The anaerobic fusiform bacillus seems to exert special influence in the production of asthma, and only when this organism was obtained from the sputum in the cases recorded and incorporated in the vaccine was the administration of vaccine beneficial.



# Proceedings of Local and National Societies

## THE NEW YORK ACADEMY OF MEDICINE.

*Stated Meeting, Held February 1, 1917,*

The President, Dr. WALTER B. JAMES, in the Chair.

### PRESENTATION OF PORTRAIT OF DR. WILLIAM M. POLK.

Dr. WALTER B. JAMES announced that the portrait of Dr. William M. Polk had been presented to the Academy of Medicine and that it completed the full line of portraits of previous presidents of the Academy. It was received on behalf of the Academy by Dr. George D. Stewart.

### ACCEPTANCE ON BEHALF OF THE NEW YORK ACADEMY OF MEDICINE OF PORTRAIT OF DR. WILLIAM M. POLK.

Dr. GEORGE D. STEWART said that it was his pleasant duty to accept this portrait on behalf of the New York Academy of Medicine, and it was his further privilege to try to express briefly and without fulsome eulogy an appreciation of Doctor Polk as a colleague, a fellow Academician, and a man. To do this adequately in a few words was not possible. One might survey a kingdom and note the result in maps, but all the wise men in the world could not produce a reliable map of even the poorest human personality. A simple effort to do so, however, might serve to convey to some degree the esteem in which Doctor Polk was held. While a personality might not be wholly explored, yet the qualities of that personality might be noted by the light of achievement. Every man brought into the world with him a certain amount of strength or force, and to that strength his accomplishment was exactly proportioned. It was in this way that every spoken word or action of a man became his autobiography. Not only was the accomplishment of a human being measured by his strength, but also by the tact which was employed in using that strength. These two qualities, strength and tact, might surely be ascribed to Doctor Polk. With strength he had struck the buffer of the world, and the recoil had been long life, honor such as came to few, and achievement far above the average. With all of his force and supplementing it, he possessed a nice, discriminating tact, as many men, particularly young men, were willing to testify. Some who were present at this meeting had walked with him all of the way; some began in the middle of the journey; still others had scarcely set their feet in the path, but all knew and many had experienced the unfailing courtesy of Doctor Polk.

The wisdom of a man was the sum of his experiences; on that measurement Doctor Polk was deeply learned. Brought up in a cultured and religious home, early tried in the crucible of patriotism, he was bound to succeed in the field which he selected as his life work—a field which, while offering the greatest opportunities, still opposed the fiercest resistance. This field he entered while political antagonisms were still bitter, entered among strong men; always courteous, but always ready to break a lance with any, he was soon riding in the front of his company. As a practitioner of medicine, he remained enshrined in the hearts of many as a special

providence. Through all his busy life he had been engaged in the teaching of this science and had been one of the major forces concerned in the foundation of a medical school, entertaining the loftiest professional and scientific ideals. His interest in the Academy, maintaining its dignity and promoting its efficiency, was too well known to need more than passing reference. It was a wonderful thing to have watched, as he had done, the progress of medicine from the preListerian days until now; to have seen it grow from a mass of largely empirical concepts to its present structure, where it touched every phase of humanity and reached helpfully into every home and heart. Before the development, Doctor Polk doubtless stood in amazed wonder and strengthened faith. The forceful man was a prophecy of the future. When the tempest was stilled and long after it was spent, the wave it created broke on shores a thousand miles away. So from his life new impulses would spring in the hosts that were to come, and the force of the impression he had stamped on his era would be felt in other times and in far distant places.

**The Modern Conception of the Nature of Inebriety.**—This paper, by Dr. M. S. Gregory, is published in full in this issue of the JOURNAL.

Dr. THOMAS W. SALMON called attention to the increasing interest of those concerned with social problems in the study of individuals instead of groups. This consideration of antisocial units might well be called the central idea in social work at the present time; and it had led to a reconstruction of the entire conception of crime and the treatment of criminals. This was particularly true in regard to inebriates, and Doctor Gregory's paper served to emphasize the fact. A careful study of the individual inebriate almost invariably showed a sick person in need of some kind of treatment, nor necessarily medicinal, but often physical, reconstructive, and psychoanalytical. The establishment of the New York City Board of Inebriety in 1910 constituted a new step toward dealing with a great social and medical problem and also constituted the first practical effort to deal with antisocial conduct in accordance with the latest views. There was a growing sentiment in favor of divorcing judicial procedure, which determined guilt or innocence, from that which decided upon punishment. It was the hope of criminologists today that eventually the courts would simply commit convicted persons to a commission which, after full study and examination, would have power to dispose of the offender solely with reference to his best interest and to the best interest of society. This principle was followed in the law establishing the Board of Inebriety, and inebriates were committed, not to any special institution, but to the care of that board. The board had also been given power to establish a farm colony.

Doctor Salmon then described briefly the purpose and the work carried on by the farm colony under Dr. Charles F. Stokes, medical director of the Board of Inebriety at the New York City Farms. He

spoke of the great physical difficulties and poverty of equipment, but said that the successful outcome was due to the fact that a new principle was recognized in dealing there with delinquents, and the regard in which Doctor Stokes was held there was a remarkable illustration of the force of an individual example, compared with elaborate equipment where such a personal factor was lacking. At Warwick an attempt was made to reconstruct the inebriate in his relations to himself and to society. The system of physical training used in the Navy improved the condition of the men, over six hundred of whom had been sent to the colony, inebriates first and lately drug habitués. Building up the physical man and bringing out the best in him was essential to character formation, and this once manifested, the individual was no longer a social problem. Doctor Stokes did not undertake to cure them, but he did give them simple, sanitary, healthful surroundings and work in the open air, and aroused in them a community spirit. But personal contact with a man like Doctor Stokes was the thing that helped them most. In closing, Doctor Salmon urged that the medical profession interest themselves in what was being done at Warwick and bring all the pressure they could to bear upon the city officials in order that the work might be adequately supported.

Dr. FOSTER KENNEDY said that Doctor Gregory's paper dealt with the use of alcohol in a generic sense; he wished to point out that the word alcohol could be regarded in a less general sense. The alcoholism of the Latin countries was very different from that of the Anglo-Saxon world, and the problem for the Anglo-Saxon to solve was to see if some means of wide social character could not be discovered to make his habits, as regards alcohol, conform more closely to those of the dwellers on the Mediterranean littoral. Certain specious arguments were brought up against the possibility of such change of habit. It was claimed that the northern climate made the imbibing of strong drink necessary and pleasant; yet the climate of northern France was every bit as raw as the climate of the north of Ireland, and in the former country inebriety was almost unknown though alcohol was habitually used. It was really more a question of social habits and the propinquity of a particular form of alcohol.

However, the individual alone was not the only consideration. The question of alcoholism and inebriety did not touch the confirmed drunkard alone. A vast number of men who yearly became less efficient because their alcoholic habits were those of their fellows, were not confirmed drunkards; but such a type of slightly overalcoholized man, debilitated and subnormal, sapped the efficiency of the nation.

Doctor Gregory had quoted the statement that in the prohibition States there was an increase in the numbers of those admitted to almshouses and institutions of restraint. But the figures would have to be given to convince one of this. It was well known that in Russia, which one could truthfully say had been widely alcoholized before the war, there was now a distinct increase in the savingsbank deposits since prohibition had been in force. However, prohibition was only a local affair. Its ultimate results were debatable. It was difficult to control a thing

of this kind, but for communities to go to the root of this deadening evil, they must prevent the manufacture or importation of drinks containing alcohol above a certain strength. The speaker believed that the abolition of strong, spirituous liquors would not be unfortunate for the world, and as a substitute for the saloon in its capacity as a centre for gregariousness, the French café was suitable. France had not considered it necessary to abolish cafés and light wines, but she had abolished absinthe.

Dr. GEORGE H. KIRBY said that at the present moment, when there was probably a wider public interest than ever before in the various social, industrial, and health questions associated with both alcohol and drug inebriety, it would seem to be an appropriate time for the medical profession to take stock of its knowledge and to voice its attitude regarding some of the fundamental principles which must be taken into account if effective measures were ever to be devised for dealing in a preventive way with the underlying causes of inebriety. The paper of the evening was a contribution of unusual importance and of scientific value, particularly in view of the fact that the conception of drug and alcohol inebriety, as formulated by Doctor Gregory, would, if practically applied in the community, go a long way toward revolutionizing the present public methods of dealing with inebriates, and also modify radically much of the therapeutical activity in which physicians were engaged in their attempts to handle individual cases.

Doctor Gregory in his presentation had shown very convincingly how recent studies in psychopathology had made clearer some of the deeper reasons as to why mankind in such large numbers resorted to the use of alcohol and narcotic drugs, and these reasons explained perhaps why inebriety had never been stamped out or successfully controlled. Even those who advocated prohibition must agree with the view that one could not thereby do away with the impulse which led persons to drink, because it was not possible to change a personality through legislative enactment. Few would dissent from the view that the use of alcohol and narcotic drugs was connected with tendencies more or less inherent in all human nature. Whether or not one accepted the hypothesis that these tendencies were the outcropping of primitive instincts which were handicaps at the present stage of development, it must still be admitted that the underlying motive in intoxication was to create a state of mind in which the conflicts and responsibilities of life were to a large extent submerged. This tendency to evade reality was, when strongly developed, looked upon as a constitutional weakness, or an inherent character defect, such cases usually being classified as the psychopathic group of inebriates. But even in the cases where this tendency was less evident, when the motive for drinking was analyzed, it would be found that the same psychological mechanism was present. Such a generalization, which might be helpful as a large viewpoint, should not cloud the important fact that there were many different forms of inebriety each of which offered its own special problems, and these must be recognized before they could be successfully coped with. The psychological conception

of inebriety demanded above all of physicians a more careful and intelligent clinical study of individual cases, as wholesale methods of treatment could find no place here.

Another point which Doctor Gregory discussed was the idea that if the intoxication impulse were forcibly repressed, as under a system of real prohibition, that other serious consequences might develop in the form of sexual immorality, neuroses, psychoses, criminal tendencies, etc. In the light of a number of observations, both in this country and abroad, such substitution need not be feared. Instructive in connection herewith was a comparison of conditions which obtained in Norway and Sweden over sixty years ago with those of the present time. The enormous improvement in health and morals coincident with severe restrictive measures was everywhere admitted. No one having read accounts of the state of social life in England, Scotland, and Ireland in the early part of the nineteenth century, when alcoholic excesses were habitual among the educated classes, could say that its present diminished use in these classes had not resulted in mental and moral improvement. Another fact proven by experience was that when even severe cases of alcoholism were segregated in colonies and custodial institutions, no corresponding degree of moral perversion or antisocial tendencies was found which might be called a substitute for the cutting off of the intoxication outlet.

Dr. HAVEN EMERSON said that having been one of Doctor Gregory's assistants in the alcoholic wards of Bellevue, he had had the opportunity of making some of the same observations that Doctor Gregory had made. He thought it was a pity to allow the problem of inebriety to be complicated by psychological theories. Morphine had a value and arsenic had a value, but if there were two thousand deaths annually due to their use, a wave of horror would sweep over the city and something would be done to prevent such an unnecessary sacrifice of life; yet there were two thousand deaths annually from alcoholism in the institutions of this city, where the facts could not be concealed. But two thousand deaths in institutions was only a small fraction of the number of deaths caused by alcoholism because physicians in private practice did not give alcoholism as the cause of death on the death certificate. People had no idea of the penalty the community was paying for retaining the belief that social life was enlarged by indulgence in alcoholic beverages. There was no function of the body, voluntary or reflex, that was not limited and diminished by alcohol. No one was ever the worse for having alcohol taken away from him, and indeed there was no one who was not ultimately greatly improved physically by such deprivation and whose working capacity was not thereby increased. For the present attitude of the public to the effect that the taking of a moderate amount of alcohol was not deleterious, but that it was in many instances a distinct advantage, physicians were largely responsible. Physicians had by their personal example and teaching allowed people to think that alcohol was harmless and was a stimulant. They should now, by personal example and precept, teach the people that alcohol

was a poison and a depressant. In other countries, the manufacture and sale of alcohol was being prevented by legislation, and until the government of this country turned its attention to this question, physicians had an opportunity to rise to the demands of statesmanship in dealing with this problem. Let physicians speak in no uncertain tones in the light of demonstrated facts from the laboratory and from clinical experience. Let them live up to the convictions which they were bound to accept, and example and teaching would accomplish without bitterness in this country what had been forced on other countries by national emergencies.

The use of alcoholic beverages would probably continue unless their sale or manufacture was limited or forbidden. Doctor Emerson said he did not hold that alcohol should be eliminated from the *materia medica*, but if anyone believed that alcohol enlarged any of the faculties of man, he did so contrary to the facts and opposed to the results of modern physiological and psychological investigations.

DOCTOR GREGORY, in closing the discussion, said that Doctor Kennedy's reference to the increase in savings bank deposits in Russia subsequent to prohibition was in substantiation of his own contention that the mere taking away of alcohol would in no wise solve the problem unless an adequate outlet was afforded the intoxication motive. The success of prohibition in Russia at the present time was undoubtedly dependent on the war with its attendant fervor of patriotism, fear of want, and the necessity of saving money which absorbed the interest and attention to the submergence of the intoxication impulse.

Doctor Kennedy had evidently misunderstood the purport of the paper, which was to point out the underlying impulses which prompted men to use alcohol. The question of the type or quality of intoxicant chosen appeared to the writer merely incidental; the larger problem was why men drank at all. The investigation of why the Anglo-Saxon race used alcohol in a way different from that affected by Latin races would not help very much in solving this problem, which was to uncover primitive, genetic motives. Proceeding in this manner, it would be possible to explain and understand the secondary phases. The writer wished to call Doctor Kennedy's attention to the fact, in reference to the alleged increase in insanity and pauperism in prohibition States, that he had dwelt at some length on the unreasonableness of these conclusions in his attempt to account for this increase which was more apparent than real.

In reply to Doctor Emerson, Doctor Gregory said that denunciation had never brought about reform nor accomplished a solution of social problems. Of what avail was it to say that alcohol was a poison and that its use led to destruction and poverty when all knew that thousands daily drank moderately and that the cocktail preceded many meals without these direful results? Sober, scientific investigation must prevail if anything were to be accomplished in dealing with the so called social vices, whether prostitution, criminality, or intemperance. The modern trend was to delve into the deeper impulses of man.



By this alone could an intelligent solution of such problems be brought about. Regarding the attitude of the writer in reference to the service of alcohol for a "larger life," Doctor Emerson seemed to have overlooked that it was stated that such services had been only valuable in the primitive or tribal states and that its usefulness had now been outgrown and that the writer most strongly condemned the use of alcohol in the present day.

#### SOUTHERN MEDICAL ASSOCIATION.

*Tenth Annual Meeting, Held at Atlanta, Ga., November 13, 14, 15, and 16, 1916.*

The President, Dr. ROBERT WILSON, JR., Charleston, S. C., in the Chair.

**Tuberculosis, a Disease of Children.**—Dr. F. CLIFTON MOOR, of Tallahassee, Fla., said that the points to be emphasized were ample protection for all children under five and prevention of the massive infection which was sure to occur when there was active disease in either parent or some other member of the household. No mother with active disease should nurse her infant, and she and others of the household should be taught in detail by precept and example all the precautions necessary. In a certain percentage of the families, where ignorance and poverty or a bedridden mother made home conditions hopeless, there was nothing to be considered except the removal of the younger children to a preventorium, the establishment of which was one of the first problems that confronted us.

Another less important requirement in preventing infection was the control of bovine tuberculosis. This could be done only by uniform State laws or, better still, by the Federal Government. In his own State there had been recently instituted work along this line. Beginning in 1914 with two nurses for the whole State, the number had been increased to thirteen, twelve of whom were assigned to definite districts. Previous to the establishment of this plan there were practically no cases reported to the Board of Health. During the first year of the present campaign 1,225 patients were seen by the visiting nurses and up to September of this year 2,781 patients were or had been visited and instructed in the principles of prevention. The average time between visits was four weeks, and the nurses reported that the great majority of families visited were interested and really endeavored to follow instructions.

#### Early Recognition of Pulmonary Tuberculosis.

—Dr. WALLACE J. DUREL, of New Orleans, La., stated that in order to diagnose incipient pulmonary tuberculosis, it was essential to give full time and attention to it, and furthermore, it was necessary to study carefully especially the manifest clinical symptoms and also the physical lung signs, with the corroborative laboratory findings. In some cases of incipient tuberculosis, the inactivity of the lesions soon manifested itself, leaving the patient in a state of latent tuberculosis. These cases had always interested him, and in his opinion such patients should be kept under limited observation in order to detect any exacerbation or reactivity of the disease. In the diagnosis of early pulmonary

tuberculosis one must separate the active incipient tuberculosis with clinical symptoms such as slight fever, instability and acceleration of the pulse, dyspepsia, loss of weight, chills, night sweats, hemoptysis, etc., from latent incipient tuberculosis where the physical findings denoted a lesion in the lungs, but where none of the cardinal clinical symptoms indicated active or progressive tuberculosis.

**Treatment of the Average Case of Tuberculosis.**—Dr. J. J. LLOYD, of Catawba Sanatorium, Va., said that the most important factors in the management of the average case of tuberculosis were as follows: 1. The importance of an accurate diagnosis as affecting the prognosis and therefore the management of cases. 2. The value of frankness and truthfulness in gaining the patient's cooperation which is indispensable. 3. The value of rest, good food, and fresh air and the danger of indiscreet exercise in treating tuberculosis. 4. The far reaching importance of reducing future tuberculosis by properly instructing each individual case in the simple measures of prevention.

**Unwarranted Fear of Tuberculosis.**—Dr. CHARLES H. COCKE, of Asheville, N. C., said that the conclusion was reasonable that the specialist took more time and trouble in explaining the truth about infection than the general man, and it was time the general practitioner told the people all the truth and not halfbaked ideas. It was the equally divided opinion of the specialists that the social stigma of tuberculosis played an important part in the cause of the fear of it, but general practitioners were eleven to four against it, a division of opinion for which he had no adequate explanation. In both classes of physicians there was almost universal agreement that the past overaccentuation of the danger of infection to all people, instead of to children, was responsible for the general prevalence of phthisiophobia and that it was the duty of the general practitioner to overcome this fear.

**The Importance of Time in the Treatment of Tuberculosis.**—Dr. WILLIAM REDIN KIRK, of Hendersonville, N. C., said that the time spent in arriving at a diagnosis was not considered as lost, for it was almost as great a mistake to brand a case tuberculous with all the resulting consequences as to fail to recognize the disease. After the diagnosis had been made no time should be lost before commencing treatment. It was economy in both time and money to send the patient from home for treatment, provided his means were sufficient to command as good or better accommodations and the necessary care and attention. Satisfactory results could only be expected if the time was spent as it should be under competent supervision. There could be no compromise, makeshift, or subterfuge with the disease once it had asserted itself until arrested or cured. We should not be content to let the patient simply idle away the time while taking the cure but should employ other agents that were known to assist and improve metabolism as well.

**Artificial Pneumothorax.**—Dr. C. M. HENDRICKS, of El Paso, Tex., stated that the disadvantages of partial collapse were few. They were: 1. Refills were necessarily more often. 2. These patients must be studied and examined very closely,

both by physical examination and the fluoroscope, in order to determine the time for refills. 3. The frequency of the refills required only that one be careful of his technic, as the more often the pleura was entered, there was an increased liability to infection, air embolism, and pleural shock. Air embolism and pleural shock scarcely needed to be taken into account because air embolism would not occur if the air was not turned on until the oscillations of the manometer so indicated. Pleural shock was prevented by local anesthesia; the only thing left then was infection, and medical men doing this operation must become modern surgeons in the strictest sense of the word.

The advantages of this method were: 1. The results were the same clinically. 2. Partial collapse might be used alternately in either lung, or at the same time in both lungs if the case so demanded. 3. There was less tendency to pleural effusions. 4. There was very little strain thrown upon the right heart. 5. There was no disturbance of the mediastinum. 6. There was less danger of spontaneous pneumothorax. 7. There was less danger of rupturing an abscess into the pleural cavity. 8. When the disease was arrested the unaffected portion of the lung performed its function. For the reasons already set forth, having obtained highly satisfactory results, there is no good reason for other than partial collapse of the lung only in extreme cases.

**The Role of Food in the Etiology of Cardiovascular Renal Disease.**—Dr. ALLAN EUSTIS, of New Orleans, La., summarized as follows: 1. In cases of cardiovascular renal disease intestinal toxemia may contribute to the severity of the symptoms and should be considered in the management of all cases. 2. The stools of man vary in degree of toxicity. 3. Extracts of human feces when injected into rabbits may produce changes in the kidney analogous to those found in cardiovascular renal disease in man. 4. Excessive protein food, irrespective of intestinal toxemia, overworks the kidney and is at least a predisposing cause of cardiovascular renal disease.

#### **Prognosis in Cardiovascular Renal Disease.**—

Dr. GEORGE DOCK, of St. Louis, Mo., stated that a bad prognosis should not be given at the first examination unless the evidences of heart failures were well marked, or unless there was advanced arteriosclerosis, strong suspicion of coronary artery disease, or evidence of severe renal insufficiency or other dangerous organic disease. Even then, the bad prognosis should be tempered by a statement as to the chance that rest and appropriate treatment might modify the outlook. In such cases the phthalain test had shown itself a valuable prognostic guide when low in the absence of other renal signs. In children below the age of puberty a conservative, briefly worded prognosis should be given, but the danger of the period of development and the need of constant supervision through that period must be made clear. In adults with definite lesions the whole mode of life must be regulated, and the patient made to understand the genuine value of accurate management in which medication played a small part. When loss of compensation occurred, the prognosis could be greatly aided by the careful

observation of the effect of treatment and the degree of functional power regained.

No matter how complete the decompensation, a hopeless prognosis for the improvement in a given attack should not be made, for it happened not infrequently that patients seemed to be *in extremis* and then recovered in a surprising manner and remained well for months. All the advances disclosed by investigation as to diagnosis should be applied and their usefulness in prognosis worked out, while the treatment should follow the most advanced knowledge.

(To be continued.)

## Book Reviews

*[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]*

**The Education of the Young in Sex Hygiene.** A Text-book for Parents and Teachers. By ROBERT N. WILLSON, M.D., Fellow of the College of Physicians of Philadelphia; Director, with Dr. William E. Hughes, of the Philadelphia Hospital Postgraduate Course in Internal Medicine; Formerly Pathologist to the Philadelphia Hospital, etc. Cincinnati: Stewart & Kidd Company, 1917. Pp. 310.

The present volume meets a demand among instructors of the young for assistance in presenting the facts of sex life in a wholesome, practical manner. It also emphasizes the importance and the essential rightfulness of such presentation to meet the needs of the growing boy or girl and for fundamentally combating social disease.

The book presents clearly the elementary facts of sex life and suggests the comparative method of their bringing them into child instruction, interspersing suggestive illustrations of the reproductive processes in other forms of Nature, in both the animal and plant kingdoms, as well as of human processes. Scientific knowledge and consideration of the problem of social disease are given in very readable and yet definite and practical form.

The book is helpful in its suggestions and guidance, and parts of it are designed to be of direct help to the maturing child. The author's attitude and purpose are those of a sane and clear dealing with facts in their vital bearing upon the individual's own place in society with regard to the right use of his sexual powers and the dangers that threaten this. An intelligent facing of the latter is the only safeguard of the individual right of the young man or woman and of their children to be born and that will alone create a demand for the conditions which will eradicate social disease. It is to be regretted that the author's high purpose is so wrapped in a religious emotionalism that the psychological side of the individual problem is obscured. This causes him to overlook the disturbing influence of the parent child factor in development, the inherent struggle through which each new generation has to make its individual way with vital problems because they fundamentally concern a dynamic reproductive nature. This out-reaches the merely sexual and surrounds even that aspect of the problem with complicating and disturbing factors which are often increased by that identification with parent love and Divine love, which the author so emphasizes as a safeguard and aid. With our growing knowledge of the complex psychology of the child this is a serious defect in a book designed to guide instructors to an efficient dealing with these questions. Careful psychical investigation is revealing that these very platitudes of clinging devotion and dependence upon parental love only disguise the infantile fixations in a child's development, which are the real factors in maintaining him on that egoistic pleasure seeking level which drives him to uncontrolled sexual life.

## After Office Hours

We notice that the *Survey*, in reviewing books of the popular medical sort, is always careful to point out the restrictions of this class of literature and to warn the public against making it a substitute for individual medical advice.

An editorial in the *Ladies Home Journal* for April is called, "The Lesson to the Doctor." It tells how a doctor asked for whiskey to give a man who had been exposed to the cold, but someone else advised hot water which was used with good effect. Supposedly, the doctor was then lost in naive admiration and admitted the lesson with thanks.

Differing from the usual popular medical article in the daily paper, Professor Lewis B. Allyn, who writes for *McClure's* appears to be sincere and ethical. In the April number there are seven points about patent medicines for the public which physicians would do well to call to the attention of their patients. Another good thing in this number is an article on eugenics by Cleveland Moffett, told in a popular style.

Serious students of race psychology will not be surprised to hear that education of the Negro diminishes crime. Judge Gilbert T. Stephenson in the *South Atlantic Quarterly*, reviewed in the *American Review of Reviews* for March, reports that after an exhaustive study of this question he finds that the majority of Negro prisoners are uneducated and that there is very little crime among graduates of the higher institutions of learning for the Negro. It is easy to say that the more you educate the Negro the more capacity for harm you give him, but you must answer figures like those of Judge Stephenson, Dr. Clarence H. Poe, and others.

Now and then the *Smart Set* will burlesque in an entertaining manner the usual scientific article. In the April number is such an instance. "Contemporary Toxicology," by L. M. Hussey, professes to discuss the researches of one M. Quig into the subject of poisoning as a fine art, the offenses for which it is a justifiable revenge, the most suitable toxins, and the most artistic methods of administering them. This treatment of murder in a nonchalant manner is of course an old device of the humorist, De Quincey's essay on the subject being the classical model, but the present writer has given several new twists to it and incidentally has introduced much technical material without once slipping up, a rather unusual achievement for a magazine writer.

Sociological experts profess to believe that the greatest problem with which the human race will have to deal after the great war will be that of marriage, on account of the enormous preponderance of females. Even now, marriage is said to be on the decrease in this country and of course many editors have searched for the reason. In the Sunday magazine of the *New York World* for March 4th, the excuses a number of Y. M. C. A. bachelors gave for not being married were reported in an entertaining manner. Economic reasons figured largely but, perhaps because of the source of the statistics, the reason many social workers give was conspicuously absent, that is, the increasing prevalence of extramarital relations between men and women of the industrial class.

It is getting so that, excluding his immediate family, John Barleycorn is being ostracized everywhere. Open almost any magazine at random and you will find an article denouncing the demon or smothering him with statistics. In the *American Review of Reviews* for March, for example, there is a review of the attitude taken by the London *Spectator* on the proposed governmental purchase of the liquor interests. The objects sought are prohibition during the war and the elimination of private profit from the business after the war. Taken in conjunction with similar movements throughout the civilized world, no great amount of linguistic ability is needed to translate the handwriting on the wall into an invitation to King John to lay aside

the crown he has worn so long and, companioned by Torture, Slavery, and other dethroned princes, await the next to join them, Monarchy itself.

Freud has given us, in "Wit and the Unconscious," a new theory of that branch of the comic which we call wit, together with some ideas about the function which laughter serves. Mark Twain, in his posthumous work, spoke of laughter as the only weapon which the human race had to defend itself against the terrors of a malign universe and, if this be indeed true, he himself was the master warrior of the world. Under the guise of a short story there is a variation on the same theme in *Harper's* for April, "Laughter," by Charles Caldwell Dobie. It is well worth reading.

Probably the most significant periodical to appear in the last month is an unpretentious little magazine called the *Sun Dial*, published by the staff of Saint Elizabeth's Hospital, Washington, D. C., this being the new name of the Government Hospital for the Insane. This is the first issue of this magazine and contains, generally speaking, two main classes of material, talks with the patients and talks by the patients. It is a therapeutical effort, an endeavor to get in touch with the mentally ill, to speak with them as man to man, and to put before them solutions to the problems of right living and thinking. The most characteristic thing in the magazine is "A Talk on Selfishness," by Dr. William A. White; this illustrates in an excellent manner the sort of thing this little paper is expected to do. The contributions of the patients themselves by their intrinsic merit, will surprise those not familiar with mental cases. We understand that the *Sun Dial* will continue to appear at approximately monthly intervals. May it have many sunny hours to record!

## Meetings of Local Medical Societies

MONDAY, April 9th.—New York Ophthalmological Society; Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo; Association of Alumni of St. Mary's Hospital, Brooklyn; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society.

TUESDAY, April 10th.—New York Academy of Medicine (Section in Neurology and Psychiatry); Medical Society of the County of Wyoming; Ontario County Medical Society; Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); New York Obstetrical Society; Medical Society of the County of Oneida.

WEDNESDAY, April 11th.—New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Rochester Academy of Medicine; Medical Society of the County of Montgomery; Medical Society of the County of Dutchess; Brooklyn Medical Society.

THURSDAY, April 12th.—New York Academy of Medicine (Section on Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Society of Sanitary and Moral Prophylaxis; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of the Village of Canandaigua; Medical Society of the County of Alleghany.

FRIDAY, April 13th.—New York Academy of Medicine (Section in Otolgoy); Society of Externes of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York; Clinical Society of the German Hospital and Dispensary; Manhattan Dermatological Society.

SATURDAY, April 14th.—New York Association of the Medical Reserve Corps of the United States Army.



## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending March 28, 1917:*

- AKIN, C. V., Assistant Surgeon. Ordered to proceed to Norfolk, Va., and nearby points, to institute measures to prevent the interstate spread of disease by rodents.
- APPLEWHITE, J. D., Assistant Surgeon. Directed to continue on duty in studies of rural sanitation in Hill County, Texas.
- BAHRENBURG, L. P. G., Surgeon. Detailed to attend and address the meeting of the South Texas District Medical Association at Houston, Texas, April 5-6, 1917; also to stop en route at Jasper, Texas, to deliver an address on public health April 4, 1917.
- BILLINGS, W. C., Surgeon. Granted ten days' leave of absence from March 27, 1917.
- CARTER, H. R., Assistant Surgeon General. Ordered to proceed to New Orleans, La., and such other places in the Southern States as may be necessary for supervision of studies of malaria.
- CLARK, T., Surgeon. Ordered to proceed to Spartanburg County, S. C., and vicinity to make a preliminary survey of school sanitation.
- COLLINS, G. L., Surgeon. Ordered to proceed to Philadelphia and other places in vicinity for duty in investigation of sanitation of the textile industry.
- FRICKS, L. D., Surgeon. Granted five days' leave of absence from March 12, 1917.
- FULLER, J. K., Assistant Surgeon. Granted two days' leave of absence from March 25, 1917.
- GARDNER, J. S. S., Assistant Surgeon. Continued on duty at Marine Hospital, Stapleton, N. Y.
- HUGHES, T. E., Assistant Surgeon. Directed to report at the Marine Hospital, Stapleton, N. Y., for temporary duty.
- MCCOY, G. W., Surgeon. Directed to represent the Service at the annual meeting of the American Association of Bacteriologists and Pathologists in New York City, April 5-7, 1917.
- MUSTARD, H. S., Assistant Surgeon. Ordered to continue on duty in studies of rural sanitation in Hill County, Texas.
- PARRAN, THOMAS, JR., Assistant Surgeon. Ordered to continue on duty in studies of rural sanitation in Okmulgee County, Okla.
- REICHARD, J. D., Assistant Surgeon. Relieved from duty at the Marine Hospital, Baltimore, Md.; directed to proceed to Spartanburg, S. C., for duty in investigations of pellagra.
- SAFFORD, M. V., Assistant Surgeon. Directed to proceed to Worcester, Mass., to examine a detained alien; also to other points in New England, at the request of the Commissioner of Immigration at Boston, for similar examinations.
- SANDIDGE, R. P., Assistant Surgeon. Ordered to continue on duty in studies of rural sanitation in Okmulgee County, Okla.
- SCHERECHESWSKY, J. W., Surgeon. Directed to inaugurate an investigation of the textile industry in Philadelphia and vicinity.
- SMITH, F. C., Surgeon. Ordered to proceed to Philadelphia and other places in vicinity for duty in investigation of sanitation of the textile industry.
- STONER, J. B., Surgeon. Granted one month and fifteen days' leave of absence on account of sickness from February 20, 1917.
- STOUT, J. D., Assistant Surgeon. Relieved from duty at Spartanburg, S. C.; ordered to proceed to Marine Hospital, Baltimore, Md., for duty.
- WAUGH, R. L., Assistant Surgeon. Ordered to report for duty at Seattle, Wash.
- WAYSON, N. E., Assistant Surgeon. Granted four days' leave of absence on account of sickness from March 19, 1917.
- WILLIAMS, R. C., Assistant Surgeon. Ordered to continue on duty in studies of rural sanitation in Okmulgee County, Oklahoma.

### Appointments.

Dr. Thomas Parran, Jr., Dr. Harry Stoll Mustard, Dr. Joseph Davis Applewhite, Dr. John Wilson Tappan, Dr. Roy Preston Sandige, Dr. Paul Darwin Mossman, Dr. Ralph Chester Williams, Dr. Julius Stanley Shourds Gardner, and Dr. Richey Laughlin Waugh, appointed and commissioned as assistant surgeons from date of oath.

### Boards Convened.

Board of commissioned medical officers reconvened at the Bureau, April 2, 1917, for the purpose of examining candidates for appointment as Assistant Surgeons. Detail for the board: Assistant Surgeon General W. G. Stimpson, chairman; Assistant Surgeon General R. H. Creel, member; Assistant Surgeon General J. W. Trask, recorder.

Board of medical officers convened at Honolulu, Hawaii, April 16, 1917, to examine Assistant Surgeon Lionel E. Hooper to determine his fitness for promotion to the grade of passed assistant surgeon. Detail for the board: Surgeon F. E. Trotter, chairman; Acting Assistant Surgeon, A. N. Sinclair or W. F. James, recorder.

Board of commissioned medical officers convened at Third and Kilgour streets, Cincinnati, Ohio, April 2, 1917, for the purpose of making the physical examination and conducting the mental examination of candidates for appointment as assistant surgeons. Detail for the board: Surgeon W. H. Frost, chairman; Passed Assistant Surgeon Paul Preble, recorder.

## Births, Marriages, and Deaths

### Married.

CROSBY-BOWERS.—In Waterloo, N. Y., on Wednesday, March 21st, Dr. John F. Crosby, of Seneca Falls, N. Y., and Miss Ethel Bowers.

REYNOLDS-RIGDON.—In Creston, Iowa, on Friday, March 16th, Dr. Earl Owen Reynolds, of Louisville, Ky., and Miss Clyde Amy Rigdon, of Glasgow, Ky.

### Died.

BALDWIN.—In Rochester, N. Y., on Saturday, March 24th, Dr. Evelyn Baldwin, aged fifty-five years.

COLLINGS.—In Hot Springs, Ark., on Friday, March 16th, Dr. Samuel P. Collings, aged seventy-two years.

CUFFMAN.—In Gurdon, Ark., on Sunday, March 18th, Dr. John H. Cuffman, aged fifty-three years.

DE ARMAND.—In Davenport, Iowa, on Friday, March 23rd, Dr. John A. De Armand, aged sixty-five years.

DENEHRINK.—In Sheridan, Wyo., on Sunday, March 11th, Dr. Frank G. Denehrink, aged fifty-four years.

EATON.—In Chittenango, N. Y., on Monday, March 12th, Dr. John R. Eaton, aged sixty-eight years.

ENDICOTT.—In Oakdale, Cal., on Thursday, March 15th, Dr. Richard H. Endicott, aged seventy-two years.

HAUSE.—In Westport, Ind., on Thursday, March 22nd, Dr. William Hause, aged seventy-nine years.

HOUX.—In Gordon, Tex., on Wednesday, March 21st, Dr. Isaiah F. Houx, aged eighty years.

KEPPEL.—In Youngstown, O., on Monday, March 19th, Dr. John W. Keppel, aged sixty-one years.

LINDLEY.—In Natoma, Kan., on Saturday, March 24th, Dr. Joseph W. Lindley, aged thirty-seven years.

MALETT.—In Troy, N. Y., on Sunday, March 25th, Dr. Ovila Mallett, aged fifty-nine years.

MEAD.—In Buffalo, N. Y., on Sunday, March 18th, Dr. Harry Mead, aged forty-eight years.

METZGER.—In South Whitley, Ind., on Tuesday, March 13th, Dr. Owen Metzger, aged thirty-five years.

MONETTE.—In Greensboro, Ala., on Friday, March 16th, Dr. Reuben F. Monette, aged forty-five years.

NEWCOMER.—In Baltimore, Md., on Sunday, March 11th, Dr. Elmer Newcomer, aged twenty-eight years.

OSMAN.—In Philadelphia, Pa., on Saturday, March 17th, Dr. Joseph Reed Osman, aged eighty-four years.

RIDDLE.—In Burgettstown, Pa., on Sunday, March 25th, Dr. William V. Riddle, aged seventy-eight years.

ROTE.—In Chicago, Ill., on Monday, March 19th, Dr. John P. Rote, of San Antonio, Tex., aged fifty-three years.

SHEA.—In Boston, Mass., on Sunday, March 25th, Dr. Thomas B. Shea, aged fifty-four years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 15.

NEW YORK, SATURDAY, APRIL 14, 1917.

WHOLE No. 2002.

## Original Communications

### HISTORICAL NOTES ON THE MEDICAL SCHOOL OF THE UNIVERSITY OF PENNSYLVANIA, WITH SOME DISCUSSION OF RECENT PROBLEMS IN MEDICAL TEACHING.\*

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Medical instruction in this country is passing through a critical period, which is characterized by the elimination of unfit schools and the strengthening of those which have proved their right to continue. In medical journals and even in the lay press the recognition of the present as a time of departure from earlier traditions is evidenced by numerous contributions on methods of teaching, extension of the course, and on the assignment of new rôles to the officers of instruction. It may therefore be timely to glance at some periods in the history of the Medical School of the University of Pennsylvania, as what is said of this school will bear on the problems of undergraduate and postgraduate instruction at large.

The five most important periods in the history of the Medical Department of the University of Pennsylvania are: 1, the time of the founding of the school in 1765; 2, the period which culminated in the merging of the Medical Department of the University of the State of Pennsylvania and the revived Medical Department of the College of Philadelphia, 1779-91; 3, the first great separatist movement in medical education in the United States, the founding of the Jefferson Medical College, chiefly by alumni of the University of Pennsylvania in 1826; 4, the period of expansion marked by the introduction of specialism into teaching and practice, and the lengthening of the medical course, 1870-1900; and 5, the period of elimination and combination, 1904-1916, characterized by the closing of some schools and the merging of others and by radical changes in methods of teaching.

The Medical Department of the College of Philadelphia, later the University of Pennsylvania, was founded by John Morgan, of Philadelphia, in 1765. Prior to this time medicine in the colonies was in a primitive and somewhat chaotic state, although among members of the profession were not a few

who attained high rank in scholarship and medicine. The story of the founding of our Medical School is familiar to all. It is worth recalling that the epochs in medical education in this country have been in close relation with great historical periods. The decade from 1760 to 1770, that immediately preceding the American Revolution, was one luminous in history, literature, art, and medicine. During the ten years following its foundation, the Medical Department of the College of Philadelphia moved steadily forward under the guidance of Morgan, Shippen, Rush, and others of its eminent company of instructors; but the Revolution came with its trials and turmoil, and medical teaching passed under a temporary eclipse. As the end of the revolutionary period approached, medical teaching took on its second phase, characterized by personal ambitions and antagonisms. In those early days, as in other periods in history, the community was divided politically into conservatives and radicals. The founders of our school belonged to a colonial semiaristocratic class, but as the war drew to its close and for a short time afterwards, the more radical element in politics came into power and disturbed the even tenor of medical education.

In 1779 a charter was obtained for a new institution called the University of the State of Pennsylvania, and an effort was made to organize a medical department in the new university. The old charter of the College of Philadelphia was abrogated. Then began a period of struggle from 1779 until 1791 between those who adhered to the old régime and those who threw in their lot with the new. Between 1779 and 1783 the adherents of the medical department of the old College of Philadelphia and those who accepted positions under the new University, made unsuccessful efforts to continue medical teaching. In the latter year the old professors accepted their election to the State University, and more regular courses were given. In 1789 by an act of the Legislature the trustees of the College of Philadelphia were enabled to reestablish that institution, the University of the State of Pennsylvania still continuing. A compromise was finally effected in 1791. This resulted in the merging of the two medical teaching bodies as the medical department of the newly chartered University of Pennsylvania. Representatives of both schools were merged into a common board of trustees and a common faculty. This was the first American medical merger.

\*Address before the Undergraduate Medical Association of the University of Pennsylvania, delivered January 16, 1917.

After this merger was effected, the teaching of medicine in Philadelphia began a new period of active development. Students came from all parts of the country to the reorganized school. In the first decade of the nineteenth century, the student body became impressively large. Rush has been described as surrounded in 1809 by five hundred zealous and attentive auditors. In the second decade of the nineteenth century, signs of discontent appeared and the establishment of a new medical school began to be discussed. When speaking of the founding of the Medical Department of the College of Philadelphia, I referred to the fact that new departures in medical education have been closely related to great historical periods. In the seventh decade of the eighteenth century, when our medical school was founded, great events were the immediate forerunners of the American Revolution and the equally certain but more remote forerunners of the revolution in France. The world was on tiptoe for new departures.

In the second decade of the nineteenth century the War of 1812 in this country and the Napoleonic Era in Europe, which was drawing to a close, had an influence on the psychology of every walk of life. Restlessness and reorganization in politics, civic and commercial unrest were everywhere in evidence. Medical education ceased to flow in quiet channels. New ideas and new ambitions began to appear. The great success of the Medical Department of the University of Pennsylvania acted as a stimulus to the creation of a new school; nor was the time unpropitious for a separatist movement. The creation of a new school promised to result in benefit rather than in harm.

I have referred to the founding of the Jefferson Medical College as an important epoch in the history of the University of Pennsylvania, and this I think can be maintained. The country was growing, medical science was expanding, able young men, mostly alumni of the University of Pennsylvania, were ambitious to become medical teachers. Criticisms of old and discussions of new methods of teaching were in the air. It was held by some that the Medical Department of the University of Pennsylvania no longer fully met the educational requirements of Philadelphia as a medical centre. The story of the founding of Jefferson Medical College is full of personal flavor, but one into which I cannot here go at length. Ambitious dissidents, like McClellan, Eberle, and Rhee, had established private schools for the teaching of some of the branches of medicine. Several distinct efforts, one in 1816, another in 1818, and others later, were made to obtain charters from the Legislature for a new medical school, but without success. Eventually in 1826 a way out was found by obtaining from the Jefferson College of Canonsburg, Washington County, Pennsylvania, the privilege of establishing a school of medicine in Philadelphia as a part of this institution. In 1828 the parent board of trustees surrendered almost entirely the management of the affairs of the Medical College to a Philadelphia board, a separate charter for the Jefferson Medical College was obtained in the winter of 1837-1838, and all connection with the Canonsburg College ceased.

Competition is the soul of medical teaching as it is of trade. Both schools, the new and the old, put forth efforts for mastery and both served to extend the fame of Philadelphia as a medical centre. In both faculties in succeeding decades appeared names which will always be treasured in the medical history of our country. During the first fifteen or sixteen years of its existence the Jefferson Medical College went through many tribulations. Its faculty was reorganized several times, the results of bitter contentions. Distinguished members of the faculty, like Nathan R. Smith and Daniel Drake, withdrew after a short service. Dr. George McClellan, to whom more than to anyone else the foundation of the College was due, was a surgeon of ability and a man of much erudition, an ardent and enthusiastic teacher, but he seems to have found it difficult to work in harness with his fellows, chafing under restrictions and inclined to believe that his own way was the best. In 1839, after one of the dissolutions and reorganizations of the faculty, his name no longer appeared in the list.

In 1840-1841 an important reorganization occurred and the chairs were largely filled by men of merit and distinction. They included such names as Joseph Pancoast, R. M. Huston, John Kearsley Mitchell, the father of S. Weir Mitchell, Charles D. Meigs, Franklin Bache, and Robley Dunglison. The Jefferson College grew apace in power and popularity. For fifteen years the same faculty continued and the number of students coming to the institution surpassed that of the University of Pennsylvania and any other medical school in the country. A great accession to the Jefferson Medical College was Dr. Samuel D. Gross, who came from the University of Louisville to fill the surgical chair at Jefferson in 1856. Gross was, however, a Pennsylvanian and had filled several other positions before his election to the Louisville school. He became a tower of strength in the Jefferson and by many has been regarded as the greatest medical leader in this country. Another famous name added to the faculty of Jefferson was that of Dr. J. M. DaCosta in the session of 1866-1867.

The Civil War had a serious effect, temporarily at least, on the fortunes of Jefferson College. As many as two fifths of its students were from the South and when the war broke out most of these, under the leadership of Dr. Hunter McGuire, then a student, left for the South and, with or without degrees, entered the Confederate service. The number of students was reduced from six or seven hundred to less than half this number, but later after the war ceased the school with its remarkable faculty again took a prominent position.

Escaping from the toils of its first decade, the Jefferson Medical College thus moved steadily forward. The University Medical School also climbed to higher planes. While its course was less aggressive and spectacular than that of the Jefferson, it held its own both in the personnel of its faculty and in its professional influence. Some of the distinguished group who began their professional careers in the first and second decades of the nineteenth century, retired in the early thirties from the positions which they had long held and highly honored.



Physick, who took the chair of surgery in 1805 and that of anatomy in 1819, retired from active teaching and became emeritus professor at the close of the session of 1830. He is often spoken of, and with propriety, as the father of American surgery. James, an excellent teacher and a man of high character, who was elected professor of obstetrics in 1810, resigned his chair in 1834, a year before his death. Chapman, who held the chair of the theory and practice of medicine for thirty-four years, resigned in 1850. His long and honorable service had endeared him to thousands of graduates and made his name familiar to the profession of his country. Hare, a chemist and physicist of world wide fame, who was appointed to the chair of chemistry in 1819, continued to hold this position until 1847. It was no easy task to fill the positions occupied by these great teachers, but they had worthy successors.

Three years after the founding of the Jefferson Medical College, that is, in 1829, one of the most important events in the history of the Medical Department of the University of Pennsylvania occurred, an event which may have had its inception, in part at least, in the stimulus given by the establishment of the new school. This was the opening of a new building for the Medical Department on Ninth Street, above Chestnut, where the postoffice now stands. The building was one of two of similar architecture, plain, substantial, and commodious, that on the north being for the College Department. Here the school continued until its removal to West Philadelphia, with the exception of a short interim of two sessions held in another building on Ninth Street, below Walnut, because of delays in the completion of Medical Hall in West Philadelphia. The Medical Department of the University of Pennsylvania was now in sharp competition with its new rival, the Jefferson Medical College.

At the time of the inaugural of the new building the University had a distinguished faculty—Physick, Chapman, Gibson, Cox, Hare, James, Horner, Dewees, and Jackson—the last three at first not holding full professorships. A struggle for supremacy between the old school and the new went steadily onward.

I have mentioned as the fourth most important period in the history of the Medical Department of the University of Pennsylvania that of expansion, marked by the introduction of specialism and the lengthening of the medical course, 1870-1900. This was a great period of awakening and advance. The faculty of the Medical Department, much of it new blood, was the strongest in its history for the number of men it contained, including Leidy, Penrose, Agnew, Pepper, Wood, Goodell, Wormley, Allen, and Tyson. The number of matriculates for the session of 1874-1875, after the removal to West Philadelphia, was 371. New positions now appear in the reports of the medical school and the hospital—clinical professors, clinical and other lecturers, demonstrators, assistant demonstrators, instructors, assistants to the professors, etc. It was during this period of expansion and specialization that the movement for lengthening the course of medical instruction took shape. The medical course was extended from two to three years in 1877. A volun-

tary fourth year course was instituted in the session of 1881-1882, and a compulsory fourth year in 1893.

The period of expansion in the University Medical School was another illustration of the fact that the psychology and material results of great national and international movements have their influence on educational advance. This country emerged from the Civil War in 1865, and Europe from the Franco-Prussian War in 1870. The stimulus of these periods of internecine and international strife influenced in a way not difficult to see the science and art of the times which followed them. From the ruin of war, great discoveries seemed to emerge in medicine—antiseptic surgery, cerebral localization, the neuron theory, bacteriology with its many radiations, the use of the Röntgen ray, and much else with which we are all now so familiar. Our own war taught our people to think more bravely and to do things in a less provincial fashion. In Germany medicine advanced and expanded under the influence of a paternalism which was one of the results of victory in arms. In France the people, aroused to the necessity of reorganization, were stimulated in every walk of life and especially in those which relate to political, social, and educational advance. Out of death, wounds, and disease emerged much that has been given to us for the understanding of the problems of life and of healing.

I have spoken of the fifth period in the history of the Medical School of the University, and I might say also of medical education in this country, as that of elimination and combination, characterized by the closing of some schools and the merging of others, and by radical changes in medical teaching made or suggested. This period has extended over a little more than the last decade, that is, from about 1904 to the present year (1917). In describing the events which led up to the founding of the Jefferson Medical College, and in glancing at the early history of this notable institution, I spoke of its founding as the first great separatist movement in medical education, and one that at the time was desirable and on the whole productive of excellent results as regards both the teaching and practice of medicine. In the early history of our country other great cities, like New York, had their medical colleges, and as the country expanded and grew in population and requirements, medical schools were founded from time to time in scattered sections; but the establishment of medical schools did not become a flourishing industry until about 1880. From that time until the new movement for revision and elimination took deep hold in 1904, the founding of medical schools went on at a rapid pace. The procedure was encouraged by a variety of causes. In a country of the enormous extent of the United States, in which large towns and cities were arising in every section from the Atlantic to the Pacific and from Canada to Mexico, the demand for physicians and surgeons was too great to be met by the output of the medical schools of the period before and just after the Civil War. Many young men willing and desirous of entering the medical profession could not afford the expense of going hundreds or thousands of miles to receive their medical education.

As state colleges and universities were founded,

often with the help of state grants in money or lands, and especially the latter, it became desirable from time to time to have as a part of such state institutions a medical school or department. It was believed, and in many instances with good reason, that the profession of medicine would be thus greatly benefited by state assistance and supervision.

Other reasons, however, not so commendable as those just stated, played a large part in the rapid growth of medical schools, most of which were of what has been termed the proprietary class. Men ambitious to succeed in the medical profession began to see that the opportunity of holding professorships furnished a lever which might be used with advantage to further their personal interests. Medical schools sprang up on all sides. One or two or several were established not only in the large cities, but also in some of the second or third rate as regards population. The aim sometimes seemed to be to make professors out of all the ambitious medical men of the community. In not a few instances such schools became, as they were often called, simply "diploma mills." Men of little repute and of less merit held chairs and gained thereby a standing not justified by their attainments.

Gradually it became evident that much harm was being done to the medical profession and to the community by this multiplication of medical schools, and thoughtful men in the profession began a propaganda for the elimination of the weak or unfit institutions. It had become evident to the community that the men trained at the larger and better equipped schools were those upon whom it could most depend. Medical education had become more elaborate and more expensive, and the poorly provided schools were rapidly losing their grip on the desirable men wishing to enter the profession. Many agencies were efficient in promoting the process of elimination of unfit schools. One of the most important of these was the work of the Council on Medical Education of the American Medical Association. In the annual presentation of data of this council for 1916, attention is called to the fact that the number of medical schools, which was running into the hundreds, was reduced to ninety-five in 1916. The number of medical students in 1904 was 28,142, and these by 1916 had decreased to 14,022, in spite of the gradual increase in the population of the country. Nevertheless, the number has proved sufficient and has made up in quality what it has lost in quantity.

Besides the elimination of weak, worthless, or harmful schools, a strong movement toward the merging of the better schools has made much headway. This movement has largely taken the form of bringing the newly merged schools under the ægis of state or other universities, a procedure which has evident advantages, such as the obtaining of state help for buildings and maintenance, the securing of university facilities for the housing of students, and the encouragement of larger numbers of students to take premedical university courses.

As is well known, a strong effort to bring about a merger of the three largest medical schools of Philadelphia—the Medical School of the University of Pennsylvania, the Jefferson Medical

College, and the Medico-Chirurgical College—has been under way for the last two years, and fortunately has met with considerable success. Three autonomous undergraduate medical schools could readily be placed under the suzerainty of the University of Pennsylvania. These might be run as practically independent organizations, each with its own teaching staff, subject only to the general supervision and control of the University. They would, however, have the same requirements for admission, the same methods of teaching, promotion, and examination, and the same tests for the medical degree. They would be three competing and yet coordinated and centrally controlled medical units.

The number of students coming to Philadelphia for a medical education should not be too much restricted by special legislation. The influence of the University of Pennsylvania and of the city of Philadelphia as a medical centre would be eventually curtailed if the classes were too restricted in number. Our doors should be open for the admission of at least three hundred students to the combined schools each year, and more than this would be desirable. If the facilities in college buildings and equipment are not sufficient to receive and handle such a number, they should be enlarged. With the present equipment of the Medical School of the University of Pennsylvania and that of the Jefferson Medical College, it would only be necessary to have one other equally well organized and equipped autonomous institution, and this might well be placed upon the present campus of the University, or in some portion of our city like the location of the Philadelphia Polyclinic, within easy reach of the campus. With these three autonomous schools and one large and well organized postgraduate medical institution, all working under the ægis of the University of Pennsylvania, not only would medical education be forwarded, but Philadelphia would recover its old and long held position as the greatest medical centre.

In the last ten years, during which the process of closing unfit medical schools and combining others has gone steadily forward, great interest has been shown by the medical profession, educators, and the community at large in the discussion and promotion of reform in medical teaching. Differences of opinion have developed, although the fact that some radical changes in methods are necessary seems to be generally conceded. These refer chiefly to 1, the necessity of large endowments for medical schools; 2, the question of full time and part time professors and other instructors; and, 3, the method in which a teaching staff should be organized to obtain the best results.

The methods of medical instruction have been greatly changed during the last fifty years. As has already been indicated, before the introduction of medical specialties and laboratory work the instruction, even in the best medical schools like that in the University of Pennsylvania and the Jefferson Medical College, was largely didactic and confined to seven principal chairs, with two or three additional courses of practical instruction like those in bandaging and dissection. General medical and surgical clinics were held to a limited extent after the estab-



lishment of outdoor or dispensary services in connection with the schools. Little practical work was done by the student. As medical teaching expanded in the eighth, ninth, and tenth decades of the last century, many additions were made to the practical curriculum.

Medical teaching has become more and more expensive. Every new department requires new equipment, and this must be of the best if the institution is to keep pace with others with which it is in competition. A cursory examination of the medical laboratory building and of the Hospital of the University of Pennsylvania will show how great and how expensive have been the changes which have taken place in the last quarter of a century or a little more. The buildings themselves, although of large size, have already become insufficient for the proper expansion of the work of medical teaching in accordance with modern requirements. Large sums are required, not only for the manning of the laboratories and for the endowing of hospital beds, but for daily running expenses. Above all, if medical education is to advance money must be forthcoming to pay the professors and the constantly increasing host of instructors and assistants who are now required to give too much of their time in the work to allow such service to be rendered without pecuniary compensation.

In 1908-1909 the Medical School of the University of Pennsylvania had twenty-two full professors, and clinical professors, associate professors, adjunct professors, and other teachers to the number of 134. This number has not changed much during the last half decade, but has not decreased. When it is considered that each of these medical teachers should receive a salary commensurate with the work done the large sum necessary for the full endowment of the Medical School becomes evident. This endowment should be not less than three to five million dollars, as without some such sum no great modern educational scheme can be thoroughly realized.

After a consideration of the necessity of a very large endowment for a modern medical school it is a natural step to take up next the question of full time and part time professors and other instructors. In the last year or two this subject has received much attention from writers on medical education. Recently several medical colleges have been largely endowed, with the understanding that those who accept positions under the endowment shall give their entire time to teaching.

No one will dispute the validity of the position that professors holding what are sometimes called the scientific chairs in a medical school—*anatomy, physiology, general and physiological chemistry, pathology, bacteriology, etc.*—should give their entire time to their work, receiving ample compensation. Those holding these chairs should undoubtedly be put upon the same footing as professors in nonmedical departments of the University. This practice has in recent years become so common that it may seem strange that one should refer to it in discussing medical education, but even within my own memory it was not unusual for professors holding such chairs as *physiology* and *even anatomy* to give part of their time to the practice of medicine.

I well remember a distinguished professor of physiology in the University of Pennsylvania and another one holding a similar chair in the Jefferson Medical College who had, when I was a student and later, large and lucrative practices. In the earlier years of medical education in this country nearly all the chairs in the medical schools were held by practitioners of medicine and surgery. Even down to very recent times most of the professors in many of the proprietary schools have continued this custom.

*(To be concluded.)*

## THE URETERAL BOUGIE AS AN AID TO DIAGNOSIS.\*

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The title of this communication expresses incompletely the subject under consideration, for while it represents an important phase of this subject, it is hoped to promote discussion upon a broader scope than is implied by the title. The entire question of renal infection is one of recognized importance and a clearer conception of its etiology is much to be desired. Urogenous infection has long been accepted as a reasonable surgical sequel, yet it cannot be denied that it seems to occur in some cases under certain conditions and fails to occur in other cases under apparently similar circumstances. The reason for this has not been entirely established. The hematogenous route is also a demonstrated source of contamination, but the explanation is still more or less complicated. Hydronephrosis is another phase of the subject, the importance of which is acknowledged, especially of those types that cause clinical symptoms closely resembling renal lithiasis. Finally, mobility of the kidney should be considered as a factor in the causation of both hydronephrosis and infection.

The interrelation of these three conditions cannot be too fully discussed, and together they embrace a large field in urological surgery. In a communication of this character it is only possible to scratch the surface, and the result must be more suggestive than thorough. In the preparation of the reports of the cases which I have collected to illustrate the different types of these troubles, the investigation is necessarily made with the assistance of others. The cystoscopic work has been done in that department of my clinic, partly by Dr. Herbert Reece, partly by Doctor Sinclair, and partly by myself. The roentgenographic work has been done in the Polyclinic Department of Radiology under Doctor Stewart, and in one instance, a very striking case, the excellent roentgenogram was taken by Doctor Lewald, of St. Luke's Hospital, and the cystoscopy performed by Doctor Bugbee. The treatment was under my direction and the operations performed by me with one exception, in which the operation was done in the Gynecological Department of the Polyclinic.

The cases about to be illustrated represent in summary: 1, displacements of the kidney with and with-

\*Read before the New York Academy of Medicine, Genitourinary Section, December 20, 1916.



out symptoms revealed by bougie or collargol injection; 2, obstructions of the ureter with and without infection revealed by bougie or collargol injections, and, 3, anomaly of the ureters, without infection or symptoms revealed by bougies.

These cases illustrate the great value of the ureteral bougie for diagnostic purposes, and demonstrate in some instances that in view of the negative results of urinary and röntgenographic investigations, the diagnosis would have been undetermined without the bougie. They likewise demonstrate the value of the dark fluid injections for diagnostic purposes and raise the question if a more complete knowledge of the exact derangement is not acquired in certain cases of the latter method. As to the question of the relation between mobility of the kidney and renal infection and the occurrence of hydronephrosis with and without infection, statistics seem to show that mobility and infection of the kidney occur more frequently on the right than on the left side.

We know the close anatomical relation between the hepatic and splenic flexures of the colon and the kidney and the more fixed relation of the splenic flexure. Does this anatomical peculiarity have any bearing upon the question of the infection in connection with mobility and hydronephrosis? It is certain that trauma or continuous trauma is likely to determine the issue. Witness the presence of a stone which has for a long time caused no symptoms and perhaps a displaced kidney mobilized somehow or other and transformed from a noninfected to an infected organ. As to the effect of the deviation of the ureter from its anatomical course, observation would seem to draw a parallel between it and the displaced kidney. In other words, we may have a marked displacement of the kidney without symptoms and without infection. When, however, displacement is such as to produce hydronephrosis, we have symptoms and, with trauma added, at least the susceptibility to infection. So the ureter may assume all kinds of directions and produce no symptoms. Hydroureter from one cause or another, be it from within—stone—or from without—adhesions—is likely to produce a different clinical picture.

Schmidt and Kretschmer (1) have shown in a series of röntgenograms with shadowgraph catheters, various deviations of the course of the ureter from the accepted practically vertical course, different degrees of angulation and zigzagging, in all of which the patients, abnormal subjects, presented no urological symptoms.

A brief abstract of cases is as follows:

CASE I.—Ptosis of right kidney, noninfected. Mrs. D., age forty. Clinical symptoms: Four months previously, acute paroxysm of pain in the hypogastric region and hematuria; duration three days. Four weeks later another attack of severe pain in the renal region; then more frequently recurring attacks, varying in duration and severity. Between times, there persisted a dull ache or soreness, radiating from the renal to the vesical region. Physical signs: Right kidney palpable. Gross urine clear. Cystoscopy: Normal bladder. Both ureters catheterized without obstruction. Catheterized specimens collected, and found negative chemically and microscopically, both from the suspected and opposite sides. Phenolsulphonphthalein gave normal result as to time and quantity on both sides. Röntgenographic observation: Right or suspected kidney in dorsal position brings negative findings. Bougie enters

kidney at level of the twelfth rib and takes normal course. Patient in erect position shows marked deviation of the ureter, which follows a rectangular instead of perpendicular course, owing to nephroptosis to about the iliac crest, rotation and displacement outwards. This case was treated conservatively by gymnastics and kidney belt. Last report, six months following original examination, no return of symptoms.

Abnormality in this case was shown only in the upright position, with the ureteral bougie and was otherwise negative.

CASE II.—Ptosis of left kidney, noninfected. Clinical symptoms: Paroxysmal attacks of pain in region of the left kidney for the past four years lasting several days and compelling patient to give up household duties. In intervals, there have been dull lumbar pains and soreness. Physical signs: Left kidney palpable. Cystoscopy: Bladder normal. Ureters catheterized without obstruction. Catheterized specimens from both suspected and opposite kidneys negative to chemical and microscopical examination. Röntgenographic pictures of urinary tracts negative. Röntgenographic bougie in left ureter showed rectangular course of ureter at about the third lumbar vertebra. Operation for fixation of the kidney performed. Four months after operation, röntgenographic bougie inserted in both ureters showed by contact normal perpendicular course and good operative result.

CASE III.—Ptosis of the kidney, infected. Clinical symptoms: pain and distress in the renal region. Cystoscopy: An infected hydronephrosis. Collargol injection and pyelography revealed hydronephrosis on affected side, caused by prolapse of kidney and kinking of ureter. Pyelography of opposite kidney showed a normal kidney. Operation performed for replacement and fixation of kidney. Satisfactory result shown by pyelography.

CASE IV.—Obstruction of ureter within; calculus. Clinical symptoms: Severe attacks of pain in the region of the left kidney, followed by chill and rise of temperature. Cystoscopy: Both kidneys reveal infection. Left kidney obstructed about four cm, but upon manipulation passes up to the pelvis. Right kidney unobstructed. Pus obtained from both catheterized specimens. Röntgenograms show calculi in the pelvis of right kidney, suspicious shadow in the left kidney, and another suspicious shadow in the region of the left ureter about four cm. above the bladder outlet. A leaded bougie inserted, this shadow proved to be within the ureteral lumen. Bilateral pyelotomy performed and stones removed from the right pelvis. No stone discovered in the left pelvis. Following operation, the ureteral calculus was mobilized and passed spontaneously.

CASE V.—Stricture of the ureter; pyelitis. This case is shown as an interiorly obstructed ureter caused by stricture and demonstrated by collargol injection. The bougie would also have demonstrated the obstruction, but not so well the sacculation above caused by the hydropyoreter. Dilatation of the constriction caused a relief of the symptoms, but not of the infection.

CASE VI.—Combination of pus and calculus revealed by ureteral bougie. The patient was a woman, seventy-odd years old, and had primarily noninfected lithiasis, which later developed infection. A bougie located a stone in the pelvis of the kidney and outlined the displacement of the organ. The stone was removed by posterior pyelotomy and the kidney fixed in upright position.

CASE VII.—Obstruction of the ureter from without. Clinical symptoms: Following a hysterectomy, the patient had suffered intermittent attacks of pain in the right renal region, radiating down the course of the ureter. These attacks were severe, and occurred at varying intervals, sometimes every other day and at other times at three and four weeks' intervals. Physical signs: The patient had a postoperative hernia, which was controlled by a well fitted truss. Gross urine is clear. Cystoscopic examination: Bladder normal. Both ureters functioning; catheterized specimens negative chemically and microscopically. Capacity of both pelves normal. The right ureteral catheter met resistance about fifteen cm. from the vesical outlet, whence it seems to take a deviating course. Ureteral bougie röntgenogram revealed a sharp angulation near the

sacroiliac synchondrosis, being directed upward and then sharply inward for two c.c., thence ascending perpendicularly to the kidney. Laparotomy was performed and the ureter inspected. Three bands of adhesions were found binding down the ureter just above the pelvic rim. These bands were broken up, and no recurrence of renal pain has occurred since the operation.

CASE VIII.—Another case of sharp angulation of the ureteral course. This patient also had an unusual sharp angulation of the ureter in its course toward the sacroiliac synchondrosis. The patient complained for two months of pains radiating from right lumbar to iliac regions, of short duration but severe in character; greater with full bladder. Cystoscopic examination: Normal bladder. Ureteral specimens negative. No obstructions though unusual deviation of right catheter noted. Ureteral bougie roentgenograms showed outline of ureters.

CASE IX.—Anomaly of the ureters multiple in number. Clinical symptoms: This patient came to the clinic for urethral trouble and a combination of symptoms, accompanied by frequent urination. Cystoscopic examination: Normal bladder. Bilateral double ureters. The flux of urine appeared first at the upper orifice, followed immediately afterwards by the flow from the lower openings. Each set of ureters was catheterized separately and submitted to laboratory examination, the result being negative in pathological significance. It was noted, however, that the two specimens from the right side, and the two specimens from the left side, corresponded exactly in chemical findings. Röntgenographic bougies were adroitly passed into all four ureters by Dr. Herbert Reece, and pictures taken.

This particular case has no pathological significance, but the method of working it up as outlined, by separate catheterization and bougie pictures, might have an important bearing in cases of an anomalous supernumerary kidney. One ureter may yield a normal urine and the other give evidence of tuberculosis or other infection. In this case the two ureters drained the same kidney.

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25 PARK AVENUE.

## THE AMERICAN DOCTOR AND PREPAREDNESS.

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The present moment, when all American eyes are focused upon measures for war, is not entirely propitious for the discussion of a military policy to be pursued consistently in peace times, for it is obvious that measures endorsed in war times often appear impracticable and chimerical in the piping years of peace, as it is clear that the military steps adopted in the years of peace often prove totally inadequate in war. General Carter emphasizes the truth of this thought in a recent public paper in which he declares that the Plattsburg idea is beyond question an inadequate measure as a means for training military reservists, if for no other reason than that it has been conceived and thus far carried on in a period of unusual nationalism and patriotism fostered by recognized imminent danger to our republic from the war maelstrom of Europe. With the subsidence of war, the enthusiasm of the patriotic men who have voluntarily pursued this training would normally subside, or at any rate the relatively few who would sacrifice personal interests in peace times could not be de-

pended upon to render such a policy adequate. This is not any reflection upon the Plattsburg idea, which has unquestionably exerted a vast influence in favor of military preparedness, but brings me to the point of present interest to the medical practitioners of this country.

What rôle must the American doctor play in the great drama of national military preparedness, or, to put the question differently, what measures are practicable in time of peace for insuring the United States an efficient and organized body of doctors for the Army, Navy, and Red Cross of America in time of war? I have elsewhere (1) discussed in detail a plan for the training and organization of a national medical reserve corps in an endeavor to correlate on the one hand the needs of the Government, and, on the other, the necessities of the civil practitioner. For it is just here that the crux of the situation rests.

It is unnecessary for me to dwell at the present moment on the need for elementary military training and organization for reserve medical officers. All of our literature for two years has teemed with this one theme. I shall only say that the doctor must not befooled himself with the idea that his professional character and duty renders him exempt from the necessity of military training and organization. By elementary military training, I do not refer to "fours right or left," but to much more important duties of a staff officer. The staff of an army, as my reader knows, is primarily concerned with the supply of the fighting forces. It must furnish supply of food, equipment, arms and ammunition, information concerning the enemy, engineering works, and certainly not least doctors, nurses, bearers, sanitary experts, ambulances, hospitals, hospital trains and ships, and medical and surgical supplies. Manifestly the fighting forces cannot exist without supplies nor be utilized to greatest success with the lack of efficient service from any one of the great supply departments. A military expert in reckoning the relative military power of a nation considers almost primarily the organization and training of its great military departments of supply. So that it is clear that an efficient medical department is a vital military factor for the success of our forces.

Now the question must be faced: Is the civil practitioner without any training in our system of supply, fit to become a cog in this great system of machinery? No matter what his professional efficiency, he is not in a position to render the Government the highest degree of service of which he is capable, and this is true because he lacks certain training and knowledge which is possessed by every good noncommissioned officer of the Medical Department. Why, then, is it necessary for the reserve medical officer to have other qualification than that of professional attainment? Because he must in the vast majority of instances leave his present environment and enter upon a new one; because he must learn to live under conditions totally at variance with former experience, and treat his sick and wounded under new and difficult conditions of life; because he must keep his command equipped and supplied with all those needs which his department is required to furnish



the fighting forces, regardless of whether they are in camp, on the march, or in battle; because finally he is like the terminal cerebral artery, the only proper channel of supply to his unit. When the channel becomes clogged through his lack of efficiency, the circulation is blocked for that area of distribution. Multiply this difficulty ten thousand times, that is, visualize ten thousand medical officers whose lack of acquaintance with environment renders them inefficient staff officers, and the great supply department breaks down, for it matters little with what efficiency medical supplies are prepared if the terminal distribution is impeded.

I have referred in detail to the matter of supply, but this is only one phase of the military machinery. There are certainly a dozen other duties of the Medical Department which can be portrayed with equal force. Now, I believe many an American doctor exclaims, "I am ready to serve my country; I am a good surgeon, but I can't bother with red tape." The fact is, the regular Army and doubtless the Navy is more than willing to dispense with red tape. Certainly the fighting man is, and the staff officer as far as it is possible to do so while still preserving an efficient and systematized administration. It is well known that if you enter the professional employ of a great commercial enterprise, such, for example, as a great railroad system, you are compelled to acquaint yourself with a certain method of making reports and returns, of asking for and issuing supplies. In fact, you can scarcely come into the most brief contact with modern enterprise without realizing that a business system founded upon forms and papers is in vogue with which you are obliged to conform as a servant of the company. It is, therefore, surprising to observe the resentment with which the average civilian discovers that this Government conducts its enterprises upon a system. I have often thought that if reserve officers suddenly thrown into military life would devote to a study of our business system a moiety of the time they spend cursing our red tape, their service would be happier to themselves and others and the language would be much poorer in expletive. In point of fact, I have observed men of the highest intelligence struggle for days with the execution of the simplest requisition, simply because they would not give a little earnest consideration to our business system. The result has been that supplies failed when the neophyte was engaged in the most unsatisfactory type of medical correspondence school, in which his education was acquired by the return unfilled of his improperly executed request for supplies.

This brings me to a few words on the subject of the Correspondence School for the Medical Reserve Corps. This course has its detractors as well as advocates, although I am of the opinion that the former are not fully aware of the purposes of this course, nor of the consideration for the civil doctor's status upon which the system is founded. In a very narrow sense it is literally true, as is pointed out in an editorial in the *NEW YORK MEDICAL JOURNAL* of March 3, 1917, that "service in the National Guard or in the Regular Army is the only practical way to prepare for service in case of war." The

Government, however, in establishing these correspondence courses was considering practicability upon a much larger scale, in which thought was given not only to the vast number of civil practitioners required for a great war, but also for the viewpoint of these same doctors when engaged in the routine practice of their profession in peace times. Until this Government shall have adopted a permanent military policy in peace as well as war founded upon compulsory or general military service, the situation must be viewed in this broad and considerate manner.

These correspondence courses do not attempt to graduate completely trained military surgeons, but they do attempt to place in the hands of American doctors the means of becoming acquainted with the rudiments of our military business system. These courses do not familiarize the students with all of the subject matter of our various manuals, nor even with all of the more important points of our business system, but they serve to introduce these books and papers to the students.

The correspondence course for Medical Reserve officers is a four year course conducted under the direction of the Surgeon General of the Army by the Director, Department Care of Troops, Army Service Schools, Fort Leavenworth, Kansas. This course embraces a series of ten papers each year. Each paper has from six to twelve questions upon some feature of the Army surgeon's duties. The student's reply is corrected, and returned for his instruction. The school also issues a number of useful bulletins for its students. Only two years have been completed thus far. It may safely be said that this course will be increasingly beneficial to those who are willing to devote to it a reasonable amount of study and interest.

A correspondence course has essential shortcomings, but it pays a high rate of interest on the capital of serious study invested by the participant. It is only one means of educating, and is of course much less satisfactory than practical instruction; but extensive practical instruction of any large percentage of American civil practitioners in time of peace under our military system in vogue up to the present moment is not feasible. We accept the conditions as they exist and meet them as fully as our limitations permit.

The doctor in civil life who enters the Reserve Corps hereafter must be actuated by patriotic motives. He will, therefore, seek to render himself better fitted to act as an officer of a supply department of the Army; he can do so by pursuing the correspondence course offered by the Medical Department. In so doing he should not concern himself so much with the grading which his papers receive as with the acquisition of a working idea of our military system as it applies to his own particular department. It is for this class of men that I am writing. Their patriotism, humanity, and magnanimity deserve and will have not only the praise, but the service and help of their professional brothers in the regular establishment.

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## EARLY DIAGNOSIS OF LOBAR PNEUMONIA.\*

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The diagnosis of lobar pneumonia is a much simpler matter in hospital practice than it is in private work. This is the reason that those who write textbooks and whose professional work is mainly done in hospitals and consulting practice speak of the diagnosis as being usually such a simple matter. The reason for this is that the patient is always ill at least twenty-four hours before he comes to the hospital and often even forty-eight hours or seventy-two hours have elapsed before he feels that he is ill enough to seek institutional care. At that time the disease is full blown and in most instances is easily recognized. In general practice it may be said that in the majority of cases the diagnosis of lobar pneumonia can be made in the first few minutes of the first examination. Almost before one has heard the first sentence of the patient describing his complaint, a correct diagnosis is made of the disease present. A minute or two spent in examination is sufficient to confirm the presence of pneumonia. But it is not always so. Quite frequently the diagnosis is not made until the third or fourth day and not rarely until the day of the crisis when the critical decline wakes us up to the fact that our supposedly typhoid fever was a pneumonia.

However, in a fairly large proportion of cases a careful history both as to the nature of onset and development of symptoms and signs makes it possible to arrive at a tentative diagnosis on the first examination. In another group are the cases that on a second visit will show definite signs or indications. In a small proportion of cases, only several days' continuance of fever and laboratory findings will settle the matter. We will first discuss the cases that do not produce a clear cut diagnosis by the history volunteered nor by the rapid examination. In elucidating these cases the first and most important point to consider is the mode of onset. One must disassociate the necessity of acuteness of onset and pneumonia as synonymous terms. In pneumonia, more than forty per cent. of the cases do not begin in the textbook manner with chill, pain in the side, and high temperature. One of the most common pitfalls is the history given by the patient, that he has not felt well for two weeks or a month, that he has lost eight to ten pounds, that he has no energy to do his work, has slept fitfully, and has a poor appetite—everything was a burden to him. He has aches and pains here and there and nowhere in particular and on examination he shows no definite physical signs except a temperature of 102° or 103° F. I believe that such a history leads us astray very frequently and makes us feel that typhoid or tuberculosis is probably present. Another path that leads us astray is the history of cough and expectoration of four or five days before the patient is ill enough to go to bed. The onset during or following delirium tremens will al-

ways catch the unwary because of the apparently slight respiratory distress. Onsets with headaches, vomiting, or with convulsions are so common that they should always suggest possible pneumonia, and yet, they frequently lead us to think primarily of some other disease that we are accustomed to associate with such initial symptoms. The human mind is so constituted that when one associates two conditions for a long time it usually requires quite an effort to disassociate them. This is true of the association of the onset of disease and the disease itself.

The most common and most uniformly present symptom of pneumonia is increased respiratory rate. While it is true that in a few other diseases one meets with increased respiratory rate as an occasional phenomenon, in no disease is it so common nor so universally present as it is in lobar pneumonia. The diseases where it is commonly present such as in uncompensated hearts, diabetes, etc., are ordinarily not accompanied by fever. In tuberculosis there is an increased respiratory rate, but other signs and symptoms usually present do not make the increased respiratory rate as such a confusing factor. This increased respiratory rate is certainly not due entirely to the amount of lung involved, but seems to be due to an acidosis evolved as a result of the pneumococcus infection. The increase in respiration is out of proportion to the increased pulse rate and instead of bearing the proportional rate of one to four it is present in the ratio of one to three or one to three and one half at most.

I believe that not enough attention is paid in private practice to the routine count of the respiration especially when the patient does not seem distressed. Unless the actual count is made we are apt to overlook the fact that the respirations are thirty or over to the minute. It may seem a commonplace to insist on this matter, but for the man in everyday active practice the need is not so much of suggesting new things as it is of reminding him of the old and well known facts. Certainly any consultant will bear out the statement that the respiration count is, in the absence of manifest dyspnea, seldom taken by the busy practitioner. The count should be made while the temperature is being taken and again after the examination, and the two counts are then to be compared. A respiration rate approximating thirty to the minute when the patient is lying quietly should always be viewed with suspicion. When the syndrome of increased respiration is much out of the proportion of one to four and there is a decided increase in temperature, in the absence of all other signs of disease usually causing it, the presumption is strongly in favor of pneumonia.

In a child suffering from a high temperature and respiratory rate of one to three compared with the pulse, the equivalent of a respiration of forty and pulse of one hundred and twenty extending over a period of twenty-four hours with no other signs in the throat or ear and a slight cough I believe one is warranted in making a diagnosis of pneumonia on the first examination and if it persists for more than forty-eight hours pneumonia is almost a certainty. Of course the relative frequency of pneumonia in children makes a chance of error much less in such

\*Read before the Medical Society, County of the Bronx, New York City, March 21, 1917.

a diagnosis in a child than in an adult, but it is a fairly good rule in an adult as well. This increased rate of respiration of forty to a pulse of one hundred and twenty is rarely continually present in febrile conditions except in pneumonia and I believe it is, next to prune juice expectoration, the most valuable single symptom.

*Temperature.*—While it is true that occasionally a low temperature is present in lobar pneumonia I have met with very few cases where the temperature was below  $101^{\circ}$  F. in the rectum at the commencement of the disease. Almost always it is  $103^{\circ}$  or over at that time and it rarely remains long below  $102^{\circ}$  F. at any time. Since pneumonia is the commonest severe disease in this latitude during the winter months we should always consider its possibility in any patient presenting a moderate or high fever and no other signs to account for it. It is quite true that such a fever under such circumstances continuing for several days with no indications in the lungs is more likely to be typhoid fever than anything else, yet, when first seen the relatively more common occurrence of pneumonia at this time should make it a disease to be kept prominently in mind. Breathlessness on exertion is a suggestive sign only; when accompanied by temperature elevation it is worthy of serious consideration. Such rare conditions as those described by Hess in infantile scurvy of disturbed pulse respiration ratio occur, but they are usually without fever and do not ordinarily cause difficulty in diagnosis.

*Pain.*—The next symptom to consider is that of pain. Actual pain in the side when accompanied by temperature above  $103^{\circ}$  F. with a slight cough and when a general friction rub is not present warrants a tentative diagnosis of pneumonia.

If expectoration is present and the temperature persists for two days the diagnosis may be considered a certainty. In this as in all other categorical statements there are exceedingly rare exceptions, but for the man in actual practice who must make a diagnosis on the second visit at the latest, I feel that the rule will hold true in ninety-five cases out of one hundred. Acute pleurisy rarely causes a temperature above  $103^{\circ}$  F. and practically always the rub is present at the first examination. Pain elicited by pressure or by a percussion while it does not have the same significance as when it is induced by respiration will often be the only pain complained of in the early part of the disease. When confined to the side under suspicion it is of considerable value. Such pain to be of value should not be referred to the sternal region and should be present for at least two days.

*Expectoration.*—The presence of prune juice or rusty sputum without demonstrable heart lesion when accompanied with a temperature of  $101^{\circ}$  F. or over is always synonymous with pneumonia. It is the most important single symptom and in a doubtful case one such sputum is quite as confirmatory as the presence of bronchial breathing. In other words of all of the symptoms mentioned "one rusty spit is worth the whole kit." During last winter and this winter there has been associated with the epidemic of gripe a series of pneumonias that resembled catarrhal pneumonia in that for the most

part there was an entire absence of physical signs characteristic of consolidation such as bronchial breathing, etc., but slight dullness on percussion could generally be made out. All of them presented sibilant and sonorous râles which were largely confined to the affected side posteriorly; clinically they were lobar pneumonias with bloody sputum and tenderness in the side. They usually ended by crisis between the fifth and ninth day. Here the bloody sputum was of great value in fixing one's attention on the pneumonia, as otherwise, the slight constitutional symptoms would never lead one to suspect that he was dealing with a pneumonia. They were mostly hilus pneumonias.

Hemorrhage when due to tuberculosis is free and is not so intimately mixed with the sputum as it is in pneumonia. It may be mentioned in passing that the staff of the Phipps Institute have demonstrated that nearly all cases of the hemoptyses of tuberculosis are associated with pneumococcal infection. The hemorrhagic sputum of mitral stenosis is generally different and there is no temperature elevation. There is almost always a history of exertion.

We have in another communication called attention to the sense of weight on the affected side as a sign of some value in the diagnosis of lobar pneumonia. The patient feels as though the side involved weighed more than its fellow, and this is actually the case as the affected lung weighs from one to four pounds more than that of the unaffected side. This sign can be elicited by having the patient change from side to side quickly or by suddenly sitting upright. It is purely a subjective symptom and requires a fair amount of intelligence on the part of the patient to differentiate between the sense of weight and the sense of pain. It is present in about one third of all cases of lobar pneumonia and is of considerable value as a confirmatory sign.

Herpes on the lips is always suggestive and where there is present an acute high fever of three days' duration with a slight cough and no other signs or symptoms one is warranted in those cases in making a tentative diagnosis of pneumonia. In the presence of leucocytosis the diagnosis is almost a certainty. It rarely occurs, however, before the second or third day of the pneumonia. Flush on one cheek is a suggestive sign only, it means nothing except that the sympathetic on that side is stimulated and usually only two diseases do this, i. e., pneumonia and tuberculosis.

We shall suppose that the cursory examination of the chest did not reveal anything to attract our notice. Now on carefully going over the chest a second time the following signs should be looked for: a very slight impairment in the percussion note; curiously enough this is sometimes of tympanic character over the affected area. In general, however, one cannot receive much valuable information from the percussion note alone at this stage. The earliest sign on auscultation is a diminished respiratory murmur both on inspiration and expiration over the affected portion of the lung. On the opposite side of the chest one is apt to find particularly in children a very loud inspiratory and expiratory note—so loud and so harsh is this that it often leads to a diagnosis of the disease on the wrong side. The diminished



respiratory murmur must be carefully looked for, otherwise it will be missed. In other words one listens for silence and not for the cardinal signs of bronchial breathing, etc. In all doubtful cases especially should one examine high up in the axilla with the arm above the head and over the scapula for signs.

To grasp the reason of this failure to hear bronchial breathing over a consolidated area it will be necessary to review a few fundamental truths that have been conclusively demonstrated in the last few years notably by Dr. N. Mason and Dr. W. H. Stewart, of this city. The laws of physics as illustrated by x ray examination in pneumonia demonstrate the following: 1. Sound is well conveyed only through media of the same density; for example, on scratching one end of a log and listening with the ear at the other end a distinct sound is heard. If the log now is sawed across and a piece of sponge is interposed between the two portions then when the end is scratched no sound is heard by the ear. 2. It has been conclusively proven in the last few years by x ray examinations that pneumonia always begins at the periphery of the lobe or what amounts to the same thing at the hilus of the lung and gradually extends in a fan like manner towards the base or towards the periphery. Bronchial breathing is only heard in the one case when the apex of the fan reaches the base of the lung where the large bronchi end and when there is tissue of the same density from the end of the large bronchi to the surface of the lung. Thus sounds conveyed from the vocal cords are carried direct to the surface of the chest. In the early stages of pneumonia and throughout the whole course of some pneumonias when the fan like consolidation never extends to the base, there is much sound tissue between the base and the apex of the fan, corresponding to the interposition of the sponge between the two ends of the sawn log as mentioned above. Consequently there can be no clear transmission of voice sounds through such a medium. We formerly covered ourselves in such cases by the diagnosis of central pneumonia. There is no such thing as central pneumonia, with the rare exception where the median periphery of the lobe is involved and then the consolidation does not reach the surface. Generally speaking, it is the periphery of the lung that is involved, hence the crepitan râle is a pleural râle and not an imaginary sticking of tubes together. This question of density also explains the paradox that used to puzzle students as to why one hears bronchial breathing over pleural effusions. Here the lung is so compressed at its base that it is about of the same density as the fluid in the chest and thus sounds are conveyed from the large bronchi by tissues of almost the same density to the ear. This only happens when the compression of the lung at the base is extreme, so it is not present in small effusions unless they are confined by adhesions. Over these areas of distant breathing light percussion may, however, confirm our suspicions by showing slight dullness over the suspicious area. In these doubtful cases on deep inspiration one hears fine râles.

But fine râles are heard in so many conditions that

not much reliance can be placed upon them. I am not now speaking of the true crepitan râle, but rather of such fine crepitations as one hears over the side of the chest when an aged person has lain for several hours on that side, or the fine crepitations over the left side of the chest in the beginning of broken cardiac compensation.

In the case under discussion these crepitations may often be elicited early, and even bronchial breathing obtained by having the patient lay on the suspected side and then by listening with the bell of the stethoscope underneath the patient, the weight of the patient and consolidation producing enough compression to carry the sounds through. Consequently if in addition to the syndrome already mentioned of a high temperature, a few râles, and an increased respiratory ratio, we have slight dullness on percussion and a diminished respiratory murmur over the same area with the rare exception mentioned before we are practically certain that we are dealing with pneumonia.

Frequently in a patient who has a severe pleuropneumonia on one side, thereafter there is apt to be breathlessness on the least exertion and on percussion slight dullness and a distinct vesicular murmur over that area, so that one finds signs suggestive of early pneumonia. Here one must make the diagnosis on pain, expectoration, and continued high temperature. Fortunately when one cardinal symptom is missing others of equal value are usually present.

In view of these facts it is easy to see that one cannot rely on the presence of physical signs in the early stages of a considerable proportion of cases of pneumonia, but we must centre our attention on individual symptoms or combination of symptoms. I believe that most physicians do have such combinations in mind as warranting the diagnosis of pneumonia, but they are seldom crystallized in the literature. Such aphorisms are always open to the objection that there is "no no nor never" in medicine, but they are extremely helpful in the rapid recognition of a case. Clinically the cases that raise the question as to the differential diagnosis fall into one of two classes: First, those patients who are taken rather suddenly ill, say, in the course of a day or two, with the general symptoms of an acute infection; and secondly, those who have been complaining of some sort of illness either of major or minor character for a week or longer. In the first category may be placed the cases wherein a differential diagnosis must be made between pneumonia and acute dry pleurisy, appendicitis, gallbladder disease, meningitis, and pulmonary infarct. In children, in addition to appendicitis and meningitis one must frequently rule out acute gastrointestinal toxemia and rarely a pyelitis. In the second group, i. e., those that have been already ill or complaining for some time, the most frequent trouble will arise in differentiating as to, 1, the presence of pleurisy with effusion; 2, typhoid fever; 3, tuberculosis; 4, pericarditis with effusion; and rarely from acute milary tuberculosis and subdiaphragmatic abscess.

*Dry pleurisy.*—Occasionally pleurisy begins with a sharp pain in the side and a high temperature. On one or two occasions I have seen it rapidly mount to 104° F., but ordinarily it is between 101° and 102°



F. There is always present a friction rub that is well marked at the first examination. The patient does not look sick, does not cough vigorously, and has no expectoration.

*Appendicitis.*—The differentiation of pneumonia from appendicitis is at times the most puzzling and most brain racking experience in medicine, because an error here means a life. On the one hand, there is the feeling that one should always give the benefit of the doubt by advising an operation whenever the indications are at all evident. On the other hand, the knowledge that the operative mortality in an abdominal section in the presence of pneumonia is about fifty per cent. makes one weigh such a decision with much seriousness. Fortunately it is in children where this error is most frequently made and under these circumstances the pneumonia mortality is not nearly so high. In the differentiation it is well to remember that in the so called Murphy syndrome of vomiting, epigastric pain, increased temperature, and rigidity and point pressure, these symptoms occur one after the other in practically all acute appendicitis cases, whereas in pneumonia careful questioning will show that the sequence does not follow this order. Usually the fever will precede the other symptoms. Epigastric pain is not so common as an initial symptom. However, when the patient is first seen the most valuable differentiating symptom will be the increased pulse and respiration ratio. The movements of the *alae nasi* are not so significant. In appendicitis there is no marked continuous increase in the respiration pulse ratio, whereas it is always present in the pneumonia of children and is usually one to three and continues for more than twenty-four hours. The rigidity will as a rule soften up under the flat hand continuously pressed on the side and the pain is apparently not made worse by this pressure, whereas in appendicitis it is almost always painful. In appendicitis careful palpation will reveal the fact that the pain is felt in vertical direction mostly, whereas the abdominal pain of pneumonia is more general. The look of the child as well as the expiratory grunt is frequently significant. The rectal examination should never be neglected in these cases and will sometimes solve the difficulty. The flush on one cheek, the herpes, and expectoration are unfortunately not often present in these cases where we need such corroborative evidences. However, all of these little ones do cough and it should be watched for very carefully. Children with appendicitis do not cough and no matter how slight the cough may be, provided it is repeated in the course of an hour, it should establish the presumption of pneumonia. The temperature in the early stage of pneumonia in children and in most adults approximates  $104^{\circ}$  F., whereas in appendicitis before rupture it is rare to find it above  $103^{\circ}$  F. In most instances when the case is first seen it is between  $101^{\circ}$  and  $102^{\circ}$  F. When all is said and done cases will occasionally occur where it is impossible to make a differentiation at the first visit. Leucocytosis over 20,000 almost always means pneumonia. It is well to remember that on the doctrine of chances every time pain is present over the appendix in children it is probably pneumonia in the proportion of at least five to one, that is, there are

five cases of pneumonia in children with abdominal pain to one of appendicitis. In a hospital with an x ray outfit a few hours should easily clear up the diagnosis as far as the lung is concerned. Curiously enough, it seems that this most valuable means of differentiation is seldom thought of by the clinician.

*Acute gallbladder disease.*—This must occasionally be differentiated from pneumonia. Here the same principles apply as in appendicitis. Usually a careful examination of the urine will reveal bile and there will be chills. At times pneumonia is associated with jaundice and then great care must be exercised. Generally a day's waiting in such cases will not be such a serious matter as in the case of appendicitis.

*Meningitis.*—Because of the more common prevalence of pneumonia in the fall and winter one should always lean to such a diagnosis in the illness of children, beginning with meningeal symptoms. Usually a close study of the respiration pulse ratio, and commonly the absence of Kernig's sign with a higher temperature will decide in favor of pneumonia. However, in many cases one cannot decide positively at the first examination. This is especially true when the case is ushered in with convulsions. Commonly convulsions in small children mean the onset of one of three diseases. The first and most common is gastrointestinal toxemia, second pneumonia, and third and most infrequent meningitis. As a rule, in the first and second of the diseases mentioned the convulsions are not repeated, whereas in meningitis they frequently are repeated. If the convulsions come on after several days' illness then pneumonia is not likely to be the diagnosis. In pneumonia the cerebral symptoms do not grow worse after the first day, whereas in meningitis they usually do. If on the second visit the signs are not sufficiently clear, then laboratory methods must be resorted to. It may be argued that laboratory methods should be employed at once. In hospital practice this is feasible, but in private practice it is impracticable, as no one goes out on his round of calls with all of the possible laboratory paraphernalia necessary for spinal taps and blood examinations. Fortunately for the practitioner the diagnosis is usually sufficiently clear on the second visit. Theoretically, the differentiation between pneumonia and meningitis is easy, but occasionally it is a very difficult one to make. I remember a girl twelve years of age who was brought into the hospital about one year ago with a history and signs typical of tuberculous meningitis. Unfortunately, as often happens in just such cases, spinal taps were always contaminated. She had been ill a week with indefinite symptoms, then opisthotonus continuous over four days, strabismus, positive Kernig and Babinski, and a temperature of  $105^{\circ}$  F. developed, and she lay in semicomatose for five days, at the end of which time diminished breathing could be made out. She had her crisis on the ninth day. She had been seen by careful observers who were on the lookout for this very denouement, but the pneumonia was not discovered. X ray pictures taken for the first time on the fifth day and interpreted on the sixth day

also showed signs at the same time that the physical examination revealed them.

*Gastrointestinal toxemia.*—In children the onset of gastrointestinal toxemia frequently resembles the onset of almost any acute infection. The increased respiratory rate incident to the acidosis sometimes present, a high temperature, and the relatively common occurrence of pneumonia in children sometimes makes the differentiation impossible on the first visit. Ordinarily, of course, this is not so. In any event, after a thorough purging has been accomplished by calomel or castor oil, there is no longer any doubt.

*Pulmonary infarct.*—This is a rare source of error; here the pain and hemorrhagic expectorations precede the temperature by a day or two, which is never the case in pneumonia. There is rarely high temperature unless the embolus is a septic one, and there is a history of phlebitis or recent abdominal operation. The pain is apt to be of an especially severe type. Of course, when seen for the first time on the fourth or fifth day without a history no one can positively make a differentiation because a true pneumonia has doubtless also occurred.

*Massive pneumonia.*—The so called massive pneumonia where there are none of the usual signs of consolidation, but on the other hand all of the signs of fluid, i. e., flatness, diminished respiratory murmur, etc., is exceedingly rare. As a rule, the whole lung on one side is affected, and yet there is no displacement of the heart nor is a Grocco sign present. Such displacement would necessarily be present when such a large effusion is present, extending from the top to the bottom of the lung. It is on these two points that the diagnosis must be made. Puncture reveals no fluid. In the few cases of this type that I have seen death has always occurred. There have been many explanations as to why one finds the signs of effusion rather than of consolidation, but none are quite satisfactory. It is an exceedingly rare condition in this country. In the second group of cases, that is, patients who have been sick for some time, the history is confusing and usually of little value. One must rely more on symptoms than on physical signs.

*Pleurisy with effusion.*—This is the most common stumbling block in this category, especially when seen for the first time after four or five days' illness. Here the gradual rising of the level of flatness—the low temperature compared with the extent of the lesion, the comparative comfort of the patient, and the low respiratory rate as compared with the extent of the lesion, are helpful aids in differentiation. Expectoration is exceedingly rare in effusion of this type and is never absent in pneumonia with such extensive consolidation. When it is present it makes for the diagnosis of pneumonia. The displacement of the heart and the presence of a Grocco sign will settle the matter in most cases. Sudden dullness limited to one lobe means pneumonia. The presence of flatness from base to apex front and rear, with the rare exceptions mentioned above of massive pneumonia, means fluid and nothing else. Movable dullness at times is of help. The S shaped curve of flatness is not as easily mapped out nor as commonly present as the textbooks

assert it to be. Pneumonia itself rarely shows as much impairment of resonance behind as in front and vice versa, i. e., it follows the lobes and not the contour of the chest. If to this is added the blood picture there is seldom much doubt but that the needle will determine the presence of fluid. However, there are plenty of cases where only the needle settles the question in the clinician's mind. It is extremely rare that thickened pleura is a stumbling block in the diagnosis. Absence of other signs of pneumonia when such an extensive area of dullness is present is sufficient to rule out all pneumonia.

*Typhoid fever.*—On the first examination it may be impossible to make a differential diagnosis from typhoid fever, yet in pneumonia there is almost always a more rapid relative pulse respiration ratio. Frequently in typhoid fever there is a slow pulse respiration ratio, of one to four and one half, or one to five. The facial expression of the pneumonia patient is that of one who is looking for something, of one suffering some anxiety, whereas in typhoid fever there is an inexpressibly stupid facies. Generally speaking, during the course of an examination the patient will give some sort of cough; the season of the year and the history of exposure are also of some help. Of course, on the second or third day the laboratory report of a leucocytosis or leucopenia and a Widal will settle the matter.

*Tuberculosis.*—It is sometimes one of the most difficult things in medicine to determine whether we are dealing with an acute or chronic process in the lung or an acute process on an old underlying chronic one. The bronchial breathing of tuberculosis is generally entirely different from that in pneumonia. In pneumonia the sounds seem to occur next to the ear, whereas in tuberculosis they are distant. In tuberculosis there are liquid râles of all sizes in other parts of the lung, and this is uncommon in lobar pneumonia. A tuberculosis extensive enough to give bronchial breathing has signs at the other apex. The breathing is not so rapid. The previous history, as mentioned before, may extend over a period of weeks or months and may be misleading, and a consumptive may also have pneumonia; a blood count and sputum examination are of course of prime value, but they take time. Absence of leucocytosis usually means that there is no pneumonia. Pneumonia more commonly affects the lower lobe, whereas tuberculosis more commonly affects the upper lobe, and yet it is in the upper lung where most errors in diagnosis are made. When in much doubt as to the diagnosis between pneumonia and tuberculosis it is safer to make a diagnosis of pneumonia, because if there are enough signs and acute symptoms present, there is in any event a small area of pneumonia probably present, even though the underlying condition may be tuberculosis. This mistake of pronouncing a lung process due to pneumonia as being pulmonary tuberculosis has unmade and made many reputations in medicine. One must constantly put up a mental fight against the ready made diagnosis of tuberculosis in busy hospital practice until tubercle bacilli are found, otherwise many cases are wrongly diagnosed. The x ray has taught us that pneumonias do not all resolve as quickly as we formerly thought, and that in



many of them the consolidation lasts for weeks and even months with few physical signs and symptoms.

*Pericarditis.*—To differentiate between pneumonia and pericarditis is not as a rule troublesome, but the question whether pneumonia is also present with a pericarditis with effusion is often a puzzling one. In almost one half of the cases of pericarditis with effusion the fluid is in the rear of the heart rather than in the front, as we were formerly taught. In such cases when we first sit the patient up there is generally found over the left back the physical signs of pneumonia such as bronchovesicular breathing, dullness, and fine râles. In addition there is a fairly high temperature and a cough due to the pressure of the fluid. The beginner cannot be blamed when he says that he thinks pneumonia is present under these conditions. A series of x ray pictures has convinced me that these signs are due to the compression of the lung by the effusion, making it temporarily quite dense and thus causing it to be a good conductor of sound; they disappear more or less fully if the patient leans forward for a space of a few minutes. In ill compensating dilated hearts with a fresh attack of bronchitis the question also comes up of differential diagnosis, and the presence of slight dullness at the angle of the left scapula known as Ewart's space, fine râles, harsh breathing, and dyspnea are very suggestive of pneumonia. Some of these patients are suffering from pneumonia, but the x ray shows that most of them are not. Generally mere congestions and bronchitis do not cause one to have a temperature above  $101^{\circ}$  F. and pneumonia almost always does. So that if one is dealing with a patient who has a high temperature, say  $103^{\circ}$  or over, for two days, with this combination it is justifiable to make a diagnosis of pneumonia. While there is a combination of pleurisy with effusion along with pneumonia in over fifty per cent. of all lobar pneumonias this effusion generally does not amount to more than 100 c. c., but sometimes it amounts to a litre or more. When this fluid is sufficient in quantity it gives all the signs of pleurisy with effusion, and of course blocks off the physical signs of pneumonia. In attempting to arrive at a complete diagnosis in such cases one must place more reliance on symptoms than on physical signs, so that given a patient with symptoms of lobar pneumonia such as sudden onset, bloody sputum, high temperature, herpes, etc., even though one finds signs of fluid before the fifth day, still the diagnosis of pneumonia would stand plus that of pleural effusion. Because these facts are not always kept in mind many an unjust criticism has been made of the previous attending physician by his colleagues who see the patient after effusion has occurred and then pronounce it to be a case of pleurisy rather than pneumonia, whereas both diseases are present. Such a condition beginning after ten or twelve days of serious illness of course would suggest that it was a postpneumonic process. Rarely the diagnosis must be made of a subdiaphragmatic abscess, although it is more commonly between the latter condition and pleuritic effusion that trouble arises. The length of time of the process, the duration, the absence of sputum, and the respiratory pulse

ratio are all cardinal points in diagnosis, yet occasionally only an x ray picture will settle the matter.

*Acute miliary tuberculosis.*—This seldom has a characteristic onset, the cyanosis is far more marked in proportion to the cardiac weakness usual in pneumonia: the presence of high leucocytosis speaks for pneumonia, the inconsistency of the symptoms is in favor of tuberculosis. In these cases often at one examination one finds signs pointing to a pneumonia, as bronchovesicular breathing, dullness, etc., and yet the following day nothing is found. In pneumonia once physical signs are found they do not disappear, but are intensified on the following day. The other symptoms are at times quite as noticeable as in pneumonia, and often a diagnosis is not made during life. Of course, after the disease has been under observation for a week or so and no evident physical signs of pneumonia are present, then our suspicions are aroused. Finally, in the aged the onset is apt to be insidious and frequently associated with mental symptoms. It is a good plan to suspect pneumonia in any old person who has cough, expectoration, and a temperature of  $101^{\circ}$  F. for two or three days without any other physical signs. After carefully going over our patient the second time we must sometimes leave the diagnosis in doubt; here the laboratory may be of help, a blood count in our suspicious cases over 20,000 will generally mean pneumonia, and when it approximates 40,000 there is rarely any exception to the rule. If it is much lower than 16,000 the count will be of little service. A marked diminution of chlorides in the urine I have found quite a reliable confirmatory sign. At the Harlem Hospital a rapid estimation of urinary chlorides has been worked out by Doctor Jahn timer, one of the interns. It is as follows: Purdy's centrifuge tube is filled to the ten c. c. mark with urine to be tested; add fifteen drops of nitric acid; add a ten per cent. solution of silver nitrate up to the fifteen c. c. mark. Thoroughly mix and centrifuge for three minutes. The reading is as follows: Each one tenth c. c. represents one per cent. of chlorides by bulk, the normal being ten per cent. This method, while it is not absolutely accurate, is near enough for all practical purposes, and has the advantage of rapidity.

I am quite well aware that there is a marked diminution in chlorides in a few other infectious diseases, such as typhus fever, etc., but they are so far removed in the diagnostic scale from pneumonia that they can be discarded from a differential standpoint. As a court of last resort, aside from the sputum there is no evidence quite as conclusive as the x ray, but unfortunately at present this is only possible in hospital work and but rarely there.

Finally, in conclusion, I believe that a great many pneumonias are missed both in private and in hospital practice; that a large number of them do not produce enough discomfort to cause the patient to go to bed, and that when the time comes when every patient who enters a public hospital will be fluoroscoped just as his urine and blood are now examined, we will be in a position to evaluate many of the minor symptoms that might otherwise be overlooked.

220 WEST 130TH STREET.



## NEWER ASPECTS OF INFECTION IN PNEUMONIA.\*

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The object of this paper is to present a brief summary of new and important findings concerning pneumonia. These facts have not yet been brought forward in their connected entirety and they exist mostly as isolated experimental data. That these facts are vital to our modern understanding of pneumonia admits of no doubt. In 1913 Dochez and Gillespie brought forward their biological classification of the pneumococcus (1). In their communication they systematized for the first time that which had already been recognized only vaguely. They divided into four types the strains of pneumococci which had been thought to be almost innumerable. All members of Type I produced a homologous antiserum which would only agglutinate specifically strains of this type and would protect white mice against lethal doses of cultures of Type I. Serum of Type I would not protect against infection with Type II and vice versa; that is, Type II also had its specific antiserum. Type III comprises that strain known as *Pneumococcus mucosus*. No immune serum could be elaborated for it, nor could any agglutination tests be applied to it. Type IV is really arbitrary and comprises a group into which are thrown all strains not falling within the definitions of the first three types.

This fairly clear differentiation indicated the reason why results had often been disappointing in the past by the administration of antipneumococcus serum. Since these serums are specific for their own types, the irregularity in results when used indiscriminately can well be accounted for. At present favorable results are being obtained by the use of immune serum in pneumonia of types I and II. The diagnosis of the type, moreover, helps in arriving at a prognosis, because it is fairly well determined that the worst cases of pneumonia are due to infection with II and III. Type I is less severe while the heterogeneous group or Type IV causes a mortality usually below ten per cent.

How is the pneumococcus transmitted? From study of the organism, it has become evident that it cannot long survive as a nonparasite; it dies within a short time when exposed to air and in media not suitable for its development. It has been known for a long time that it is harbored normally in the mouths of many healthy individuals. The importance of this fact was disputed when it was shown that these pneumococci did not correspond usually to the pathogenic types. I am, however, inclined to believe that we must not feel too sure about the innocuous character of these harbored germs and I base this doubt upon the fact that many variations may be produced experimentally in the pneumococcus both in virulence and agglutinability. Even during the course of a single infection, the virulence of the germ may increase during the ascension of the bacteriemia. There is then a possibility of a rapid evolution of the apparently avirulent germ, from the distribution into

the mouths of susceptible individuals, especially in the colder months of the year.

Still more to the point is the demonstration that virulent pneumococci are fostered in the mouth of a patient recovering from pneumonia for a period in some cases as long as ninety days from the first day of illness (2); furthermore, that in many cases those attending the sick one reveal on cultured examination of the mouth a type of organism identical to that of the patient. From these statements it is reasonable to assume that transmission of the infection occurs from person to person by way of the respiratory tract especially in the acts of coughing and sneezing and that at this time the coccus is already in its definitive pathogenic type in a large number of cases.

The well known predisposing cause of pneumonia, exposure to cold, which has been experimentally demonstrated a number of times in the past has been recently repeated under conditions more analogous to the human infection (3). *Bacillus bovisepitiscus* was made use of because it produces in rabbits catarrhal conditions of the nose and even pneumonia. Cultures of this bacillus were sprayed into the nose or throat of rabbits. Among those animals which were exposed to the outside temperature during winter there develop more fatal cases of pneumonia than in the controls which were sheltered. Even changes from cold to warm temperatures raised the incidence of infection.

We have next to consider the mechanism of the infection. We must remember that it is essentially a bacteriemia. The pulmonary lesion then is a focal sign of a generalized bacteriemia and the amount of lung involvement is no criterion of the heaviness of infection. Toxins in this disease are not the soluble toxins which are elaborated in diphtheria, but they belong to the class of endotoxins which are only liberated when the body of the coccus is broken up and digested in the body or dissolved experimentally in bile. Shortly after their entrance into the circulation, the pneumococcus gains in virulence and resistance to antibodies until the infection is at its height. The means of defense lies mostly with the agglutinins. When these begin to be formed, clumps of cocci are swept from the general circulation into the liver and spleen and here probably digested by phagocytic cells. Agglutinins have been found in the blood of pneumonics during some stages of the disease in about seventy-three per cent. of cases of types I, II, and IV. This does not imply that they can easily be demonstrated *in vitro*, for they usually are not found before the crisis and in many cases can be found only on one or two days, and subsequently disappear.

The crisis itself still remains an obscure phenomenon and any explanations made have been more in the nature of vague guesses. If the patient has recovered there should theoretically be a period of active immunity lasting a variable length of time. It is likely that this period is rather short. It has been shown that the serum of pneumonia convalescents may protect mice from lethal infection with the homologous type, but that the efficacy of this protection gradually diminishes after the crisis and tends to disappear in two or three weeks (4).

\*Read before the Logan Medical Society, September, 1916.

Though this statement does not limit the duration of clinical immunity, it possibly indicates that the major concentration of antibodies lasts but a short time. It is always possible for immunity to exist without our being able to demonstrate it in the blood serum by laboratory methods.

I would like to revert for emphasis and because it has a bearing on the discharge of the patient, to the statement that a number of recovered pneumonics will show persistence of the presence of pathogenic cocci in the sputum. This is a matter upon which no stress is laid, though it would seem apparent that such an individual may be the centre of dissemination of virulent pneumococci for some days to come. It seems deserving of a little attention from our bureaus of public health who realize the menace of diphtheria and typhoid carriers. The remedy is to determine whether the patient is still harboring his pathogenic type before we allow him to go about his daily routine, or if he is in a hospital, to detain him until he shows negative reactions, helping this process along by the use of oral and nasal antiseptic solutions. We must go further than this to be thorough. The physician and nurse since they cannot always obviate the chances of some contamination should rigidly observe oral cleanliness and at intervals allow a cultural examination of the mouth.

If we impose any additional burden upon the hospital or if there is a question of added expense, we must consider that no procedure of even theoretical value ought to be left undone, and that similar measures are taken in other conditions where the common welfare is concerned.

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1819 CHESTNUT STREET.

## RITUAL CIRCUMCISION.\*

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The statement has been made on apparently good grounds, that circumcision is the most ancient of all the surgical operations. Indeed the truth of the affirmation seems now to be generally admitted by experts in the arcana of anthropological and antiquarian lore as well as by those best acquainted with the history of primitive surgery. The locus of its origin has not been so definitely agreed upon. It was practised in Egypt, among the Arabs and Islamites, in the Balkan regions, Asia Minor, Persia, a greater part of India, northern Africa, Christian Abyssinia, and among the original Australians and North American Indians. In Egypt circumcision was the distinctive physical stamp of the elect and the learned; Pythagoras, on his arrival in Egypt, had to undergo the operation of circumcision, as the subjects of that operation alone could be admitted to the privilege of initiation into the special myster-

ies and esoteric doctrines of that inspired circle of priest philosophers.

The origin of circumcision among Jews, is derived from Abraham, upon whom it was enjoined as a token of the covenant. "This is my covenant which ye shall keep between me and you, and thy seed after thee; every man child among you shall be circumcised. And ye shall circumcise the flesh of your foreskin and it shall be a token of the covenant betwixt me and you. And he that is eight days old shall be circumcised among you, every man child in your generations, he that is born in the house, or bought with money of any stranger, which is not of thy seed."

Aliens had to undergo circumcision before they could be allowed to partake of the covenant feast of Passover or marry into a Jewish family; those who did not undergo the operation were called *ārelīm* (uncircumcised) or *tāmīn* (unclean). This shows how deeply rooted in the minds of the ancient Hebrews was the idea that circumcision was an indispensable act of national consecration and purification.

The cosmopolitan distribution of this first and most frequent of all surgical operations has very naturally given rise to a great deal of speculation and inquiry regarding its origin and the intimate nature of the practice. The rather numerous theories which have been advanced by various investigators may be classified under the headings of utilitarian, tribal, sacrificial, and religious. With the Jews it was nothing more nor less than a religious ceremony; a rite, of such importance, that heaven and earth are held only by the fulfillment of this covenant, and all the merits of Moses could not shield him from the danger to which he was exposed in consequence of the neglect of this command.

Evidence of the strictly religious nature of the rite, as far as the Hebrews are concerned, lies in the fact that with all their skill in surgery and medical sciences, they being at one time the only intelligent exponents of our science, they never made any alteration or improvement in the technic of the operation. It is evident that even Maimonides, the celebrated Jewish physician of the twelfth century who furnished some rules in regard to the operation, was held under some constraint by the religious aspect of the rite.

If repressive measures are of any avail, circumcision as an Hebraic rite should now have no existence. Its present existence and observance show a vitality that is simply phenomenal; its resistance and apparent indestructibility would seem to stamp it as of divine origin. No custom, habit, or rite has survived so many ages and so many persecutions. Other customs have died a natural death with time or want of persecution, but circumcision in peace and in war has held its own from the misty epochs of the Stone Age to the present.

In its primitive form circumcision was connected with marriage. Whether performed with a view to the facilitation of cohabitation or to the consecration of the generative powers, at all events the age of puberty was selected for the rite. The Arabic

\*Read before the New York Academy of Medicine, December 15, 1916.

word *hatana* signifies both "to marry" and "to circumcise." The ancient Hebrews followed the more primitive custom of undergoing circumcision at the age of puberty. After the settlement of the Israelites in Palestine, the rite was transferred to the eighth day after birth. The Mohammedans, Persians, and Tartars, usually circumcise their boys between the ages of six and fourteen years, and it is usually carried out in a public place on as many as a hundred boys at a time. In Arabia and Persia, girls were also circumcised at the age of ten years. Just what was circumcised is not clearly defined; at times the prepuce of the clitoris, the clitoris itself, or the nymphæ were cut away. These operations were performed by women who were accustomed to travel in the villages, and who would call out at the top of their voices: "Are there any girls to be circumcised?" In certain provinces of Asia Minor only girls were circumcised, the boys being spared.

Among the Hebrews as early as the Geonic times, the ceremony had been transferred from the house of the parents to the synagogue. The *brith-milah* (circumcision) has been made the occasion of great festivity from the days of Abraham. In accordance with the Bible, Abraham was the first man to be circumcised at the age of ninety-nine years. In Biblical days the mother performed the operation. It was in later days performed by a surgeon, *mohel*, *gozer*, or *amen*; in the absence of a Jewish physician, according to R. Mëir, a non Jewish physician, a woman, or a slave might perform the ceremony. The instrument used in Biblical days was a knife made of flint stone; later stone, steel, or glass was allowed to be used as instruments for circumcision. The operation itself, in post-Biblical days was composed of three steps: *milah*, *periah*, and *mezizah*. *Milah* was the cutting away of the prepuce. The Mohammedans do not carry out the operation with the exacting scrupulosity of the Jews; they merely detach the overhanging foreskin, but do not think it necessary to expose the surface of the glans. *Periah* means the seizing of the inner lining with the thumb nail and index finger of each hand and the tearing of it so that the *mohel* can roll it back over the glans and expose the latter completely.

In the early Greek and Roman periods, the Jews, threatened with exile, confiscation, or exorbitant taxation, were driven to adopt every possible expedient to eradicate the signs of their Israelitism, and made attempts to reform a prepuce. The first attempts in this line were made during the reign of Antiochus when a number of Hebrews wished to become as the people about them who were not persecuted. This is no easy operation and in later times, by the aid of appliances, both in Rome and in Spain they undertook to cause the skin to recover the glans (epispadias). In order to prevent the obliteration of the seal of the covenant on the flesh, as circumcision was henceforth called, the rabbis, after the war of Bar Kokba, instituted the *periah*, the laying bare of the glans, without which circumcision was declared to be of no value. *Mezizah* means the sucking of the blood from the wound; the *mohel*, or professional circumciser, took some wine in his mouth and applied his lips to the part and exerted suction; after which he expelled the

mixture of wine and blood into a receptacle provided for the purpose. This was regarded a health measure to prevent hemorrhage.

Maimonides, the physician to the court of Saladin and the greatest physician of his day, insisted on suction of the fresh wound as the safest method of hemostasis, and made the ruling that anyone who would endanger the life of an infant by not sucking the wound, should not be allowed to perform circumcision. He made the wise observation that when blood remains in a wound it is apt to fester; he insisted therefore that all wounds should be sucked first to aspirate every drop of blood from the wound to prevent festering, and second, to promote hemostasis.

We must, therefore, not judge too harshly the old shepherds of the Armenian plains for adopting a practice which to them was calculated to avert subsequent dangers, or their descendants for following in their footsteps until they learned better, even if that practice is to us disgusting, primitive, and useless.

Anyone familiar with the Talmud knows that the Jewish law is replete with hygienic and sanitary suggestions. It was always the aim of the Jewish law-makers, to enact laws which would preserve health and prolong life. Such reverence did they have for physicians and medical science that a Jew according to one of their laws is not allowed to reside in a community where no physician dwells; and to allow for future medical progress, they have specifically stated that any of the talmudic laws may be rescinded and abrogated if they should be proven to endanger life or health.

The talmudic law prescribes that the circumcision should be performed during the daytime on the eighth day. In no case should it be performed before this day as until then the infant is considered a fetal being, and as lactation is not fully established for one week after birth, the infant may be too weak before this time. A prematurely born infant must not be circumcised until its age *ex utero* corresponds to the age of a maturely born infant. A sick child must not be circumcised until it is well and not for seven days after its recovery. If the infant is too yellow or too red, circumcision must be postponed until the skin assumes a healthy color. If two infants die in the same family and of the same mother as a result of hemorrhage following circumcision, all other infants must not be circumcised until they have attained maturity.

It is not surprising to learn therefore that when the dangers of suction of the wound, became apparent, it was the very orthodox rabbis that rescinded this part of circumcision and forbade its use. As early as 1827, Rabbi Moses Sofer preached against it. In 1845 in Germany Doctor Solomon forbade suction. In 1854 the Grand Rabbi of Paris, the most orthodox rabbi in that city at the time, was one of the most zealous supporters of the new departure. In New York, the Kehillah, the Federation of Jewish Societies, a number of years ago took up the supervision of *mohelim*, or those who perform circumcision, organizing a special committee. The chairman of this committee is the Rev. Dr. Moses



Hyamson, chief rabbi of New York city. In a conversation with the chief rabbi, he outlined for me their method of supervision which makes ample provisions for the safeguarding of those circumcised and those who circumcise. Suction of the wound is not only not allowed but is strongly forbidden. The medical members of this board have issued a pamphlet for *mohelim* which has been adopted by the board of health.

The certification of *mohelim* by the Kehillah is carried out as follows: 1. Every applicant receives an application blank, every statement of which is investigated. 2. He receives a thorough medical and legal examination. 3. No business man is accepted as a *mohel*; only those who are dependent on *milah* for support are chosen; preferably those interested in associated work. 4. Only those who have had previous experience are accepted. 5. Those who are accepted must undergo a course of instruction in the technic and the general rules of asepsis given by the medical members of the *milah* board. Instruction is given in certain accredited hospitals. The *mohelim* must perform a certain number of circumcisions in the presence of physicians of the board. They must then undergo an examination after passing which, they receive a certificate to practise circumcision. 6. Certificated *mohelim* must report to the board every circumcision they are going to perform at least twenty-four hours before the circumcision takes place. Physicians of the board are at times present to see that the laws of asepsis are carried out. From time to time these certificated *mohelim* are reassembled and receive further instruction. 7. The certificates are issued only for two years, at the end of which time they are reexamined. 8. The names of certified *mohelim* are published in the press and in the Jewish journals, as is also a blacklist. 9. A campaign of education through the pulpits and the Jewish papers on the dangers of circumcision as performed by uncertificated *mohelim* is soon to be inaugurated.

In the city of New York the practice of circumcision is on a higher plane than anywhere else in the world; the responsibility is now with the people. In the Jewish papers and magazines are printed lists of medically trained and certificated *mohelim* who perform circumcision in accordance with the highest standards of medical science and with greater dexterity than it is performed by the average physician, for they are trained specialists in this art. In my opinion the supervision of *mohelim* as carried out by the *milah* board of the Kehillah is ample and efficient; nothing but encouragement and amplification of their field of action is necessary.

Rome was not built in a day and a custom—*mezizah*—which has been followed for thousands of years cannot be eradicated in a day or a decade, especially as it was originally adopted as a health measure. Everything possible to free circumcision of all dangers to operator and operator is being done by those to whom circumcision is a religious medical question. Criticisms from those to whom this subject is purely of medical interest are apt to be misconstrued however sincere they may be. The best policy the latter can follow is one of *laissez faire*.

316 WEST NINETY-FOURTH STREET.

## ADMINISTRATIVE CONTROL OF SICK INDIGENTS.

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One of the problems that demands the keenest attention of public spirited citizens is the question as to how the indigent sick may be best and most economically cared for. The statutes of the state of New York provide for such treatment as follows:

Article III, Paragraph 30. HOSPITAL ACCOMMODATIONS FOR INDIGENT PERSONS. 1. Any city or county in which a hospital duly incorporated is situated, may send to and support, in the same, such sick and disabled indigent persons as require medical or surgical treatment, and when admitted the authorities of such city or county shall pay to the directors of such hospital such sum per week as may be agreed upon or found to be just during the period in which such person shall remain in such hospital.

2. In all counties of this State in which there are not adequate hospital accommodations for indigent persons requiring medical or surgical care and treatment, or in which no appropriations of money are made for this specific purpose, it shall be the duty of county superintendents of the poor, upon the certificate of a physician approved by the board of supervisors, or of the overseers of the poor in the several towns of such counties, upon the certificate of a physician approved by the supervisor of the town, as their jurisdiction over the several cases may require, to send all such indigent persons requiring medical or surgical care and treatment to the nearest hospital, the incorporation and management of which have been approved by the State Board of Charities, provided transportation to such hospital can be safely accomplished. The charge for the care and treatment of such indigent persons in such hospitals, as herein provided, shall not exceed one dollar per day for each person, except that in the counties of Westchester, Nassau, and Suffolk a charge of not to exceed two dollars per day may be made therefor, which shall be paid by the several counties or towns from which such persons are sent, and provision for which shall be made in the annual budgets of such counties and towns. (As amended by Chapter 309 of the laws of 1912.)

Article VI, Section 130. ADMISSION AND MAINTENANCE OF PATIENTS.

Whenever a patient shall have been admitted to such hospital, the superintendent shall cause to be made such inquiry as he may deem necessary, relative to the ability of such patient, or of the relatives of such patient legally liable for his support, to pay for his care and treatment. If he find that such patient, or said relatives, are able to pay for his care and treatment in whole or in part, an order shall be made by the superintendent directing such patient, or said relatives, to pay to the treasurer of such hospital for the support of such patient a specified sum per week in proportion to their financial ability, but such sum shall not exceed the actual cost of maintenance. The superintendent shall have the same power and authority to collect such sums from the patient, or his relative legally liable for his support, as is possessed by an overseer of the poor in like circumstances. If the superintendent find that such patient, or said relatives, are not able to pay, either in whole or in part, for his care and treatment in such hospital, the unpaid cost of his maintenance shall become a charge upon the town, city, or village by which the hospital is maintained, provided, however, that in case such patient is not a resident of said town, city, or village, the cost of his maintenance shall be a charge upon the civil division of the State upon which he would be a charge as a poor person. No employee of such hospital shall accept from any patient thereof any fee, payment, or gratuity whatsoever for his service. (Added by Chapter 558 of the laws of 1910.)

Collection from persons able to pay is provided for in the following paragraph:

Article IV, Paragraph 57. RECOVERY FROM PAUPER WHO HAS PROPERTY.

If it shall at any time be ascertained that any person, who has been assisted by or received support from any town,

city, or county, has real or personal property, or if any such person shall die, leaving real or personal property, an action may be maintained in any court of competent jurisdiction, by the overseer of the poor of the town or city, or the superintendent of the poor of any county which has furnished or provided such assistance or support, or any part thereof, against such person or his or her estate, to recover such sums of money as may have been expended by their town, city, or county in the assistance and support of such person during the period of ten years next preceding such discovery or death.

So long as these sick indigents demand care it will be debated as to how this may be best provided. The point which demands the most consideration is perhaps the one concerning the relative value and economy of treatment in public or private institutions. In either case, the citizens pay the bills. Is it wise in the interests of public health to consider the development of one to the exclusion of the other? There is a definite relationship between private philanthropy and public responsibility in the care of the sick. The burden is on the taxpayer in either case, there are always city poor that need attention. When the administration of municipal hospitals and clinics is entirely removed from politics and put upon an efficient basis, the care of the sick poor is more economically managed in city owned and city managed institutions. In cities of moderate size it has been found desirable to provide for pay patients in the municipal hospital; such provision offers a source of income to the hospital and places it upon a markedly higher plane.

Another problem which demands consideration is the question as to whether the dispensary service should be an outpatient department of the hospital or a separate organization. This has been decided differently in different communities.

Worcester, Mass.—O. P. D. Worcester City Hospital.

New Haven, Conn.—Supported jointly by city and Yale University.

Providence, R. I.—O. P. D. Rhode Island General Hospital.

Rochester, N. Y.—Private philanthropy.

Cleveland, Ohio.—O. P. D. private hospitals.

Boston, Mass.—Boston Dispensary, private philanthropy.

Boston, Mass.—O. P. D. Boston City Hospital.

San Francisco.—O. P. D. Private hospitals.

The more satisfactory and economical arrangement is to have the city dispensary service rendered by an outpatient department of the municipal hospital. The outpatient department feeds the wards with carefully chosen hospital cases that actually need hospital treatment and culls out these cases which would otherwise get into the hospital but may be as well taken care of outside at less cost. The discharge of patients from the wards can be accomplished earlier when an outpatient department exists for by this organization the patients may be followed up and treatment given. The outpatient department also cuts down the actual number of hospital admissions by forestalling disease and educating the citizens.

Much has been said and written in regard to dispensary abuse but careful observation of efficiently managed dispensary services leads one to the opinion that it is a factor that can be eliminated. It is easy to become excited over scattered cases of im-

posture, but it is better to find out whether such cases are a large or small proportion of all applying for treatment. Thus we find in a recently published report of the Dispensary of the Rhode Island Hospital that the admission desk has been in charge of a trained social worker who questioned all applicants for treatment. The proportion of patients who were deemed able to pay for a physician was three and one half per cent.

Handling dispensary admissions through a social service department is the constructive method. With such a system in force there can be no dispensary abuse. In another New England city of 150,000 there were 2,987 applications for treatment in the outpatient department of the municipal hospital. Two hundred and fifty one, or eight and one third per cent. of these were referred to private physicians and in two subsequent years but five of these presented themselves for treatment at the dispensary a second time. This method also has the advantage of contributing annually to our knowledge about the kind of people who apply for dispensary treatment and what needs to be done for or with them.

There is another question of medical attention that cities are continually confronting. What is to be done for the vast middle class? It has been stated that only the very poor and the wealthy receive the best medical service. In a sense, this is true, and in order to put the services of competent specialists within the reach of the middle classes, the pay clinics have been established. The Massachusetts General Hospital has carried on the most extensive experiments in this field and so far have met with unqualified success.

Pay clinics for venereal disease have been in operation some time and have done much to ruin the quack and advertising specialist. At the Boston Dispensary, a charge of fifty cents is made and medicine is extra. At the Brooklyn Hospital a fee of one dollar a visit is charged and includes treatment and medicine.

These three institutions, the municipal hospital, the outpatient department supervised by social service workers, and the pay clinic offer the most efficient and satisfactory methods for caring for the sick poor of the community.

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**The Oculocardiac Reflex in Syphilis of the Central Nervous System.**—E. Murray Auer (*Journal A. M. A.*, March 24, 1917) reviews some of the recent literature on the significance of this reflex and cites the results of his own study of its occurrence or absence in a series of thirty-seven cases. He concludes that its abolition is one of the earliest signs of syphilis involving the central nervous system, and one which is easily investigated by the general practitioner. He found the reflex to be abolished on the side of hemianalgesia with retained tactile sensation in a case with the Millard-Gubler syndrome. It was also noted in this series of cases that the pulse rate ranged between eighty-two and 112 in fifty-two per cent., and that during the spasmodic weeping of cases of pseudobulbar palsy the radial pulse became almost imperceptible from reflex inhibition.



## MORE LIGHT ON THE AFTERTREATMENT OF POLIOMYELITIS.\*

### *Demonstration of Cases and Technic.*

By A. C. GEYSER, M. D.,

New York,

Professor of Physiological Therapeutics at Fordham University Medical College; Consultant to the Nazareth Trade School and Hospital, U. S. D., Farmingdale, L. I.; President of the N. Y. Society for the Promotion of Physical Therapeutics, New York City.

The poliomyelitis epidemic of 1916 has passed. We are now dealing with the aftereffects of the disease. Any therapeutical measure that holds out a reasonable promise of amelioration is worthy of our serious consideration. Eight patients under my observation during the last three years had their acute attack from four to eighteen years prior to coming under treatment. These patients were referred cases and under the close observation of their physicians. The first four patients made complete recoveries averaging about six weeks' treatment for each year elapsed since the acute attack. Two more patients regained complete voluntary movements, but there remained shortening of one inch in the leg and one inch in the upper extremity. Two patients are now under treatment.

CASE I.—The patient, a well nourished miss of nineteen years, referred by Dr. I. Nasher, came under my observation in October, 1916. She had her acute attack eighteen years ago. In October last she presented a complete reaction of degeneration of all of the muscles of the left leg with some involvement of the quadriceps extensors. The limb was flaccid, cold, and blue, and there was four inches of shortening with corresponding circumferential shrinkage. Treatments were given on alternate days for fifty-five minutes each. Today the limb is of normal color and temperature and there are marked gains in the circumference, strong voluntary motion in all of the toes, perceptible extension and flexion of the foot, and improved gait due to improved quadriceps action.

CASE II.—Referred by Dr. J. G. Sauer. Treatment was begun on January 9th of this year. The patient, a well nourished girl of fourteen, had her acute attack eight years ago. The left leg and the quadriceps group were involved, and there was complete reaction of degeneration of all muscles below the knee. At the age of twelve a tendon transplantation was performed at St. Mark's with little or no cosmetic results. Today this patient has voluntary motion of all the toes and strong extension and flexion of foot, and the limb is warm and of normal color.

Such uniform results cannot happen without a good and sufficient reason.

*Pathology.*—The lesion of poliomyelitis in these cases is the injury or destruction of the motor cells in the cord. The trophic centre for the nerve and muscle is cut off. While the motor cells act as a trophic centre, it does so through its connection with the sympathetic ganglion by the ramus communicans. The atrophy is due to the inability to function; this lack of function causes a reflex sympathetic effect through the communicating branch and spasm or contraction of the vasomotor system occurs due to the loss of blood supply. A paralyzed, cold, blue, flaccid, and atrophied limb is the unavoidable result.

*Therapeutics.*—If we wish to harmonize our therapy with the existing pathology, our first endeavor must be to reestablish the nutrition through an adequate blood supply, then by causing the nerves

and muscles to perform their physiological function, to affect what is left of the motor cells or, which is equally feasible, to awaken collateral nerve paths or even form new paths of conduction. When this has been accomplished muscle training leads to complete reestablishment of normal function.

*Technic.*—In the practice of electrotherapy it is a recognized fact that muscles will react in inverse ratio to the temperature of the parts. All locally applied heat from external sources penetrates only from three to five mm., or about one quarter of an inch. The high frequency current on the other hand is the only agent now known that will heat tissue through and through. It differs from all externally applied heat in that it exercises little or no effect upon the skin. In fact, instead of a conduction or convection of heat we are dealing with a conversion. Electric energy is converted into heat by the resistance of the tissues. It must be clearly understood that we are not using electricity except to convert it into heat units. The flexible tin electrodes are properly moistened with soap lather and applied in such a manner that all of the affected region is enclosed between the two poles.

The current is turned on to a point of comfortable tolerance. Not less than thirty nor more than sixty minutes should be consumed either daily or upon alternate days. In many cases of recent standing this treatment alone has been followed by rapid and complete restoration of all function. When the functional response is slow as in old cases, this heating process is followed by the application of the sinusoidal current, later by the faradic and then by muscle training. It is of considerable moment to appreciate the fact that the sinusoidal current is not used to produce muscular contractions but only for the purpose of assisting the tissue in finding and forming new or unused paths for conduction for nerve force. It is my opinion that the early use of electric currents for the sole purpose of causing muscular contractions without adequate provisions for nutrition to the parts has been justly condemned.

The testing of the nerves and muscles with an electric current may be of prognostic value; therapeutically it is a hindrance. It is nutrition, not work, that is primarily indicated. The demonstration showed the actual technic employed. Case II was selected for this purpose. The patient was attached to a Wappler diathermia machine as previously described. In ten minutes the entire limb was heated through and through. By charts it was made clear just how this electric energy is converted into heat units. A further demonstration showed that this current, while passing through a patient's body in series with two ordinary thirty-two candle power lamps, brilliantly illuminated the lamps.

To show that this treatment was indicated not only in chronic cases a little child two and a half years old was shown. This patient had her acute attack one year ago. One week after the subsidence of the acute symptoms this patient presented a complete paralysis of both lower extremities with involvement of the erector spinæ. This patient was given the diathermic treatment and six weeks later was completely cured. Other tests were shown, the coagulation of albumen, tracing the current track

\* Read before the New York Physicians' Association, January 25, 1917, at the Park Avenue Hotel.



through the centre of a potato, etc. All of these tests showed that we were not dealing with external heat conduction nor with the passage of electric currents *per se*. The author's contention is that we are dealing with a conversion of electric energy into heat units. The electrodes do not become heated but instead the tissues are heated through and through.

231 WEST NINETY-SIXTH STREET.

## Abstracts and Reviews

### CARDIAC DYSPNEA.\*

BY PROFESSOR FRANCIS W. PEABODY,  
Harvard University.

After a few introductory remarks upon the subject of disturbances of the respiration and mention of some of the newer methods of approach to the study of its phenomena the lecturer proceeded to a brief discussion of the use of the term dyspnea. He said that this term was commonly loosely applied to disturbed respiration and was often used to include simple tachypnea or hyperpnea. The derivation of the term indicated its true field of application, namely, to a condition of difficult or labored breathing in which there was an element of discomfort on the part of the sufferer. It was in such a sense that the term would be used.

Before passing on to a discussion of the abnormal condition of dyspnea it was necessary to review some of the factors concerned in the regulation of normal respiration. It was now known that the essential factor for the stimulation of respiration was carbon dioxide, to which the respiratory centre responded with great sensitiveness. A very slight increase of the amount of this substance in the blood was capable of doubling the normal pulmonary ventilation. Other acid bodies present in the circulation exerted a similar effect. The respiratory centre was very delicately attuned to respond to changes in the carbon dioxide content of the blood and always responded under normal conditions in such a way as to maintain this content within normal limits. Since carbon dioxide was one of the products of normal metabolism, this latter became the basic factor in the control of respiration, and the respiratory function was capable in health of responding to the greatest needs of the body.

Thus in the normal person at rest the pulmonary ventilation, expressed as the volume of air respired in a minute, was five litres on the average. Studies on a group of normal persons subjected to prolonged and strenuous exercise to the point where they were compelled to stop on account of severe dyspnea showed that the normal capacity for pulmonary ventilation could be raised to ten or eleven times that found in the resting state. Thus the ventilation rose from an average minute volume of five litres to from forty-eight to eighty litres, depending upon the weight of the individual and upon sex. This capacity to increase the ventilation to meet the demands of the body might be described as the pulmo-

nary reserve. The increased ventilation was brought about by an increase in the rate of respiration and an even more marked increase in the depth of the individual respirations.

With these facts as a basis it was possible to analyze the factors present in cardiac disease which led to the production of dyspnea. It was well known that the tendency to dyspnea and the intensity of it when present presented great variations in different cases of cardiac disease, and it might be anticipated that the conditions and causes leading to its development would be different. The first of these factors to be studied was that of the metabolism.

Cases were studied in the Sage calorimeter and by means of the method of respiration calorimetry, the results in general being the same. It was found that the cases could be grouped according to the state of metabolism. In the first group were those cases in which this was within normal limits, and in this group were found all of the cases of cardiac disease which were well compensated. In the second group there was found to be more or less increase in the metabolism and this group contained those cases which showed more or less failure of compensation. Not all of the noncompensated cases, however, showed an increase in metabolism. Thus metabolism alone as a factor in the production of dyspnea in heart disease proved to be a variable feature.

The minute volume of the respiration was then studied and again the well compensated cases gave results within the normal limits. In cases of severe heart disease with a tendency to dyspnea the minute volume was found to be high. In all cases the minute volume was taken while the patients were at rest. It was found that the changes in this factor bore no relation to the state of the individual's metabolism. This high minute volume was proved, therefore, to be a factor of considerable importance in the production of cardiac dyspnea, for if the minute volume at rest was high it left a much restricted range for increase under conditions of exertion, even if mild.

A few years ago the occurrence of acidosis in heart disease was brought forward and used to account for the occurrence of dyspnea in practically all cases. It was proved that the respiratory centre was excessively sensitive to changes in the reaction of the blood in the direction of a reduction of its alkalinity. More extensive study of this factor was undertaken and it was shown that in cases of pure cardiac disease in a state of compensation there was no increase in the hydrogen ion concentration of the blood. In cases of pure cardiac disease with acute loss of compensation this factor was found to be variable, although in many there was found to be some increased accumulation of carbon dioxide in the blood, probably due to factors in the lungs which interfered with its diffusion. These studies proved, however, that carbon dioxide accumulation was a factor of importance in the production of dyspnea only in the most severe cases of noncompensated pure cardiac disease. Where, however, there was an associated renal involvement, the increase in the acidity of the blood was of great importance. In

\*Summary of a lecture delivered before the Harvey Society at the Academy of Medicine, New York, March 17, 1917.

such cases it was found that where the phenolphthalein output was normal there was no acidosis. Where the output was reduced acidosis was usually present, and where there was no excretion of phthalein acidosis was always very marked. In the group with low phthalein excretion the acidosis was alone of little importance as a cause of dyspnea, for it was usually relatively slight. It, however, diminished the buffer action of the blood salts and increased the sensitiveness of the respiratory centre to the accumulation of carbon dioxide. In the milder cases of this type the administration of alkalis was found of material benefit, for by neutralizing the slight acidosis the sensitiveness of the respiratory centre was restored toward normal.

The preceding factors produced a demand for an increased minute volume of respiration to meet which both rate and depth of respiration would have to be augmented. As has been pointed out, there was found to be a tendency for the resting rate to be increased in many persons with heart disease due to some degree of acidosis. This factor allowed less range of further increase and tended to the production of dyspnea. The capacity for increasing the depth of each respiration was then studied and was found to be impaired in many cases, thus further preventing the patient from meeting the demand for increased ventilation. The vital capacity of the lungs is measured by the volume of air which can be expired after the fullest inspiration. This was found to be decreased in many cases also, and its decrease was more or less parallel to the loss of capacity for increasing the depth. Thus in a study of cardiac cases the following findings were recorded: 1. Where the vital capacity was found to be at least ninety per cent. of the normal average the cases were found to be well compensated and to have little or no tendency to the development of dyspnea. 2. In all of the cases with a vital capacity between seventy and ninety per cent. of the normal there was some dyspnea on any unusual exertion, but the patients were usually able to get about with a very fair degree of comfort and relatively little restriction. 3. In the group with vital capacities between forty and seventy per cent. of normal there was dyspnea on moderate exertion and most of them were confined to bed or to the house and were much troubled with dyspnea on climbing stairs or going uphill, and many had frequent attacks of loss of compensation. 4. All of the patients with vital capacities less than forty per cent. of the normal presented severe states of loss of compensation, severe dyspnea, were confined to bed, and gave a bad prognosis, sixty-one per cent. having died in a short time. It was thus shown that the degree of decrease in the vital capacity in cardiac cases ran parallel to the tendency to the development of dyspnea and constituted a fairly accurate measure of this tendency.

The causes of this decrease in the vital capacity were many and included such conditions as pleural and pericardial effusions, emphysema, pulmonary edema, etc. In others, in whom there were no physical signs to account for this decrease, it had been shown that there was often a loss of elasticity of the lungs from pulmonary engorgement and back pressure on the right heart. From these studies it was

found that the vital capacity remained the same as long as the clinical condition was constant, that it paralleled the clinical condition and the tendency to dyspnea, and that it gave a rough quantitative measure of the clinical condition where dyspnea was the presenting symptom. It was often of more value in this respect than the blood pressure or the pulse rate.

Finally some remarks were made on the mechanism of the production of a special type of breathing known as periodic respiration. This condition was found to be commoner than usually believed, but as yet no full explanation of its cause could be offered. It was proved that it was not due to acidosis, for the blood carbon dioxide was not abnormal. It was found as a normal phenomenon in many persons in sleep and was known to be aggravated by respiratory depressants such as morphine. It seemed to be best explained as due to an alteration in the excitability of the respiratory centre, and possibly in part to some lack of oxygen. It could be checked temporarily by the administration of caffeine, which was known to be a powerful stimulant of the respiratory centre.

## Contemporary Comment

**Whooping Cough.**—In a delicate child of any age, especially one with latent tuberculosis, and also in the aged, whooping cough is always to be dreaded. The percentage of whooping cough cases that terminate fatally has never been satisfactorily determined, for the reason that no infectious disease is more poorly reported to the health authorities, says *Health News*, the monthly bulletin of the New York State Department of Health. It is doubtful if more than one quarter of the cases in this country ever become a matter of official record.

Unlike the other infectious diseases of childhood, against which the young infant, especially when breastfed, possesses more or less immunity, whooping cough finds its victims even among the newborn, and occurs more frequently than any other infectious disease during the first six months of life. In the present state of our knowledge the positive recognition of the presence of whooping cough in the earliest stages is not possible by any method of general practicability, and until a child "whoops" the disease is usually not recognized, by which time others have been exposed to the disease during its most infectious period.

In view of the harmlessness of whooping cough vaccines and the great probability that they produce some immunity, infants and weaklings in a household in which whooping cough exists should be given the benefit of inoculation. Unfortunately, however, they have usually already become infected before the vaccine is administered; therefore, the only safe rule for protection is to forbid any contact direct or indirect between the baby or the delicate child and any other child not known to have had whooping cough within or without the household. This proceeding may be difficult and seemingly unnecessary, but when the grave danger to life is considered no one should deny the baby this measure of safety.

# Our Readers' Monthly Prize Discussions

## Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CLXXX.—How do you treat ringworm? (Closed.)

CLXXXI.—How do you treat thumb sucking and nail biting in children and adults? (Answers due not later than April 15, 1917.)

CLXXXII.—How do you prevent infantile diarrhea? (Answers due not later than May 15, 1917.)

The award will be based solely on the value of information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

*The prize of \$25 for the best answer to Question CLXXXI has been awarded to Dr. Moses Scholtz, of Cincinnati, Ohio, whose paper appeared on page 650.*

### PRIZE QUESTION NO. CLXXXIX.

#### HOW DO YOU TREAT ECZEMA IN CHILDREN?

(Concluded from page 652.)

*Dr. William Martin, of Atlantic City, writes:*

It is recognized that children who are the victims of this disease are suffering from some disturbance of metabolism, which expresses itself locally. In order to overcome the eczema, it is necessary to recognize this fact and seek the cause, and by its removal aid materially in restoring the skin to normal.

Anemia and gastrointestinal disorders are largely responsible for the local manifestations, therefore care in these directions is necessary. Better blood may be secured by various methods, perhaps the best of which is the proper diet. Errors of digestion may be cured by the same means, in large measure. Actual disease of the digestive organs will require special attention. Fortunately eczema is not the constant attendant of these diseases, but more often the result of improper diet or improperly prepared foods. The infant is best off when breast fed, but when this is impossible, the suitable artificial food can be found by careful testing, and this alone will at times relieve the skin condition. Keeping the bowels well open, not by drugs, but by laxative foods, will be a factor in this line.

Older children with eczema should have their diet restricted to the plain type. It is essential that there be variety, but the quantity should be guarded, and meats largely eliminated. Excessive amounts of sweets are also tabooed. Fruit juices, vegetables, bread and butter, milk and milk foods, should be in preponderance.

In infants with eczema of the buttocks, the fault will frequently be found in the lack of proper care of the diaper, by which the child is allowed to remain wet or unwashed too long. Care in these regards is essential in the relief of eczema as well as in its prevention. Local lotions for their soothing qualities may be needed for a time until the measures pursued bring the result, but water for bathing is as a rule not desirable as it acts as an irritant. Olive oil or plain rose water ointment for cleansing purposes will obviate this. For the actual cure of these local conditions, we have in physical measures the very best method.

Eczematous patches show skin infiltrations with sluggish circulation, therefore the first object sought is the restoration of the skin circulation, and the resolution of the infiltrations. Hyperemia in these conditions is best produced by the use of the high candle power lamp of proper construction. The range of heat may be from fifty to five hundred candle power, and the parabolic hood should be so constructed that the rays are projected in parallel, and not in focus. The lamp should be hung so that it can be swung over the area to be treated, obviating a too intense heat over any one part at one time. The height of the lamp above the part may vary according to the effect, and the irradiation should be carried to the point of active hyperemia.

This treatment should be followed by the use of the "blue pencil" effluve, so called because of the color of the discharge, and the shape of the electrode. To give this treatment, the patient must be seated upon an insulated platform. If the child is too young to be placed alone, it may be held by the nurse. The positive end of the static machine is grounded, and the negative end is connected by a crook, which the patient holds, or in the case of a very young child, the nurse holds. The pencil electrode is held by the operator, and is attached to a second ground chain connected with a water or gas pipe. The two balls of the sliding rods are widely separated, and the machine run at moderate speed, sufficient to give a good effluve, this being played over the eczematous patches for a period varying from ten to fifteen minutes according to the needs. This spray from the electrode gives the feeling of a cool breeze, and is not unpleasant or painful, and children soon become soothed under it. Its first effect is a blanching of the part, which is soon followed by an activity of the local circulation.

What part the effluve plays in an antiseptic manner, is a matter of conjecture, as both ozone and nitrous oxide gas are generated. We do know that the effect of the effluve upon the tissues outside of the rubefacience, is the relief of local stasis and the softening of the infiltrated tissues underneath the skin, thus restoring local circulation and activating metabolism.

Some operators may prefer the brush discharge. This is given in the same way, but by using a wooden stick, moistened, in place of the pencil electrode.



The effluve from this is much more of a sputtering type, and gives the sensation of hot sand thrown against the part. The effect is more rapid, but it is not so well borne by children, therefore not as advisable.

For the digestive faults, aside from the correction of the diet, we may use with benefit the static wave current, applied by a metal plate. This is placed over the abdomen, attached to the positive end of the machine, the negative grounded, and the machine started with the poles together. These are separated slowly until there are good slow contractions, which are synchronous with the discharge of the current across the spark gap. This acts mechanically, activating all of the organs of digestion, increasing the secretions, as well as all the normal functioning of the organs.

Perhaps the one end attained by these physical measures is the saving of drugging the child, a matter of no little importance. Aside from this, their effects are purely physiological, and therefore are of the best.

*Dr. M. H. Edelman, of New York, asserts:*

Treatment of eczema in children may be divided into the following large categories: 1, Local, which remains the same for all eczemas; and 2, constitutional, which varies with the different type. Local treatment embraces: a. Removal of all crusts. Before ointments can be applied, it is necessary to remove all crusts, and get to the bottom of eczema. If it involves a hairy part, the hair must be shaved; after soaking the crusts for twenty-four to forty-eight hours, until soft with any oil, tincture green soap, or bichloride, one to 5,000, then remove crusts, even if bleeding occurs. Application of ointments. It is not so much the kind of ointment we use as its proper application. The crusts removed, the salve is applied thick over the eczematous area and rather freely with a wooden spatula. A useful salve is:

R	Salicylici acidi, .....	gr. x;
	Zinci oxidi, .....	gr. xx;
	Amyli, .....	10%;
	Lanolin, .....	q. s.

If the eczema is of the weeping type, use greater quantities of starch and zinc oxide. If very itchy use carbolated vaseline as a base. If stimulation is required, use tar. The importance in ointment therapy is to prescribe it by the pound and not to continue for a long time, as the mineral in the ointment may become absorbed and produce toxic symptoms. c. Retention of applications. This is performed by gauze and bandages. If eczema occurs on the face and scalp, as it very often does, it is necessary to retain the salve by means of a mask, made especially for the child with openings for eyes, nose, and mouth; this mask is kept on day and night. d. Protective measures. To prevent scratching, a very important measure in the local treatment, both elbows should be placed in splints to prevent flexion of elbow joint. The application is changed every twenty-four to forty-eight hours, depending on the severity of the eczema. e. Bathing. Here there seems to be a difference of opinion. I maintain that these patients should be bathed by all means, but soap should not be used. Use bran or bicarbonate of soda in the bath; it relieves the itch-

ing, it is soothing and allows the patient to sleep better. f. Lights. Use red or green lights; they are soothing and prevent itching.

Constitutional treatment: Keep the bowels empty; if necessary, give one dram of rhubarb and soda three times a day. The rest of the treatment depends upon the variety. For the external variety removing the cause and local treatment will usually cure. If the eczema is due to faulty diet, eliminate sugars and fats. In breast fed infants, feed every four hours for three to five minutes and give a little boiled unsweetened water before nursing. The fore milk is very poor in fat. The mother's diet must be modified, limiting sweets and fats. In artificially fed babies use skimmed milk. If child is older, eliminate sugars and fats from diet. If it be ascertained that the sugars or fats are not the cause, then determine whether the proteins are producing the condition.

If the eczema is due to idiosyncrasy, the child inherits a predisposition to eczemas and he is unable to take care of the normal quantities of fats and sugars without manifesting skin irritation; therefore eliminate fats and sugars. If we have determined that endocrin apathy is responsible, the condition being due to hypothyroidism, presenting some of the cretinoid degenerations, thyroid extract in one half grain doses three times a day acts as a specific, and we must remember that deficient thyroid means lessened metabolic powers; therefore give less food. If the eczema is due to infection, it is simply an external manifestation of a tuberculous infection. Treat the same as any tuberculosis—fresh air, tonics, and good wholesome food. If due to syphilis give antisyphilitic treatment—mercury, salvarsan, or neosalvarsan. With those due to a deficiency of vitamins, the indication is to supply the deficiency of vitamins in the food; this at present time is best performed by the administration of autolyzed yeast (endomyscin). I have seen a number of such cases in which the yeast acted as a specific, replacing the vitamins produced usually by rich carbohydrate diets. In those due to oral sepsis the teeth must be attended to by a dentist and an autogenous vaccine given. Never allow any operations to be performed on children having eczema; especially be careful of plastic operations, for they never heal, and remember that eczema is a symptom and not a disease, so that a diagnosis of eczema is as improper as a diagnosis of headache.

*Dr. Benjamin W. Stearns, of Unadilla, N. Y., states:*

Bearing in mind that the underlying cause of eczema is disturbed function of the excretory system, the remedy should promote the oxidation of waste material, causing it to be carried off through the kidneys. This can best be done by the administration of the old time Basham's mixture, made up by the modern formula, giving one half to one teaspoonful in a little water every three hours for two days; then three times a day one half hour after meals, the size of the dose ranging according to the age of the child.

The grayish color or offensive odor of the stools or a tendency to constipation is evidence of the liver's being the seat of the primary cause. The liver disturbance may be corrected by an external

application over the liver of the following mixture, night and morning, for two or three weeks:

R Tinc. iodine, .....	3ss;
Spiriti camphoris, .....	3ij;
Tinc. belladonnae, .....	3ss;
Olive oil, q. s. ad, .....	3j.

*Dr. S. A. Lewin, of Brooklyn, writes:*

Like scurvy, rickets, and allied nutritional diseases, it is now held that eczema in children, and especially in nursing children, is due to faulty nutrition. Eczema is divided and subdivided into several varieties, but for the purpose of treatment it is necessary to consider only the two main divisions: moist eczema, which is the more common form among young children and infants, and the dry or papular eczema. As a first step to successful treatment, have the child dressed in light, loose, clean clothes. If the eczema is on the face, neck, or scalp, cut the hair as close as possible. If the child is breast fed, give five to twenty grains of sodium citrate in water, three times daily. If overweight, reduce the feeding by longer intervals, giving oatmeal water, well cooked, without sugar, between feedings. If the bowels are loose, give barley water made from whole barley—not the prepared—instead of the oatmeal water; the quantity and number of feedings depending upon the age of the child and the discretion of the doctor.

In children that are artificially fed, eliminate all prepared, malted, or predigested food and carbohydrates. Give only pasteurized milk and boiled water, equal parts, at definite periods, using sugar of milk only for sweetening, and add to each bottle five to twenty grains of sodium citrate. In some cases it is more advisable to give raw milk instead of the pasteurized.

Depending upon the age of the child, it is advisable to give during the twenty-four hours the yolk of one egg, a few teaspoonfuls of freshly prepared beet juice, the juice of one or two oranges, or prune juice made from the unsweetened prunes. Older children may also be given barley or wheatena or oatmeal, well cooked in milk and water, with salt or brown sugar to taste; or soup made from all vegetables well cooked and strained.

**Local treatment.**—For the intense pruritus and eruption, apply with a cotton swab, one half to one per cent. phenol in olive oil and after carefully sponging off the oil and crusts with a soft gauze sponge apply the following ointment:

R Acidi salicylici, .....	1.0;
Bismuthi subnit., .....	4.0;
Acidi borici, .....	2.0;
Olei. amygdali, .....	8.0;
Ung. zinci oxidi, q. s. ad, .....	30.0.

This should be applied by the mother or nurse two or three times daily. Use no face masks, as these but add to the irritation and aggravate the pruritus. If the child has a tendency to scratch, encase his hands in gloves made of oiled silk or fine linen. Although textbooks and other authorities advise against the use of water in eczema, many children suffering from the dry, papular, and vesicular eczema have been quickly relieved of a severe itching by my use of the following bath: I instruct the mother or nurse to take about one pound of or-

dinary bran, put it into a gauze bag, soak it in a tub, sufficiently filled with warm water, and then bathe the child in it for about ten to fifteen minutes. Then dry the child and apply the oil and ointment, as above stated. There is some soluble substance in bran which the water abstracts, that has a remarkably soothing effect in eczema, and enhances the cure.

If constipation be present, and it usually is, give either the milk of magnesia, or calcined magnesia, mixed with the milk or water, once or twice daily. For the anemia and rickets which are frequently present, the saccharated carbonate of iron and the phosphorated oil in codliver oil, in appropriate doses, will be found very beneficial.

*Dr. T. W. Jenkins, of Albany, asserts:*

There are three phases of treatment: dietary, medicinal, and protection of the skin. Diet should be simplified. The mothers of nursing babies should take exercise in the fields and lanes of the country or the parks of the city, taking the baby with her. Older children should be fed cereals, fruits, vegetables, milk and buttermilk, eliminating candy, cookies, cakes, coffee, tea, and beer. Medicinal treatment: For acute eczema in very young children a course of calomel should be given first. Then give ten to twenty drops of spirits of nitrous ether four times a day, or two to four grains of acetate of potash four times a day. Later emulsion of *Bacillus bulgaricus* should be given. For skin protection we should examine for vermin, irritating clothing, particularly woollens and furs and clothing with irritating dyes, and cosmetics or medicated dusting powders, to all of which the child may have an idiosyncrasy. A general bath is indicated, accompanied with gasoline emulsion if vermin are present. Afterward, refrain from water absolutely for cleansing purposes until the child is well, but use olive oil, and apply twice a day an ointment of salicylic acid, grains twenty, zinc oxide, one dram, and petrolatum, one ounce, until the itching and redness are markedly reduced when diachylon ointment may be used. When dusting powders are needed cornstarch may be used or plain talcum powder.

For chronic eczema in very young children use diet as above. After the eczema has disappeared, syrup of hydriodic acid in doses of seven to fifteen drops three times a day should be administered for a long time. For older children if the eczema is severely acute and itching we give a diet of plain milk and water or buttermilk. For medicinal treatment the following is useful:

R Potassii acetatis, .....	53;
Tr. nucis vomiciis, .....	23;
Fl. ex. rumicis, .....	45.

S.: One half to one dram in water four times a day.

For skin protection: Refrain from frequent washings with water, cleanse with olive oil, and apply the zinc and salicylic ointment or the diachylon ointment twice a day.

[Owing to lack of space we regret that we are unable to publish the articles in this discussion which were submitted by Dr. S. Weingrad, of Mountain Dale, N. Y., and Dr. J. L. Marcus, of Atlantic City, N. J.—The Editors.]

# Dietetics, Alimentation, and Metabolism

## Food and Food Preparation, in Health and Disease

### HYPERCHLORHYDRIA,

#### *A Paradoxical Disease.*

By A. L. BENEDICT, A.M., M.D., F. A. C. P.

Buffalo,

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*Frequency.*—The majority of American gastroenterologists find hyperchlorhydria to be a very common condition. Adolph Schmidt, of Halle, during his visit to America, spoke of it as comparatively infrequent in Germany, and as occurring with a marked difference in frequency in different parts of Germany. On the other hand, he said, a third of all stomach cases in his clinic severe enough to be intubated showed achylia, which is rather a rare condition in America. Twenty years ago, when I was beginning to specialize, I was puzzled at the fact that my experience comprised relatively few cases of hyperchlorhydria and many of hypochlorhydria. At present, my experience coincides with the majority view just stated. This discrepancy is probably due to two factors. In general practice and in the beginning of gastroenterologic practice when one naturally sees more of the milder cases, hypochlorhydria is more often encountered because it really is much more common than hyperchlorhydria, but as one's practice tends to become limited to more troublesome cases, hyperchlorhydria predominates. Then, too, hyperchlorhydria is usually listed as such, whereas hypochlorhydria is more apt to be counted under various headings such as cancer, gastric catarrh or other conditions in which the gastric state is complicated with intestinal and other lesions.

But in the general literature, one of a faultfinding disposition will be impressed with the frequency with which hyperchlorhydria is diagnosed without definite demonstration. For instance, in a certain article a whole series of cases is discussed in a most interesting and really valuable way, with no more basis for the diagnosis than a positive reaction with phloroglucin vanillin which means nothing more than that there is not an extreme degree of the opposite condition. In other instances the total acidity is employed as the basis of diagnosis whereas usually the total acidity of hyperchlorhydria is not very high, say sixty to seventy degrees, because the very excess of HCl inhibits fermentation. Speaking broadly, a very high total acidity usually means hypochlorhydria, especially if there is any delay in making the tests, because the acidity readings of a hyperchlorhydric case change very little from one day to the next, whereas the readings for total acidity, when there is little or no free HCl present, may be quite high—say sixty to seventy degrees—immediately on extraction and may rise to over 100 on standing at room temperature for a day. An interesting minor paradox may be mentioned here. With extreme fermentation, so much organic acid may be produced that it will react like HCl with dimethylaminoazobenzol and thus apparently increase the amount of

free HCl present, though usually not more than two to five degrees.

Another fallacy, as may be determined by comparative titration, withdrawing a drop of fluid occasionally and applying the phloroglucin vanillin or sugar resorcin test, is this: Free HCl is neutralized somewhere about ten degrees below the final discharge of color from dimethyl, in other words at about the point at which the cherry red color disappears and a distinct orange tint takes its place. Many writers on hyperchlorhydria apparently fail to allow for this fact and make their free HCl readings at the final end point with dimethyl, if the tautology may be pardoned.

Again, it seems that in many instances, too narrow a normal zone is conceded between hypochlorhydria and hyperchlorhydria, and cases have even been reported as hyperchlorhydria with fermentation which were really nothing but hypochlorhydria slightly below the standard of normality, with secondary sour stomach. Approximately, the gastric juice has a hydrochloric acidity of fifty degrees and it comprises half of the stomach contents, so that the normal acidity may be taken to be twenty-five degrees. However, it is impossible to reduce standards to mathematical accuracy, and it may be considered that an acidity of fifteen to thirty degrees is normal. But, if so much gastric juice is poured out that the test meal, one hour after ingestion, still measures more than the original bulk, and there is spasm of the pylorus preventing the normal evacuation of the stomach, with stormy peristalsis, as heard by the stethoscope or seen on the fluoroscopic screen, and the contents irritate the gastric wall so as to cause pain, especially if this is relieved by eating, one may say that there is hyperchlorhydria with a free HCl acidity of twenty-five, perhaps even of twenty. Very seldom is a hydrochloric acidity of more than fifty degrees encountered.

*Relation to isochymia, etc.*—Cannon has beautifully demonstrated by x ray examinations of animals that the opening of the pylorus is due to the presence of HCl in the stomach and its closure to HCl in the duodenum. Clinically, however, we find that unless there is organic obstruction at or near the pylorus or atony with or without ptosis or dilatation, cases with deficient HCl are accompanied with relaxed pylorus so that the stomach speedily empties itself after a meal, while usually hyperchlorhydric cases are accompanied with spasm of the pylorus. Even with this spasm very little fermentation takes place, as HCl does possess moderate antiseptic power, though not to the degree demanded for certain bacteriological tests. Thus very often complaint of gas in the stomach in hyperchlorhydria is a false interpretation of the chemical irritation of the gastric wall or at most there is only a small amount of gas such as is usually swallowed with food and drink. However, there are cases in which there is really an abundance of gas, gastric or intestinal or both. This



paradox was explained by the writer some years ago, on the ground of the effervescence between the acid of the stomach and the carbonates of the liver, pancreas, and intestinal glands. Hyperchlorhydric stomach contents very seldom show more than a few bubbles of gas on incubation in a U tube for twenty-four hours, though, for that matter, the amount of gas developed in the same way from stomach contents generally is usually disappointingly small and very seldom confirms the ordinary conception of gas production by fermentation. On the other hand, if a U tube is filled with hyperchlorhydric, or otherwise highly acid stomach contents and a lump of sodium bicarbonate is pushed down into the closed arm of the tube, a considerable effervescence is produced, amounting to fifty per cent. or more by volume.

*Relation to general acidity of the system.*—For almost a century the profession has been treated to a mass of saprophytic decomposition about acid and alkaline tides and the theory has been put forth that in hyperchlorhydria, the bodily fluids generally and the urine as a convenient index of their reaction, are robbed of acid radicles. It may seem presumptuous to speak thus disrespectfully of accepted authority, but the best authority is the burette. From a large number of experiments, the writer feels justified in stating that there is no distinct acid and alkaline tide in the urine corresponding to digestion and that there is no necessary reduction of urinary acidity in hyperchlorhydria. The reason is not far to seek. The tidal theory and the assumption that hyperchlorhydria depletes the system of acid radicles implicitly assume the old conception of digestion that after a definite and rather prolonged acid digestion in the stomach there followed an opposite alkaline digestion in the intestine. Now the facts are that the stomach begins to empty itself within a few minutes after ingestion, that it is approximately half empty in an hour, that neutralization of acid gastric juice occurs in the duodenum even at the height of gastric secretion and that, as shown especially by the cases of hyperchlorhydria with marked gas production, the alkaline carbonates of the liver, pancreas, and intestine, must have begun their secretion almost, if not quite, as soon as the gastric glands. In addition, it must be remembered that the intestine is secreting for and digesting one meal, perhaps two or three, at the same time, while the stomach is at work on the following meal. There probably are tides of acid and alkaline depletion of the blood, but these follow one another at such short intervals and so rapidly that their influence on measurable quantities of urine is practically nil, and it is not likely that any marked effect is produced on the blood. However, there are cases of hyperchlorhydria which are apparently not associated with corresponding alkaline supersecretion so that occasionally one encounters a case in which the urine really is low in acidity though almost never actually alkaline. Even more than this may be conceded, for the writer found the urinary acidity of a series of hyperchlorhydric cases to be below the average. However, the reduction of urinary acidity was not sufficient to be definitely diagnostic in any given case and cases were encountered in which the urine maintained its full normal acidity or even more.

*Symptomatic diagnosis of hyperchlorhydria.*—The classic picture of hyperchlorhydria is too well known to require repetition. It is sometimes encountered and sometimes not, and, at the risk of seeming cynical, the writer may add that when he encounters a history beautifully typical of hyperchlorhydria, he rather expects to find the opposite gastric state and some entirely different ultimate lesion, such as duodenitis, gallstones, chronic cholecystitis, inflammation of the appendix, colitis, dry pleurisy, or a variety of other lesions. But in fairness it should be stated that many cases of hyperchlorhydria are typical symptomatically and that hyperchlorhydria may really exist, though as a reflex from any of the organic lesions mentioned.

*Relation to gastric and duodenal ulcer.*—According to the old, simple theory, gastric ulcer was due to corrosion of the gastric wall by an excess of HCl. Various observations, as that the dog normally has a high degree of HCl, that HCl or even ferments do not digest living tissues, etc., as well as the inevitable observation of a great majority of exceptions to this rule, rendered it necessary to qualify this theory. It was then assumed that there was an antecedent vascular lesion which resulted in necrosis of the gastric wall. But the great majority of gastric ulcers occur in patients rather young for such lesions and even shown histologically to be free from them. The further modification of the theory then substituted angiospasm for a definite vascular lesion. This theory was and is plausible, for the relation of even transient nervous states to hyperchlorhydria is well established, and it must be admitted that the majority of cases of ulcer of the peptic type, do occur in neurotic individuals. Recently, duodenal ulcer has been substituted for gastric ulcer in the theoretical chain of events, and even more exaggerated statements have been made regarding it. Speaking broadly, in anticipation of a statistical paper, it may be said that the occurrence of either gastric or duodenal ulcer does not by any means correspond in frequency to that of hyperchlorhydria. The writer is unable to present statistics as to the actual acidity of the stomach in existing ulcer. Many ulcers in elderly persons are undoubtedly due to vascular lesions and in such cases the vomitus is usually hypochlorhydric or achlorhydric. The vomitus of a bleeding ulcer patient is necessarily neutralized by the blood. But the writer has always adhered to the rule not to pass a tube in a case in which an ulcer was believed to be present unless it was of a malignant type, and, for this reason, he is ignorant of the true secretory state of the stomach as far as direct examination is concerned. But critical examination of the theory of the association of ulcer and hyperchlorhydria is rather surprising. A few years ago C. A. Ewald prepared a masterly general treatise on gastric ulcer. In it a comparison of available data showed that the acidity of gastric ulcer cases was approximately equally divided between normal and abnormal and that the abnormal cases were about equally divided between hypochlorhydric and hyperchlorhydric. Further examination showed that in many series quoted the examinations had been too

superficial to demonstrate even a twenty-five per cent. incidence of hyperchlorhydria.

Somewhat the same statements might be made regarding duodenal ulcer, but it should be understood that the elaborate intubation and thread tests of the duodenum are much more difficult than appears at first sight, and that there are many fallacies. However, it may be that surgical statistics may show a genuine sequence of events not apparent when the matter is regarded from the opposite standpoint. For instance, insane asylum statistics show a considerable number of farmers' wives whose minds have succumbed to the monotonous strain of their lives, yet this number is insignificant if compared with the total of population affected.

*Is hyperchlorhydria a neurosis?*—It has been explained that the discrepancy of statistics between hypochlorhydria and hyperchlorhydria is partly due to the fact that cases of the former nature are to a large extent assorted under various disease names, while hyperchlorhydria occurs as a clear cut neurosis. That hyperchlorhydria is a neurosis in certain cases or at least that it occurs in neurotics and is transiently, or in exacerbated degree, the direct result of nerve strain, cannot be questioned. But it seems altogether unlikely that chronic tendencies to hyperchlorhydria, perhaps lasting most of a lifetime, and without marked dietetic or neurotic cause, are mere neuroses. The same classes of cases are noted in hyperthyroidism. But it cannot be said that histological examination, opportunities for which under favorable circumstances, including especially prompt necropsy, are rare, has as yet definitely settled this question. Recently, indeed, doubt has been thrown on the existence of distinct, acid secreting cells in the gastric tubules.

Two minor paradoxes regarding the neurotic theory may be mentioned, though they are somewhat fallacious as real arguments. Hyperchlorhydria is, if a neurosis at all, one of overstimulation, yet it occurs to a considerable degree in adolescents and rather young adults who are anemic and depressed as far as ordinary functions are concerned. Another large class of cases occurs in prosperous middle aged persons, men rather than women, who have no obvious cause for being neurotic at all, while the man who really has good cause to worry does not often have this type of dyspepsia. Nor is the distinction of such a nature that we can assume inadequate food as the reason for the freedom of the latter class.

*Relation to diet.*—The only conceivable origin of HCl in the stomach is the chlorine of foods, which is almost entirely in the form of chlorides, and mainly in that of sodium chloride. Theoretically, therefore, the amount of HCl secretion should depend on the ingestion of salt. That there may be an abundance of salt and still a lack of acid formation, is well established by experience and quite analogous to other bodily deficiencies in spite of abundance of raw material. There certainly is a direct relation between carnivorous diet and salt ingestion, and hyperchlorhydria, either in the sense of comparative physiology or of human pathology. The writer would even go so far as to maintain that every hyperchlorhydria can be cured, as far as the secretion itself is

concerned, though not necessarily the tendency, by withholding salt. But this statement must be qualified by the repeated experience that, in the period usually considered by both patient and physician reasonable for successful treatment, neither the withdrawal of salt nor even the general regulation of the diet to exclude chemical and mechanical stimulants of secretion without other means can be relied upon.

As a general rule, any secretion is stimulated by the conditions that require it and inhibited by those that do not. Hence, a protein diet is supposed to favor hyperchlorhydria and one rich in carbohydrate and fat to oppose it. However, protein relatively free from extractives, salts, etc., such as milk, eggs, boiled meat, and plant seeds, including, of course, the flours, meals, cereals, and breadstuffs made from them, does not especially excite the secretion of HCl while it fixes that already secreted. It seems also that an excess of sugar or candy, or even of fat at one time, may exacerbate a hyperchlorhydria while, of course, many foods rich in fat are contraindicated because they so often imply methods of cooking and seasoning which irritate the stomach.

A classic diagnostic point is that the pain of hyperchlorhydria is relieved by taking food while that of ulcer is aggravated. This is measurably true, but numerous exceptions in all possible ways may be noted. Theoretically, the pain of hyperchlorhydria or even of ulcer, should be relieved by taking water to dilute the gastric contents, and it is obvious that cold water should have a peculiarly sedative effect on secretion. To these rules, also, there are numerous exceptions.

One theory of diet in hyperchlorhydria is to abstain for as long periods as possible from food and drink that might stimulate secretion; the opposite theory is to fatigue the glands and to fix the acid by administering frequent meals, consisting largely of protein, but not accompanied by extractives. Sometimes one, sometimes the other, of these theories works out in practice. Sometimes it is best to adhere to a bland diet of approximately the same amount and at about the same periods as normally. Adolph Schmidt emphasizes the importance of fatiguing the excitable glands and fixing the acid early in the day. But I am certain that in this country we find many persons whose stomachs do not wake up in the morning and which are accustomed to doing most of their work at the evening meal.

228 SUMMER STREET.

*Eiweiss Milch in Disturbances of Nutrition.*—D. Orrico (*Revista de la Asociacion Medica Argentina, August, 1916*) states that the action of this preparation is due to the diminution of the proportion of the milk salts and lactose. Its principal indication is in the dyspeptic state of Finkelstein, where it is supreme, and also in the moderately severe forms of intoxication and decomposition. In enteritis its results are mediocre, but they are satisfactory in the convalescence therefrom with frequent liquid acid movements. In private practice, a modified Engel's technic may be followed.



**Pneumonitis.**—Robert L. Hammond (*Medical Standard*, February, 1917), writing of the treatment of croupous pneumonia, says that the diet is of supreme importance. Predigested foods of the highest degree of excellence should alone be given until convalescence is established. One or two tablespoonfuls of liquid peptonoids of beef, milk, and gluten should be given regularly, with cracked ice and sugar if desired, every two hours, or an equivalent quantity of meat juice. A glass of lemonade made from the perfect fruit is very refreshing and may be given three times daily. The expressed juice of a good, ripe orange, sweetened if desired, may be taken in lieu of the lemonade. Milk should be avoided unless the above forms of nourishment cannot be obtained. If compelled to use it the quality should be first class, fresh from the clean udder of a healthy cow, and free from acidity. Then three or four ounces with the addition of one or two tablespoonfuls of sterilized limewater may be given every two hours. Cracked ice should be consumed freely. If sufficient water for the needs of the system is supplied in this form gastric disturbance will be prevented and nourishment will be consumed in sufficient quantity to meet the necessities of the case at critical times. Very large doses of medicines should be avoided, particularly those having a depressing effect, as their sudden withdrawal, which is imperative at the time of the crisis, is apt to be followed by a recrudescence of the fever.

**Condensed Milk and Rice Water in Diarrhea.**—P. Lassablière (*Paris médical*, September 9, 1916), having under his care numerous soldiers suffering from severe diarrhea, decided to test the effects of a form of treatment with which he had had considerable success in the diarrhea of infants. His patients included a series of 256 men with acute enteritis, following unusual fatigue, exposure, or the drinking of water of doubtful purity. The number of bowel movements in these patients upon application for treatment was from six to thirty a day, the material passed being glairy in seventy-two per cent. and containing blood in fifty-one per cent. of cases. Cramps and tenesmus were sometimes complained of; the temperature ranged between 38° and 39.8° C.; the pulse was rapid, and the general condition poor, frequently with vomiting, nausea, headache, and sleeplessness. Bacteriological examination showed that these were not cases of true dysentery. Upon admission the patients were at once placed upon a daily ration of one to two litres of a mixture of one part of condensed milk with four parts of rice water, sweetened. In order to render the therapeutic test more conclusive, seventy-two patients were placed exclusively on this mixture, without drugs or other food, until complete recovery. The efficacy of the treatment in these cases was shown, in the first place, by the rapid decrease in the number of stools, which fell to one a day within two to four days in fifty-one per cent. of the seventy-two cases and within five to ten days in forty-three per cent. Among the thirty-six cases with bloody stools the blood disappeared within one to five days in eighty-four per cent. Glairy material likewise soon disappeared, and the fetid odor passed off before the daily number of stools had become reduced to one.

A valuable feature of the treatment is that the two litres of milk taken daily permit of postponing the return to ordinary food, which, in cases of this type, generally induces a relapse because resumed too soon. The greater efficiency of the treatment as compared to the ordinary treatment by limitation to water, followed by vegetable bouillon or milk and the usual remedies, was shown by the relative length of stay in the hospital of the seventy-two patients referred to and a series of thirty-two patients previously treated by the ordinary measures. In the former series the average stay was fifteen days; in the latter, twenty-six days. Opiates may, of course, be advantageously given in conjunction with the condensed milk and rice water treatment where sharp colic is complained of; likewise calomel in case of extremely foul odor, sodium sulphate if indicated, etc. Three patients with true bacillary dysentery, admitted as cases of acute enteritis, had already recovered under the milk and rice water treatment when the bacteriological examination was made; the treatment is, therefore, probably of some value in this condition also. Rice water is well known to possess an astringent action and according to Gouraud is distinctly active as an antiseptic. It is easily digested, and is known to be especially well borne in hyperchlorhydria. Sweetened condensed milk, in addition to being, like ordinary milk, a food requiring but little digestive glandular activity for its proper assimilation, acts as an antemetic, antiseptic, and antitoxic. Reboul-Lachaud has reported to the author good results from its use in the diarrheas of tropical countries. Rice water and condensed milk, simultaneously used, thus combine many valuable properties.

**Report of a Dietary Study at St. Paul's School, Concord, New Hampshire.**—Frank C. Gephart (*Boston Medical and Surgical Journal*, January, 1917) states that he made a study of the food supply of this school which is likely to prove of value to other similar institutions. The school is attended by about 350 boys from fourteen to eighteen years of age, and has four separate dining halls, corresponding to three school groups, and an infirmary. In addition, a small store, known as the Tuck Shop, where the boys satisfied their desires for sweets, etc., had to be taken into account. He found that the food value of a meal in the group known as the upper school was 1,450 calories; in the school, 1,493 calories; in the lower school, 1,434 calories, and in the infirmary, 1,423 calories. The caloric value of the food for twenty-four hours was approximately 5,000 calories, about three times that of the basal requirement, greater than that calculated for farmers or soldiers by Atwater, who allowed 3,500 calories, or the 4,150 calories calculated for blacksmiths and men engaged in hard work. The figures appear to be high, but inasmuch as we have no previous results for like conditions, we can only say that they are a revelation. The calculated caloric value of a boy's food a day at the Tuck Shop was 647 calories. Doctor Gephart speaks very highly of the quantity and quality of the food, as well as the manner in which it was served, but considered that the details of the menus needed adjustment. A reduction also seemed to be indicated.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

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Address all communications to  
A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

### Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address. Medjour, New York

NEW YORK, SATURDAY, APRIL 14, 1917.

## ARMING FOR WAR'S GREATEST MENACE.

Face to face with actual war there can be no self-condoning security against facts. Stern work is ahead of all departments of service and of the medical in a most particular form. For after all the toll of war will not finally be measured in the swallowing up of resources, the total number of men killed, nor yet in the maimed who are the first care of the medical corps.

The menace of venereal disease that has spread itself broadcast in the countries already given over to war must be brought sharply before us. The burden of this falls upon the medical profession. For it is a definite problem which calls for specifically applied treatment. It is utterly vain to fix attention merely upon the more obvious forms of preparation which resolve themselves into magnificent armaments, outpouring of wealth, patriotic enthusiasm and devotion. That grim patriotism which faces reality will resolutely set itself to a hand to hand grapple with this actual danger, the greatest one because most insidious and reaching with a destructiveness which cannot be checked far beyond the territory or the time limit of war.

A prophylaxis here must consist of actual preparation in money and other means for medical sur-

veillance and precise knowledge of existing conditions which finds venereal disease where it exists, applies its ointments, and prevents infection as far as possible. This is otherwise going to increase in a measure to permeate our country to that alarming extent which is all too surely attested from England, France, Germany, and all the nations who have learned as never before what war really is and what are the seeds it sows.

The high ideals, the patriotic fervor with which men consecrate themselves to the nation's task, the enthusiasm which discounts the sacrifice, are subjected to the severest test. The sordid details of camp life, the long waiting for participation in a struggle so highly organized that there is little room for individual preoccupation, drive men into the paths of least resistance toward easily obtained pleasure. More than this is the tremendous releasing from restraint of baser selfseeking impulses, which war imposes upon all society.

Master minds, keen and fearless in their thinking, have from most remote times expressed themselves concerning this release of higher control the moment that governments and those in authority remove the restraints of civilization by entering upon war. It is not that men are dragged down inexplicably from a height they had attained. It is rather that our civilization is only a thin veneer which culture has crystallized over an immeasurable depth of impulses surviving from early stages of development and all too ready to seize the opportunity for exercise in spite of a conscious wish to conform to higher standards.

Civilization supports and strengthens this conscious, ethical wish; the veneer has been laid on for this defensive purpose and has served in part. But it works against the odds of a powerful opposing force. This loss of restraint and following of the easiest path of indulgence are also mightily contagious. Therefore men are too ready and women too easily found who will yield to the release of control for the thrill and excitement which stimulates yet further. Sexual indulgence will inevitably follow in the wake of the army as it has always done and as it is sweeping over Europe today. The result will be equally inevitable in its vitiating influence upon the generation concerned now and the generations to follow. Is there any duty that devolves more directly and urgently upon the government than to prepare most definitely to counteract this? Let the medical units forming take heed to this and come forward with the most practical and effective suggestions and measures.

A dark picture indeed, but only a determined intelligent recognition of the facts and preparation to meet them can make it any lighter. It is time now to attack the problem upon the side of its direct, practical issues. There is a deeper and a broader side which must not be left out of sight and which may well be a guiding principle. We must direct our attention to the value that must come out of this bitter trial, which has torn asunder the superficiality and hypocrisy of our imperfect civilization in order to establish it once more, a firmer structure on a more secure basis. This will come about by a clearer knowledge of the violence of those primitive impulses which lie unspent beneath the surface of men's lives ready for activity in such a maelstrom of unrestraint, from which no civilized nation is to be spared. Knowing them better we will no longer relegate them to the dead past, surviving only in the few, the "degenerate," or what not, but will realize that they do survive because they contain the energy which sustains and creates life in every form. This energy must be reached, guided, utilized in pathways which tending upward free it from the entanglements which bring disease and destruction. This is a long and slow task. It can serve as a background for all effort in the present crisis, but its value lies chiefly in the future. Our position today calls for preparedness definitely, clearly, vigorously against the menace of venereal disease spread through our army.

### SAVING THE TIME OF THE PHYSICIAN.

Let any practising physician's wife take the stand and she will bear witness that, far from her husband's being a stay and a comfort to her, a solace in her fits of depression, a companion for her leisure, a bodyguard for her shopping expeditions, and a general all around partner in the firm, he is as if he were not. He leaves the breakfast table to rush around the corner, he spends his noon hours at the telephone, he rises in the middle of the night and is seen no more until the day is far gone, he buys theatre tickets and never sees the play. Wherever physicians foregather the tale goes around of patients with imaginary ills who call their beloved medical adviser from his comfortable Ostermoor at dead of night to minister to them valerian and cochineal or *pulvis sacchari*. These stories retrospectively seem humorous enough, but some of them have their painful features at the time.

What doctor is there who has not a paper he is going to write when he gets the time, or some little task he is going to finish when he gets around to it? One such practitioner made up his mind some thirty years ago that he was going to install a more

efficient system of bookkeeping when he got time. This doctor was the idol of a populous neighborhood, where the doctrines of Miss Margaret Sanger had never penetrated. Babies were born, grew to manhood, mated, and had babies of their own. Card indexes came into vogue, were simplified, became popular, and almost universal. The old doctor's hair grew gray and then white; his buggy was sold, his high wheeled horseless carriage came and went, and now he glides around in a very modern electric, but he still has the same old cumbersome ledger where he painfully posts such of his daily calls as he can remember in the evenings while one patient is being shown out and another one is coming in. Some day he will take in an assistant or an office nurse and before he knows it he will have an elaborate filing system and then he will feel strange and uncomfortable and take refuge in the club where he and several other of the "old boys" will exchange stories of the days of calomel and ipecac.

All of which serves merely to illustrate that even with the present alleged overcrowded condition of the profession the practitioner who has become established never finds time hanging heavily on his hands. How much of his time is taken up with imaginary ailments or at least disorders which are of neurotic origin it is hard to say. Certain it is that lack of thoughtfulness among his patients is frequently responsible for the physician being overworked. The custom of allowing an illness to go all day unattended until nightfall brings with it a state of depression and apprehension and then sending in haste for the doctor is so common that practitioners have come to accept it as one of the strange, but apparently incurable, foibles of human nature. A shrug of the shoulders, an extra charge for night work, and he dismisses the matter. But no extra fee can really be an economic compensation for the loss of time and efficiency involved. We will suppose that a general practitioner has had a busy day, in the course of which he has passed very near a house where a man lies ill. If he knew of it he could stop by and prescribe for him and it would make hardly any difference in his daily schedule. But this patient calls him instead at two o'clock in the morning; the physician is obliged to get out his car, go clear across the city, perhaps prepare the medicine himself, not wishing to arouse a pharmacist; and it is four or five before he gets back to his bed. As a consequence he is tired all the next day and then perhaps is sent for on an obstetrical case the following evening. Is it reasonable to suppose that he will bring to this case the same cool judgment which he would if his sleep the night before had been undisturbed?

But, it may be said, after all is there any solution

to this problem? The extra charge for night calls has not proved effective; if we should make the price prohibitive for night visits where it seems that the summons for just as well have been sent the previous day we are going to find in the first place that patients becoming aware of this practice will show some amnesia in regard to the onset of their symptoms—diseases will show a curious unanimity in beginning in the evening.

In the event that this nation should be drawn into a war this problem would become an acute one. At the first call to arms about 10,000 doctors would be needed to augment the ranks of the regular military surgeons and, if we may suppose such a war lasting several years and having the sanguinary features of the present European one, the ranks of the army surgeons will be constantly depleted and will have to be replenished from civil life. What then will be the result when to an already busy practitioner is added twenty-five, fifty, or even one hundred per cent. more practice?

To answer this question let us turn to England, which is facing a similar situation. At the beginning of the war the complaint was made that those practitioners who assumed the scarcely less onerous duty of remaining at home would be overburdened with work, they would be obliged to slight some of their practice, and would never be able to take any vacations. As time went on, however, and more and more doctors were called to the colors, it was found that the situation did not become so stringent as had been anticipated. The *Lancet*, for October 28th, attempts editorially to analyze the reasons for this.

Medical practice, says the *Lancet*, in effect runs the gamut of urgency from emergencies and acute illnesses at one end to neurasthenic ailments and duty calls at the other. By the latter class is meant those patients with chronic illness whose faith in the medical man is so profound that they are actually prevented from having exacerbations by regular visits although nothing of a therapeutically definite nature may be done for them. It is worthy of note that the atmosphere of a country at war is unfavorable to the development or continuance of imaginary or functional illnesses. The English physicians report a remarkable diminution in the incidence of such complaints as migraine, for example. Berlin, too, bears witness to the same experience. Although more than half of the German profession was called for duty at the beginning of the war, those remaining had actually less to do.

The English practitioners do not exactly put the case so strongly as that, but they do state that their increase of work has not been proportionate to the decrease of their numbers. It has been sufficient,

however, to bring into being many suggestions for economy of time. One of these is that patients who it has been found do not actually require the attendance of a physician be omitted from the visiting list altogether, it being held that, even if such patients pay well it is an injustice to the genuinely ill to spare any precious time for them. Another suggestion is that wherever a physician is called between the hours of 10 p. m. and 6 a. m. and it is found that such a call could have as well been made earlier or later than twice the usual night fee be charged. As intimated above, however, this would hardly prove effectual, and the additional reason suggests itself that wealthy patients would not be at all deterred by the extra fee.

Undoubtedly, if the American practitioner is called upon to face a similar situation, the well known Yankee ingenuity will come to the fore and suggest many ways of alleviating the pressure. In the meantime, it will be interesting to observe just what will be the ultimate solution which our British cousins will find for their present quandary.

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#### THE SHORTAGE OF FOOD.

It is not only in the countries at war that the food supply appears to be limited. Judging from the high and still mounting prices of the necessities of life, the food supply in this country cannot be adequate to the requirements of the population. In any event, whether the supply is adequate or not, or whether the prices have been artificially raised, the fact remains that, owing to the high cost of all kinds of food, it is difficult for the poor, and especially for those with large families, to procure sufficient to maintain life at a normal standard and even in some instances to sustain existence.

Such being the case and apparently with no relief in sight, it behooves the heads of families to learn how to expend their money in the purchase of provisions to the best advantage. Buying in the cheapest market will not solve the problem, but rather complicate it, for there is a good deal of truth in the saying, that "what is cheap is generally nasty." It is fortunately true, however, that many of the cheaper foods contain a considerable amount of nourishment, and that it by no means follows that because an article of diet is expensive that it is nutritious. For example, a large number of persons who are engaged in severe manual labor consume little or no meat. The Italians in this country probably do the most laborious work and yet they are very small meat eaters.

Such foods as oatmeal, barley meal, tapioca, sago, rice, arrowroot, fish, eggs, spaghetti, milk, butter, margarine, lard, cheese, potatoes, peas, beans, and



lentils, all contain a great deal of sustaining and energy producing material, but some of these articles are beyond the reach of the poor. Attention might well be focused here upon the great food value of the banana, which has high caloric value at a reasonable price. It is stated by scientific dietitians that a person, to keep in good physical condition, needs protein, carbohydrates, and fats in certain proportions, always largely dependent, of course, on the manner of life. However, it is certain that under existing conditions many individuals are unable to obtain an adequate amount of protein food, as both meat and milk, the usual sources of supply, are almost prohibitive to the small wage earner. Bread, too, is beginning to be somewhat of a luxury. A diet selected from the following list is comparatively cheap and fairly sustaining: Oatmeal, tapioca, sago, rice, arrowroot, cheese, peas, beans, and lentils. Sugar is an almost necessary ingredient of a diet, as one pound of sugar supplies 267 calories in carbohydrate form.

A food control law might meet the situation, but in the meantime it is well to know the most nutritious foods that are at the same time cheap.

#### ADVANCE AGAINST EPIDEMIC POLIO-MYELITIS.

The possibility of a summer campaign against a once more active foe has stimulated a winter of unremitting preparation. The advance upon so insidious and virulent an enemy as poliomyelitis must be cautious and slow. The workers in this field test their ground and then are ready point by point to make headway toward some effective knowledge of this disease and the means of combating its occurrence and its disastrous effect where it has gained entrance. Certain of these vantage points are presented with clear and instructive discussion in the *Journal of Experimental Medicine* for April, 1917. This number is devoted entirely to definite experiments in poliomyelitis carried on by Doctors Flexner, Amoss, Taylor, Bull, and Chesney, which represent advance toward a condition of preparedness adequate at some future time to control this disease.

Several of these studies have been concentrated upon the question of serum action, particularly of immune serum. It is found that the injection of normal serum in monkeys has no curative effect, but it does render the meninges permeable to the circulating immunity principles in the blood, which can thus pass into the cerebrospinal fluid. There is in the early stages of the disease a condition of meningitic inflammation which makes the meninges permeable to some extent. This is increased by the action of the normal serum. Since, however, these

neutralizing principles do not appear in the blood until after several days, there is no therapeutical indication for the injection of normal serum.

It is otherwise with the value of immune serum injected early in the course of the disease. The presence of the immunity principles has not been detected in the cerebrospinal fluid and as has been shown is late in developing in the blood. Therefore it would seem probable that there would be marked advantage in intraspinal and intravenous injection of immune serum provided that no contraindications should appear.

A detailed report of the treatment in twenty-six cases of epidemic poliomyelitis by immune serum confirms the value of this treatment and proves that it is unaccompanied by danger if proper precautions are observed. Twelve of these patients already showed paralysis before the serum was administered. Of these one died, while in two there was still some extension of paralysis. In the remainder there was no further development of the paralysis. Two of the patients in whom paralysis had not yet appeared manifested respiratory paralysis subsequent to the injection and died and two others showed some weakness or partial paralysis in certain muscles. The results with the others was arrest of the paralysis.

The unfavorable results suggest at least in some instances that repeated doses should have been used, a question still left for investigation. The temperature may be the guide for the use of repeated injections. "The action of the serum," the investigators state, "appears to be more precise and definite in arresting paralysis than in rapidly bringing about its retrogression."

Since recovery is due to a process of selfimmunization, the artificial injection of immune serum is simply an anticipation and increase of the slower and more limited natural process, since it introduces the immunity principles directly to the interstices of the central nervous organs through the cerebrospinal fluid and increases them in the blood.

#### DIPSOMANIA OR METHAMANIA.

The meaning of the word dipsomania has recently become a subject of inquiry among the inquisitive many who read the newspapers, and the inquisitive few who like to know the meaning of what they read as the readiest mode of explanation.

The word dipsomania has been popularly travestied into tipsy mania; and the *vox populi* seems to express more precisely the actual ill which it is now proposed to bring under legislative control in certain Western States as a type of insanity. Dipsomania, from the Greek word meaning thirst, correctly de-

scribes the ailment of the thirsty soul, as illustrated by the Dutchman, who

Though he never got drunk,  
Sipped brandy and water gaily.

But the habitual drunkard, seeking to get out of himself, craving strong drink for the purpose of getting intoxicated, and thus a dangerous nuisance to society, is not necessarily identical with the man who habitually takes his two or three glasses and believes he can do without his accustomed stimulant and who is rather too fond perhaps of availing himself of the usual five excuses for drinking,

Good wine, a friend, or being dry,  
Or lest he should be by and by,  
Or any other reason why,

yet rarely, if ever, is positively inebriated. The former is, however, the true dipsomaniac. It is just the difference of the Chinaman's drinker for drink, and drinker for drunk.

If legislation is to be undertaken on the subject, this distinction is rather an important one, though as old as the days of the Greek dramatists. An incorrigible old drunkard and poet, named Cratinus, at the age of ninety-seven, wrote a comedy called "The Flasks," which carried off the prize before the "Clouds" of Aristophanes, who has left it on record that Cratinus died of chagrin on seeing the wine run to waste from a burst cask. In this comedy *metha* is made the opponent of *comadia* for the affection of the poet. And *metha* is evidently the drunkard's love of drink, not mere thirst. Rabelais has made the same distinction. The derivation of *metha* is evidently from the Greek, and therefore the word *methamania* would probably be a more correct and classical definition of the drunken madness which needs restraint.

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## News Items

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**The Brooklyn Antirabic and Wassermann Clinics** will hereafter be conducted at the Brooklyn headquarters of the health department, at Fleet and Willoughby streets. The hours of these clinics will remain unchanged.

**New York City Offers Bacteriological Products to the Government at Cost.**—The Department of Health of the City of New York has formally offered to supply the Federal government with the bacteriological products manufactured in its laboratories at figures which are said to represent practically the cost of production.

**Free Dental Service for the Rutherford.**—Through the Consumptive Jewish Aid Society in the Borough of Brooklyn, the Health Department has been able to effect an arrangement by which a Brooklyn dentist will give his services for such dental work as may be required for the children patients of the Tuberculosis Day Camp Rutherford.

**A Doctors' Cooperative Club.**—Dr. William Waugh, formerly of Chicago, announces that he has organized at Palacios, Texas, a doctors' club which combines individual ownership with cooperation. Doctor Waugh will be pleased to furnish full particulars regarding the club to any one interested.

**A Campaign against Infantile Paralysis in Massachusetts.**—A committee composed of one hundred representative citizens of the state of Massachusetts is being organized to cooperate with the Harvard Commission on Infantile Paralysis, the State Board of Health, local health boards, and physicians generally, in a State wide campaign against infantile paralysis. This committee will endeavor to raise \$150,000 to carry on the work.

**Pathologists Wanted in City Hospitals.**—The Municipal Civil Service Commission announces an examination for pathologist, for which applications will be received up to April 25th, 4 p. m. From the resulting list appointments will be made in Bellevue and Allied Hospitals, and in the hospitals of the Department of Charities. For further information and the proper application blanks apply to the Municipal Civil Service Commission, Room 1400, Municipal Building, New York.

**Health Survey of Chelsea District.**—The Chelsea Neighborhood Association has undertaken to make a health survey of the district, which constitutes the area from Fourteenth to Forty-second streets, Fifth Avenue to the Hudson River, with a population of about 180,000. A census will be taken at the end of the month which will embrace more than half of the population, and it is believed that the information obtained regarding prevailing conditions in this district will be of great value in constructive work along health and social welfare lines.

**Dentists Organize for Service.**—The Preparedness League of American Dentists has been organized, and its 20,000 members throughout the United States are ready to repair defective teeth, free of charge, for any prospective recruit. The metropolitan unit of the league has offered its services to General Wood, who has accepted the offer. The faculty of the New York College of Dentistry and the New York College of Dental and Oral Surgery, the clinics of Bellevue and Allied Hospitals, Orthopedic Hospital and the Health Department dental clinics have been placed at the disposal of the league.

**A Hay Fever Clinic in New Orleans.**—The American Hay Fever Prevention Association announces that a free clinic for the prevention and treatment of hay fever was opened at the Charity Hospital, New Orleans, La., on April 2d. The officers of this association, which has its headquarters in New Orleans, are as follows: Dr. W. Scheppegrell, president; Dr. Rupert Blue, Surgeon General, United States Public Health Service, honorary vice-president; Lieutenant Colonel George McC. Derby, United States Army, vice-president; Dr. Joseph B. Bassich, recording secretary; Dr. N. F. Thiberge, corresponding secretary; Dr. J. D. O'Keefe, treasurer.

**Civil Service Examination for Medical Consultant, Law Department.**—The Municipal Civil Service Commission announces an examination for medical consultant, law department, for which applications will be received up to and including Tuesday, April 24th. The duties of the position require that the incumbent act, when required, as medical consultant to the Corporation Counsel, mainly in connection with claims against the city for damages for personal injuries, and include the physical examination of claimants, the preparation of medical reports in accident cases, testimony as an expert for the city in the trials, and consultations with the Assistant Corporation Counsel. For full particulars and the proper application blanks apply to the Municipal Civil Service Commission, Room 1400, Municipal Building.

**Mayor Mitchel Mobilizing City Hospital Resources.**—Dr. S. S. Goldwater is chairman of a committee on hospitals appointed by Mayor Mitchel for the purpose of organizing for national defense the city's hospital and medical facilities. Preliminary steps have already been taken to mobilize the resources of all the municipal hospitals. Those who have been invited to serve on the committee are Mr. John A. Kingsbury, Commissioner of Public Charities; Dr. John Winters Brannan, president of the Board of Trustees of Bellevue and Allied Hospitals; Dr. Haven Emerson, Commissioner of Health, and a representative of each of the following hospitals: St. Luke's, Roosevelt, Presbyterian, New York, Post Graduate, St. Vincent's, Mount Sinai, German, Brooklyn, Long Island College, Brooklyn Jewish, and St. Catharine's.

**A New Hospital in Queens Borough.**—The Queensborough General Hospital has been organized to take over the Jamaica Hospital, which has been in existence for twenty-five years. Option on a site on a ridge just north of Jamaica has been secured and a campaign to secure \$250,000 to finance the project will be started at once. Tentative plans provide for a building with 200 rooms, on a plot large enough to permit the addition of wings when necessity demands.

**Physicians' Summer School at Rome, N. Y.**—A summer course in clinical medicine and psychology will be given at the Rome State Custodial Asylum for recently graduated physicians in order to offer to recently graduated physicians an opportunity to study special groups of defective children. From ten to twelve men can be accommodated at one time. The course will be given June 6th to 16th, and repeated June 19th to 29th. For full information regarding this work write to Dr. Charles Bernstein, superintendent, Rome, N. Y.

**American Pediatric Society.**—The twenty-ninth annual meeting of this society will be held at The Greenbrier, White Sulphur Springs, W. Va., May 28th, 29th, and 30th, under the presidency of Dr. F. S. Churchill, of Chicago. Other officers are: Dr. Wilder Tileston, of New Haven, vice-president; Dr. Howard Childs Carpenter, of Philadelphia, secretary; Dr. Charles Hunter Dunn, of Boston, treasurer; Dr. L. A. La F  tra, of New York, recorder and editor; Dr. O. M. Schloss, assistant editor. Dr. Isaac A. Abt, of Chicago, is chairman of the council.

**Instruction for Mosquito Fighters.**—The Brooklyn Institute of Arts and Sciences calls attention to its courses of instruction offered at the Biological Laboratory, Cold Spring Harbor, Long Island. The courses begin on July 5th and continue for six weeks. One of the courses is designed to train persons for practical work in the elimination of mosquitoes and flies. This course will include surveys and mapping, identification of species, life history of the different species of mosquitoes and flies, specifications for treatment, and elimination. For further information, address Dr. Charles B. Davenport, Cold Spring Harbor, N. Y.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, April 16th, Clinical Association, Society of Normal and Pathological Physiology, Medical Society of Woman's Hospital, Blockley Medical Society; Tuesday, April 17th, West Branch of the County Medical Society; Wednesday, April 18th, County Medical Society (business meeting), Section in Otology and Laryngology of the College of Physicians; Thursday, April 19th, Section in Ophthalmology of the College of Physicians, Northeast and Southeast Branches of the County Medical Society; Friday, April 20th, Logan Medical Association, Medical Club (reception).

**Yorkville Medical Society.**—A stated meeting of this society will be held at Hotel Bon Ray, Madison Avenue and Ninety-second Street, New York, Monday evening, April 16th. Dr. Henry S. Stark will demonstrate an interesting case of diabetes mellitus associated with Baedow's disease, complicating pregnancy. The remainder of the scientific program will consist of a symposium on internal secretions, and the subject will be presented as follows: In ophthalmology, by Dr. M. J. Schoenberg; in gynecology, by Dr. Robert T. Frank; in surgery, by Dr. De Witt Stetten; in internal medicine, by Dr. J. J. Hertz. The discussion will be opened by Dr. Otto Hensel and Dr. Alfred M. Hellman.

**The Control of Venereal Diseases.**—At the eighteenth annual meeting of the New York Conference on Hospital-Social Service, to be held at the New York Academy of Medicine, Wednesday evening, April 18th, the program will consist of a discussion of the Control of Gonorrhea and Syphilis. The subject will be presented as follows: A Survey of Four Years' Clinical Work, by Dr. H. A. Fosher, of the Brooklyn Hospital Dispensary; Dispensary Control, by Dr. A. N. Thomson, of the Brooklyn Hospital Dispensary; Community Control, by Mr. Frank Osborn, of the New York Social Hygiene Society; Dispensary Follow-up, by Miss Grace Barclay, of Johns Hopkins Hospital. The discussion will be opened by Dr. James M. Kent and Dr. J. Sturdivant Read.

**Babies' Hospital of Philadelphia.**—At the annual meeting of the board of managers of this hospital, on April 2d, Dr. Charles A. Fife was elected president, and other members were elected as follows: Dr. Joseph Sailer, Dr. David Reisman, Dr. John F. Sinclair, Dr. James E. Talley, Dr. Joseph S. Neff, Dr. Arthur Newlin, and Mrs. Charles F. Jenkins. It is reported that \$11,000 has been contributed toward the purchase of a site for a dispensary building.

**Annual Meeting of Alienists and Neurologists.**—A preliminary announcement has been issued of the meeting of alienists and neurologists, to be held under the auspices of the Chicago Medical Society, at the La Salle Hotel, Chicago, July 9th to 12th. Dr. George A. Zeller will act as chairman. Complete programs will be mailed on June 28th, with abstracts of the papers to be presented. Contributions to the program are solicited. Address all communications to the secretary of the society, Dr. J. V. Fowler, Room 1218, 30 North Michigan Avenue, Chicago.

**Physicians' Economic Society.**—The Physicians' Protective League of New York, which meets the first Thursday of every month at the Hotel Cecil, St. Nicholas Avenue and 118th Street, New York, has been incorporated under the name of the Physicians' Economic Society of New York, with the following officers: Dr. K. Eisenbud, president; Dr. Henry Keller, first vice-president; Dr. Charles Hyman, second vice-president; Dr. Robert Kahn, financial secretary; Dr. L. W. Zwishon, recording secretary; Dr. Joseph Bruder, treasurer; Dr. W. G. Wulfahrt, historian.

**Medical Association of the Greater City of New York.**—A stated meeting of this association will be held in Hosack Hall, New York Academy of Medicine, Monday, April 16th. The program will consist of a demonstration of operative surgery by motion pictures, as follows: Perineal Prostatectomy (Dr. Parker Syme), by Dr. Milton R. Bookman; Splenectomy for Banti's Disease, by Dr. Howard Lilienthal; Cholecystectomy for Cholecystitis, by Dr. John F. Erdmann; Thyroidectomy, by Dr. Charles H. Peck; Posterior Gastroenterostomy for pyloric stenosis, by Dr. Benjamin T. Tilton.

**Red Cross Supply Service.**—The American Red Cross Society announces the organization of a national supply service in the principal cities of the United States which will have charge of the forwarding and distributing of all gifts and comforts for American troops and American military hospitals. Mr. Otto T. Bannard is director of the New York branch of the bureau, with headquarters in the Metropolitan Building, and he will be assisted by an advisory committee. In every training camp, in every military and naval hospital, at every army base there will be agents of the service to report on the soldiers' needs and to supervise the distribution of supplies.

**Examinations for Assistant Bacteriologists in the State Health Department.**—Among the positions for which the New York State Civil Service Commission will hold examinations on May 5th are two for assistant bacteriologists in the State Department of Health. One is open to men only and applicants must have been graduated from a registered medical college. Training and experience in sanitary chemistry are desirable. The salary is \$1,800 a year. The other examination is open to both men and women, and a degree from a college maintaining a standard satisfactory to the Commission, or an equivalent education, is required; salary, \$900 to \$1,200 a year.

**Accuracy of Certified Causes of Death.**—The United States Public Health Service has issued in the form of a reprint the conclusions of a committee of the Section on Vital Statistics of the American Public Health Association. The report gives the conclusions of the committee title by title, each cause being designated as either acceptable or not acceptable or, in certain cases, unacceptable without autopsy, or laboratory confirmation. Copies of this reprint will be sent to all interested in this study with a view to eliciting comment for the information of the meeting of the committee to be held April 20th. Any changes proposed by the committee and approved by the association must be approved by the Conference on the International List of Causes of Death before adoption.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 659.)

One of the most salient instances of the recent increase in drug values, and that which has probably imposed more hardships on a multitude of sufferers than any other change, is that of the coal tar analgesics. Antipyrine and acetphenetidin, for example, approximately equal in price in 1914, rose during 1915 and the early part of 1916 to figures about eight and four times as high, respectively, as those quoted before the war. Since the high level of 1916 the cost of antipyrine has receded to approximately five times that prevailing in October, 1914, but that of acetphenetidin has continued to rise gradually to five times the 1914 figure. Antipyrine and acetphenetidin have thus in recent months been selling at an approximately equal figure, though in the last week or two the latter has shown a tendency to rise above the former, owing to greater scarcity at the present time. Acetanilid, after rising early in 1916 to a price almost four times the normal, has declined to a point at which its price is somewhat less than twice that prevailing in 1914. Comparing the present prices of the three agents, we find antipyrine and acetphenetidin to be, weight for weight, about twenty-six times as costly as acetanilid. Considering, moreover, the fact that acetanilid acts on the system in a dose about three fifths that of the other drugs, the latter will be seen to be approximately forty-three times as expensive, dose for dose, as acetanilid.

While one cannot but deplore the substitution of acetanilid for acetphenetidin or antipyrine in the majority of proprietary headache preparations put out for independent use by the layman, the question arises whether in view of the practically prohibitive cost or complete unavailability of acetphenetidin and antipyrine, acetanilid might not at present with sufficient safety be prescribed by the medical practitioner in lieu of the former agents.

The tendency to produce collapse in the event of excessive dosage or idiosyncrasy is universally held greater in the case of acetanilid than in that of acetphenetidin or even antipyrine. Information for a definite comparison of the three drugs in connection herewith is afforded by the classic statistical inquiry of Kebler, Morgan, and Rupp, of the U. S. Bureau of Chemistry, published in 1909. Of 288 physicians responding to questions on the subject of acetanilid poisoning, seventy-six per cent. stated that they had observed toxic effects from this drug, while in a similar large series of physicians supplying data on antipyrine and acetphenetidin poisoning, the percentages were 46.3 and 21.5, respectively. The total number of cases of toxic action witnessed by these physicians was 614 in the case of acetanilid, 105 in

that of antipyrine, and ninety-five in that of acetphenetidin. Certain factors tending to raise the morbidity from acetanilid are, however, to be borne in mind: The overwhelming predominance of acetanilid over the other two agents in proprietary preparations, with consequent much more extensive use by the public and greater likelihood of the physician being called to see cases of acetanilid poisoning, the fact that this drug was in use before the other two and was frequently employed in excessive amounts through widespread inappreciation of its toxic properties and the fact that acetanilid has been rather largely used locally for analgesic and antiseptic purposes account for numerous cases of poisoning from absorption of the drug. The first of these factors is substantiated in that among the 614 cases of acetanilid poisoning, only 289, or less than half, arose in cases where the drug had been ordered by a physician, whereas among the antipyrine and acetphenetidin cases this ratio was far different, seventy-nine out of 105 and sixty-nine out of ninety-five cases, respectively, occurring in subjects to whom a prescription had been given. The third factor is illustrated in that, among the cases of poisoning by acetanilid reported by Kebler, Morgan, and Rupp, fourteen resulted from external use of the drug, whereas from local use of antipyrine or acetphenetidin no instances of toxic action have been recorded.

Comparison of the three drugs from the standpoint of danger to life reveals, in the above mentioned series, a mortality of 2.7 per cent. among the cases of acetanilid poisoning, 4.7 per cent. among the antipyrine cases, and 7.3 per cent. among the acetphenetidin cases. The cases of poisoning by the last two drugs being, however, less numerous than those due to acetanilid, a truer idea of the relative danger is afforded by multiplying these percentages by the number of instances of poisoning met with in the case of each drug. Using only the figures relating to cases in which the drugs had been prescribed by a physician, we thus obtain products of 780.3 for acetanilid, 371.3 for antipyrine, and 503.7 for acetphenetidin. In these figures, however, no account is taken of the total number of cases in which each drug had been prescribed—a knowledge of which point is desirable where the degree of danger in using the remedies is to be fairly compared. Although no direct data on this are given in the report approximate information concerning it can be derived by considering the number of physicians, among the entire series of 400 replying to the inquiry, who stated that they used each of the drugs in question in practice. Thus, 288 physicians prescribed acetanilid, 192 antipyrine, and 306 acetphenetidin. Dividing the figures previously obtained for each drug by the number of physicians using that drug, we obtain the factors 2.71 for acetanilid, 1.93 for antipyrine, and 1.65 for acetphenetidin, which may be taken to express roughly the relative danger to life attending the use of the three reme-

dies, according to the data furnished in the report. Eliminating the two deaths through local use of acetanilid from the total seventeen deaths caused by this drug, the factor for acetanilid is reduced to 2.39. On the whole, these figures tend to show that the risk of fatal poisoning from acetanilid, *when prescribed by the physician*, is probably less, in comparison with that attending the use of antipyrine or acetphenetidin, than has been generally supposed. The impression of a far greater lethal power on the part of acetanilid, while correct up to a certain limit, seems to have been somewhat exaggerated owing to the greater frequency with which it has been used in an illadvised, indiscriminate manner by the laity.

(To be continued.)

**A Treatment of Gastric Ulcer Based upon Established Clinical, Histopathological, and Physiological Facts.**—Frank Smithies (*American Journal of the Medical Sciences*, April, 1917) makes the points that we can never expect to establish a single definite cause of gastric ulcer, and that we have no basis for considering it a distinct disease entity, but that it is rather a local accident in association with a systemic upset. Successful medical treatment first demands a careful selection of patients to be so treated. It is indicated only in ulcers associated with little callus, or if calloused, located in portions of the stomach in which stenoses are not liable to result, or where surgical procedures cannot be carried out. The following is an outline of the author's method of nonsurgical treatment: 1. Rest in bed with both physical and mental rest for from one to three weeks. 2. Rest to the stomach itself, including avoidance of irritating medicine, gastric lavage, and frequent abdominal examinations. 3. Local applications to the abdomen of compresses saturated with Ochsner's fluid (alcohol and boric acid) to prevent painful spasms. 4. Abstinence from food by mouth for from three to seven days, as determined by the clinical disappearance of gastric spasm, pain, regurgitation, waterbrash, heartburn, and by fluoroscopic proof of absent or diminished gastric peristalsis. During this fast paraffin wax should be chewed for fifteen minutes every hour to keep the mouth clean, to promote a free flow of protective saliva and mucus, to counteract painful hunger contractions and gastros spasms, and to allay thirst. 5. Rectal feedings of nutrient mixture of from 500 to 1,000 calories in twenty-four hours during the fasting period. A clyster used contains one ounce of fifty per cent. alcohol, one ounce of glucose with normal salt solution to make 240 c.c., given at body temperature by the drop method, thirty to sixty drops a minute. During the first day of rectal feeding ten drops of tincture of opium are given with each enema. 6. Mouth feeding is begun usually from the fourth to the seventh day. The nourishment should be liquid and warm, and should be given in small quantities frequently. Carbohydrates should be selected. 7. Overproduction of gastric acid is limited by keeping the stomach food free as above described. The exhibition of large quantities of alkali is unnecessary and apt to be harmful. Frequent lavage is to be condemned. 8. Medicines are

administered largely to counteract discomfort due to painful gastros spasms, accumulations of overacid gastric contents associated with peristaltic unrest, and pain associated with perforation. It is doubtful if any medicine has a direct healing effect upon peptic ulcer. Painful gastros spasms are usually controlled in the way above indicated, but in certain cases in which there is an individual vagus hyper-tonia, or the ulcers are located at or near the orifices, atropine, belladonna, or bromides may be needed. In the early stages atropine may be given hypodermically, or bromides may be placed in the nutrient enemata. Later, when food is given by mouth, five to fifteen drops of tincture of belladonna may be administered fifteen minutes before feeding. Bismuth and olive oil do not seem useful as analgesics. Orthoform, in ten grain doses in warm water, is an efficient local anesthetic when it comes in direct contact with an open ulcer. For the relief of overacid gastric accumulations sodium bicarbonate is contraindicated. Five to ten grains of calcined magnesia, or small doses of milk of magnesia, are better. Often no alkali is needed. Only in extreme cases is lavage necessary. Usually atropine or belladonna has a definite controlling effect. Pains of perforation are best controlled by morphine hypodermically, rest in bed, and hot compresses to the abdomen. Prompt surgical intervention is indicated. 9. Hemorrhage, whether seepage or acute, generally indicates surgical intervention. Intermittent seepage may be controlled by rest in bed, morphine hypodermically, intravenous injections of horse serum, coagulose, or copious transfusion. Acute hemorrhage with vomiting can frequently be stopped by lavage with water at 110° F. 10. The bowels may be regulated at first by simple soap-suds enemata every second day. After the second week morning doses of phosphate of soda or Carlsbad salts in hot water may be given. In chronic cases liquid paraffin given in equal quantities of warm cream results in easy movements, and the paraffin appears to have a certain protective value upon the ulcer bearing area.

**Serum Treatment of Poliomyelitis.**—Abraham Zingher (*Journal A. M. A.*, March 17, 1917) presents the results of his experience in the recent epidemic with the use of serum in the various stages of poliomyelitis, including also the use of normal serum. The outstanding feature is the need for the very early administration of serum and this can be met only by the adoption of some method of making a diagnosis even in the absence of the typical signs of the disease. Such a diagnosis can usually be made, in the face of an epidemic, by bedside examination of the spinal fluid. This shows macroscopically a ground glass opacity and forms an abundant and lasting foam when shaken vigorously. On the strength of these findings one is warranted in injecting the serum at once, the positive diagnosis being confirmed by later microscopic and chemical examination of the fluid. The dose of serum should be fifteen mls and its administration should be preceded by the removal of a somewhat larger amount of fluid. The injection should be made slowly and by gravity. The effects of the serum are the production of a profuse leucocytosis

and polymyelocytosis in the spinal fluid, and possibly of some specific action in the case of immune serum. The dose should be repeated at intervals of about twenty hours to allow for the full effect of the leucocytosis and to keep up the specific effect. In addition to these local effects the injection is followed by constitutional symptoms, including an increase in signs of meningeal irritation and a rise of the temperature. After two to three days all of these symptoms will pass off and the temperature will have fallen sooner. The serum may be obtained from early convalescent cases, two to six months after an attack; from later convalescents, six to twelve months after; from those who have had the disease at any time over a year before; or normal serum may be secured. The blood should be drawn through a large needle and collected in small square bottles, where it is allowed to clot at an angle giving a wide surface. After twenty-four hours in the icebox the serum should be decanted, centrifugated, and preserved by the addition of 0.2 per cent. tricresol. Other methods of its collection may be employed if preferable. Although a considerable number of patients were treated it was not sufficient to warrant the deduction of positive statements. It seemed that if given in the preparalytic stage the administration of immune serum tended to increase materially the number of patients recovering without paralysis as well as the total proportion of recoveries, including those manifesting paralysis. Normal serum seemed also to have a very marked beneficial effect, but it could not be stated whether this was as great as that from immune serum or not, but it seemed that the immune serum was somewhat more efficient. The fulminating bulbar type and the spinal paralytic forms of the disease seemed to give an unfavorable prognosis even when treated in the early stages with serum. In a certain proportion of patients treated after paralysis had developed the serum seemed to check the progress of the paralysis and to save life.

**Hodgkin's Disease.**—J. L. Yates and C. H. Bunting (*Journal A. M. A.*, March 10, 1917) contend that Hodgkin's disease combines the destructive potentialities of a malignant infection and a neoplasm. A mortality of 100 per cent. has been universally accepted, but recent efforts seem to promise a considerable hope for improvement. The general plan of treatment should include a series of sequential steps. Diagnosis should be made at the earliest possible moment and the portals of entry of the infection sought and eliminated. This may be by tonsillectomy, the healing of chronic cutaneous and mucous membrane lesions, care of the teeth and accessory sinuses, and the cure of enterocolitis or constipation. Combined with these measures early and complete extirpation of all accessible enlarged glands should be practised, followed at once by a thorough and prolonged Röntgen ray treatment of the operative field and of all glands not removed. All efforts should also be made to improve the patient's general health. Finally immune serum should be administered for its general and specific effects. Medication is without specific value, but may be helpful as a general measure. The treatment requires modification to suit the special conditions of

each case, depending largely on the stage of development of the disease. Excision for diagnostic purposes should never be attempted unless one is prepared to make it complete if a frozen section proves the condition to be Hodgkin's disease, owing to the great tendency of this procedure to accelerate the process. As a result of such a plan of treatment recovery, that is for more than five years, is estimated at less than five per cent. for acute cases; at eighty to ninety per cent. for incipient chronic cases; sixty to seventy per cent. for early chronic; five to ten per cent. for advanced chronic; and nil for both the very late and the lethally involved chronic cases. In all cases, taken as they come under observation, the possibility of recovery is present in about twenty per cent.

**Spelter Chills.**—David Riesman and Russell S. Boles (*American Journal of the Medical Sciences*, March, 1917) give the following rules to be carried out by the employer for the prevention of this occupational disease, which is met with among workmen who are engaged in processes in which zinc is volatilized. Inhalation and ingestion of metallic vapors should be guarded against by providing the working rooms with an efficient system of ventilation practical for all seasons of the year. The furnace room should be kept apart from the others and provided with proper ventilation about the furnaces. An improved technic, perhaps some automatic device, should be employed for pouring when such is at fault. All metallic dust and deposits about the foundry should be removed by thorough systematic cleansing at regular intervals. Strong, healthy men should be employed to do the work demanded in brass foundries, zinc smelters, and allied trades in which zinc is poured; minors and women should not be employed, and a fatiguing amount of labor should not be demanded from the workmen. Proper washing and toilet facilities should be provided and the men advised as to the necessity of their proper use. Allow the men reasonable time for washing before their eating period and a suitable place for eating; caution them to change their clothes before leaving the shop, to avoid sudden changes in temperature, and advise them not to wear mustaches, and to use respirators when necessary.

**Treatment of Cardiac Disease and Arteriosclerosis with the Condensator Current.**—H. Weber (*Correspondenz-Blatt für Schweizer Aerzte*, January 20, 1917) states that better results can be obtained by means of electricity in cardiac and vascular disease than by the employment of rest, digitalis, and other remedies which are apt only too easily to become toxic. He prefers what he calls the condensator current, which appears to be a form of galvanism, as he says that by a condensator is understood an apparatus in which a certain quantity of positive and negative electricity is collected joined through an external conductor. He reports nineteen patients treated in this manner, and says that it is indicated in all organic heart diseases without serious disturbances of compensation; in cardiac neuroses provided that the nervous system is not too irritable; in organic heart diseases associated with cardiac neuroses; and in arteriosclerosis of all degrees, including that of the coronary arteries, and



excluding only the arteriosclerosis associated with contracted kidney. Contraindications would seem to be loss of compensation, an irritable nervous system, and contracted kidney. Some points in his functional testing of the heart are of interest. The patient while breathing quietly holds his breath. If he cannot do this for from thirteen to fifteen seconds an insufficiency of the heart muscle is very probable. The pulse is counted while the patient is standing and again while he is lying down, as in a healthy man, or in one in whom a cardiac fault is compensated, the pulse becomes distinctly slower when he lies down. Then he tries Herz's selfinhibition, in which the patient slowly flexes his elbow and extends it again, concentrating his attention on the procedure; the pulse before and after shows little or no difference if the heart is sound, is considerably retarded if the heart muscle is diseased, and is much accelerated in nervous heart affections. He then determines the amount of hemoglobin, examines the urine, and measures the diameters of the heart as shown in röntgenograms.

**Pneumothorax in Acute Lung Abscess.**—W. D. Tewksbury (*Journal A. M. A.*, March 10, 1917) reports completely satisfactory results with entire cure in one case and similar results with promise of cure in another case of acute pulmonary abscess. In both cases the abscess had ruptured through a bronchus and was draining through the bronchial tree. The induction of a gradually increasing degree of collapse of the lung promoted the drainage of the abscess and its collapse and healing. Following the partial collapse of the lung the temperature began to fall rapidly, cough and expectoration diminished and soon ceased, and there was prompt and progressive improvement in the patient's general condition, including rapid gain in weight. Neither of the abscesses so treated was of tuberculous origin.

**Ureter Catheter Drainage in Renal Infections.**—John R. Caulk (*Journal, A. M. A.*, March 3, 1917) divides cases of renal infections into three groups from the point of view of treatment by ureteral catheterization. The first is that in which the retention is small and the fluid under great pressure, but the tissues of the pelvis have not lost their tone and renal function is little disturbed. The second shows greater dilatation of the pelvis with more marked weakening of the muscle fibres and impairment of the renal function. In this group the fibres are still capable of returning to normal. In the third group the pelvic tissues are no longer able to return to normal, renal function is greatly damaged, and the kidney is seriously involved. In the first group the chances of recovery are excellent, in the second they are doubtful, and in the third the only hope is from the surgical removal of one kidney if the other is still able to perform its function. In the first two groups ureteral catheterization offers very favorable results. Following drainage of the pelvis by the catheter these patients often promptly lose their chills and high fever and begin to improve. At times, especially in the second group, ureter catheter drainage is necessary over a long period and it has been found that the catheter is well borne for several days at a time. While it is in place daily instillations of twenty-five per cent. argyrol solutions are

recommended. The catheter should be removed for several hours every three days. This form of treatment is especially applicable in those patients so frequently encountered in the fifth and sixth months of pregnancy when the usual methods of flushing with water and the administration of antiseptics have failed. This condition is almost wholly due to mechanical retention coupled with mild infection and is almost invariably unilateral.

**Removal of Varicose Veins of the Leg with Local Anesthesia.**—Carroll W. Allen (*New Orleans Medical and Surgical Journal*, March, 1917) states that he enucleates the entire vein with such of its tributaries as seem necessary, from the saphenous opening above to the ankle below. This operation is performed under local anesthesia produced with weak solution, either of 0.25 per cent. novocaine, or of 0.2 per cent. eucaine. Four points are selected for making the injections: one just below the saphenous opening in the fascia lata, one slightly above the knee, one just below the knee, and one just above the ankle. All four areas are infiltrated before the operation is begun, commencing above. With a small syringe and fine needle an intradermal wheal is produced in the centre of each area, about over the saphenous vein. A large syringe and long needle are now substituted. Starting at the upper wheal the needle is directed subcutaneously at right angles to the axis of the leg and advanced two inches, the solution being injected as the needle is advanced. The needle is partly withdrawn and redirected in the opposite direction, which is similarly injected. Again it is partly withdrawn, directed at a slight angle to the first injection nearer the deep fascia, and similarly on the opposite side. Two deep injections are then made down to or slightly below the deep fascia, one on each side. Each area is treated in this manner. Usually about eight ounces of fluid are required, to which twenty drops of adrenalin, one to 1,000, are added.

**Artificial Mobile Stump for Cases of Forced Eye Enucleation.**—A. Magitot (*Bulletin de l'Académie de médecine*, February 6, 1917) points out that the various procedures hitherto employed for supplying an artificial stump are applicable only in cases in which the cavity remaining after enucleation is aseptic. In many instances enucleation is carried out because the globe is lacerated, or opened, or is the seat of inflammation. The latter, even though causing but mild objective signs, is actually attended by dissemination of pathogenic organisms in the lymphatics of the orbit, and when cartilaginous autoplasty is attempted, abscess formation and elimination of the transplant soon follow. The author therefore substitutes in such cases a piece of costal cartilage from a freshly killed lamb or calf, this cartilage having previously been placed in ten per cent. formaldehyde solution for three days and then in sterile water, renewed repeatedly, for several more days. Though consisting of "dead" tissue, such cartilage, by the formaldehyde treatment, has been rendered invulnerable to bacteria and also almost invulnerable to phagocytes, being therefore but slowly dissolved in the tissues. Pieces of animal cornea thus treated and transplanted on living corneas re-

mained unabsorbed after two years. After an enucleation, the cartilage is merely sutured to the external and internal recti, care being, however, taken to close the conjunctiva in front of the stump with a double row of sutures. When all traumatic phenomena have disappeared, six months or a year after the injury or inflammation, a true autoplasty can easily be performed in the now aseptic tissues. The formaldehyde treated cartilage was employed with satisfactory results by Magitot in ten cases. The procedure is applicable in nearly all cases except those of panophthalmitis. The pieces of prepared cartilage keep indefinitely in water in tightly sealed bottles. The author believes a similar use of cartilage will prove feasible in other autoplasmic operations on the face for open wounds.

**Transplantation of Fat.**—Irvin S. Koll (*Journal A. M. A.*, February 17, 1917) states that he found in animal experiments that transplanted fat acted as a valuable hemostatic material, especially for the control of bleeding from parenchymatous organs such as the kidney. This method was then tried on man in kidney and prostate operations, the fat either being taken from the patient himself or from healthy dogs. The results were excellent. The fat was found to undergo prompt change into fibrous tissue, this being complete in from three to four months. This change was so marked that following decapsulation of the dog's kidney a new capsule would be formed in a few months. Infection of the fat did not influence its hemostatic properties or interfere with its metaplasia into connective tissue.

**Quinine Urethane Intravenously in Malaria.**—Richet and Walter B. Griffin (*British Medical Journal*, February 10, 1917) report that they encountered a large number of specially severe forms of malaria, many of the patients manifesting coma and failing to respond to repeated oral and intramuscular doses of quinine. They tried the effect of the injection of quinine intravenously and found the results to be strikingly good. Many cases were controlled by a single injection and only two patients with coma in a series of seventy died after this plan of treatment was adopted. The solution used had the following composition:

R Quinine hydrochloride, .....	0.4;
Urethane, .....	0.2;
Aque distillata, .....	1.0.

This was taken up into a fifteen mil syringe and fourteen mils of physiological saline solution drawn in to dilute it. The injection was then made very slowly into one of the arm veins through a very fine needle. Within a minute conscious patients noticed a bitter taste in the mouth, buzzing in the ears, and slight vertigo. In only one case did even slight thrombosis result from the injection. Two or three injections were sometimes required before the temperature remained normal. In every case the administration of quinine was continued orally after the intravenous treatment was stopped. It was seldom necessary to give more than 0.4 to 0.65 gram of quinine at a single injection, though as high as 1.2 gram was given in one injection without harm. This proved to be the only successful method of treating these patients with malarial coma.

**Pituitrin in Labor.**—A P. Agnew (*British Medical Journal*, December 23, 1916) reports most satisfactory results in shortening the period of labor by the discriminate use of pituitrin. He injects 0.5 mil late in the first stage. This often produces a few severe, even tetanic, contractions, followed by effective normal pains. Labor is materially hastened and the need for instruments greatly reduced. Chloroform may be used to diminish the pain.

**Three Flap Leg Amputation.**—Chaput (*Presse médicale*, January 11, 1917) reports good results from this procedure in ten cases. A short antero-internal flap is cut, together with two longer flaps, one anteroexternal and the other posterior. This method requires much less flap tissue than those based on a single external or posterior flap, and is much safer as regards gangrene than a circular amputation or one with two equal flaps because of the shortness of the anterointernal flap already mentioned. An excellent stump is afforded.

**Seminal Vesiculitis and Chronic Urethral Discharge.**—Robert H. Herbst (*Journal A. M. A.*, March 10, 1917) believes that surgical intervention is necessary in the majority of cases in which vesiculitis can be proved to have developed. The form of intervention and treatment which gives the best results seems to be either unilateral or bilateral vasotomy with injection through the vas into the vesicles of a solution of collargol. The strength of the solution may be varied from three to five per cent, and the amount to be injected at one time from six to twelve mils into each vesicle. This treatment will often check the urethral discharge in two days and result in a prompt and complete cure of the inflammation.

**Neuritis and Paralysis in Pasteur Treatment.**—J. C. Geiger (*Journal A. M. A.*, February 17, 1917) states that he found reports of 150 cases of these complications of the Pasteur treatment, including his own. About 0.9 per cent. of all patients treated showed one or the other complication. A study of the cases showed the occurrence of all forms of neuritis and of myelitis. No single etiological factor could be found to explain every case, but the chief factors seemed to be anaphylaxis, individual susceptibility, and the development of a modified virus infection. While usually not materially influencing the course of the treatment, the occurrence of these complications might be fraught with great danger and demand immediate abandonment of further treatment.

**The Question of Operation in Suspected Perforation in Typhoid Fever.**—John S. Thacher (*Medical Record*, February 24, 1917) from his own experience and from a review of the literature closely agrees with Mikulicz, who performed the first operation for typhoid perforation and who said that "where there is suspicion of perforation do not wait for an exact diagnosis, but explore at once, as there is no danger in so doing." No harm is done to the patient if on operating it is found that there is no perforation as is shown by the records of many observers; in fact Bunt says that in two cases of this kind it seemed that recovery was very much aided and hastened by the operation.



# Miscellany from Home and Foreign Journals

**Effects of Cinematograph Displays on the Eyes of Children.**—N. Bishop Harman (*British Medical Journal*, February 17, 1917) discusses this problem and points out several of the factors which render moving pictures fatiguing to the eyes of children. In the first place there is the effect of glare, which is directly irritating to the eye, and is specially associated with the existence of a limited spot of light in a dark room. To overcome this the room in which the pictures are shown should be illuminated in the parts not immediately about the screen. The light used for projection should be only of sufficient intensity to make the pictures clear and the reading matter should be shown with much less intensity. The flicker of the motion of the pictures and the rapidity of the movement of the persons and objects in the pictures are both very fatiguing and irritating to the eye. Both of these can be largely overcome by perfection in the process of taking the pictures. The prolonged concentration required to grasp the story of the pictures, especially combined with the absence of other objects or of speech to provide some distraction also causes very marked fatigue. The long duration of the exhibitions serves to intensify this factor and the pictures should be interrupted by some other form of exhibition, or limited to one hour for children. Finally the fact that the majority of the children sit in positions relative to the screen which produce distortion or are too close or too distant for the proper visual effects, conduces to further tiring of the eyes and the child's brain. If the points mentioned could be remedied and the time for children be sharply restricted, the occasional indulgence in these exhibitions would have no harmful effect upon the eyes, but as the shows are now run they are conducive to a noticeable amount of visual impairment.

**Diagnosis of Duodenal Ulcer.**—John B. Deaver (*Archives of Diagnosis*, January, 1917), in a series of fifty-three cases operated in in the year 1916, noted forty-seven males, with an average age of 41.5 years, and six females, averaging 36.8 years. The physical signs consisted of some tenderness and rigidity in the epigastric and upper right rectus regions. In the typical case, however, he finds the diagnosis easy to make from the history alone, which reveals years, if not a lifetime, of attacks of epigastric discomfort three or four hours after meals, relieved by eating or by alkalies; high acidity; motor hyperactivity of the stomach, and sometimes vomiting and hemorrhage. A correct preoperative diagnosis was made in all but eight in the series. The atypical cases, however, may prove troublesome. Chronic appendicitis frequently shows the same hunger pains, and hyperacidity is not unusual in it. Flatulence and discomfort, on the other hand, are apt to be constantly present in this condition; there is more pain after certain foods, especially starches and red meats; the pain is not so severe as in ulcer, and radiates downward, and exercise often increases the discomfort. The appendix proves diseased in so many cases of duodenal or gastric ulcer that the latter may be held secondary conditions, and Deaver

removes the appendix in nearly all these cases. Pain appearing in one half to two hours after eating and not promptly relieved by food suggests gastric rather than duodenal ulcer. Radiating pain is usually to the right in duodenal ulcer, to the left in gastric; in the latter, pain is apt to be more constant and vomiting is more frequent. Cholelithiasis can often be differentiated by the very severe colicky pain with sudden, unaccountable onset and mysterious cessation, and by the prompt relief frequently afforded by lavage. In chronic cholecystitis the attacks do not last as long as in duodenal ulcer—especially the perforating form—but differentiation is otherwise difficult. Pancreatic disease is distinguished by the absence of a definite relation of the attacks to eating or drinking, or to the kind of food taken. Similar considerations apply in early malignant disease of the intestines. In support of prompt surgical treatment Deaver urges the frequent malignant degeneration of ulcers. Perforation occurred in about fifteen per cent. of the patients in his series. The operative mortality in chronic duodenal ulcers was 3.7 per cent., and the death of only one patient occurred among forty-six perforated cases, including a previous series. In all but one of the cases, a posterior gastroenterostomy was performed; in seventeen this was combined with pylorotomy. In ten cases the ulcer was invaginated and in five excised; duodenal plication was performed twice.

**Traumatic Separation of the Symphysis Pubis.**—R. M. Beach (*American Journal of Obstetrics*, February, 1917) asserts that this condition is not as infrequent a complication of labor as reported statistics indicate. Among predisposing factors are the normal increase of mobility of the pelvic joints in late pregnancy; repeated child bearing; disproportion between the size of the fetus and the pelvis, and diseases of the pelvic joints, e. g., suppuration, caries, osteomalacia, rickets, or new growths. Spontaneous rupture with excessive uterine contraction as causative factor is believed impossible by some, the usual form being due to some type of forcible delivery. No diagnosis was made, in many recorded cases, until the second to fourth day postpartum. Yet the symptoms may be pronounced at time of rupture, and a grinding sensation or pistol shot sound may be noted by the physician, who suddenly finds the delivery becoming very easy. Vaginal examination facilitates the diagnosis. The most constant symptom during the puerperium is pain referred to the back, especially on turning in bed or being lifted on a bed pan. Pubic pain and tenderness may coexist, and continuance of these symptoms into the second and third weeks should suggest some bony injury. In the case reported by Beach the patient had had eight previous pregnancies, the last of which had ended in a forty-eight hour labor terminated by forceps and followed by extreme sacral pain on motion for sixteen days and inability to walk for three months. In the ninth and last pregnancy, examination on admission revealed the pubic bones so widely separated that four fingers could be placed in the interval. Labor progressed



normally. The pelvis was firmly bound with an abdominal binder and five days postpartum, with the patient lying prone, x ray examination showed a pubic separation of only two and three quarters centimetres. At the time of discharge, with the patient lying on the back, there was a separation of nearly two fingers, but the lateral posture brought the bone ends close together. Eight and one half months after the labor the x rays showed a three and one half centimetre separation, with the bone ends moving freely but causing no symptoms.

**Reichmann's Syndrome.**—F. Gallart y Mones (*Revista de Ciencias Médicas de Barcelona*, January, 1917) states that this syndrome is clinically nothing more than a painful crisis with gastric hypersecretion, hyperchlorhydria, and gastric stasis. Four fundamental symptoms compose this syndrome, namely: pain coming on several hours after eating; the presence of fluid in the fasting stomach; hyperchlorhydria with hypersecretion, and complete and rapid digestion of albumins. This symptom complex is the clinical manifestation of a pyloric stenosis and, by extension, of a pyloric or juxtapyloric ulcer.

**Significance of Hypertension.**—C. W. Strickler (*Southern Medical Journal*, March, 1917) concludes that it seems to be possible for worry and mental and physical strain to keep up a moderate hypertension. Of all the theories advanced concerning the cause of hypertension the toxic seems to him the most rational. While we cannot explain the manner in which it acts, or name the agents, we possess the clinical evidence that hypertension responds more quickly and remains improved for a longer period of time when this condition has been relieved. He states that hypertension is neither a cause of nephritis or arteriosclerosis, nor caused by them, although it is associated with them and may be influenced by them to some extent.

**Revival of Heart Action Resulting from Excitation of the Accelerator Nerves.**—J. P. Morat and M. Petzetakis (*Bulletin de l'Académie de médecine*, February 13, 1917) state that they have found experimentally that electrical stimulation of the accelerators may act with sufficient power on the intracardiac nervous mechanism to cause a completely arrested heart to resume beating. Thus, in a heart arrested in diastole as a result of chloroform administration, excitation of one or both accelerators with a current of moderate intensity caused return of the beats after a latent period varying in duration from five to ten seconds. The right auricle begins to beat first, the left auricle almost immediately after, and after an interval the ventricle also. Later the beats, after increasing progressively in strength, show also an increase of frequency. The phenomenon was noted in particular in animals cooled down by exposure to 23° or even 17° C. Even five or more minutes after the heart has stopped beating, with the thorax opened and artificial respiration interrupted, the electrical excitation restores the heart beat, and will do so again if reapplied after the heart action has been interrupted anew for a minute or more. It is believed that these observations may prove applicable in practice.

**Echinococcic Bone Disease.**—C. A. Walker and W. T. Cummins (*Journal A. M. A.*, March 17, 1917) state that they have been able to find reports of only eighty-eight cases of echinococcic involvement of the bone. To this number they contribute one of their own observation. A man, thirty-one years old, with negative past and family history, had suffered from attacks of severe aching pains of paroxysmal character, worst at night and located in the upper third of the left tibia. At times there was much swelling in the same region. The affected region showed some increase in size and was tender. The x rays revealed a cystic tumor of the bone. Operation was performed with the removal of a large number of cysts, none of which contained any scoleces. The condition recurred and a second slight operation was performed, but this also was followed by recurrence, so a third was undertaken in which a large amount of the cancellous tissue was chiseled out and the wound cauterized with phenol. This was followed by permanent cure.

**The Relation of Dyspnea to Acidosis.**—Andrew Hunter (*Canada Lancet*, February, 1917) writes that acidosis is the result of the draining of bases from the body by excessive quantities of fixed acids in the blood. These fixed acids are excreted by the kidneys and in passing into the urine they carry with them some of the bases of the blood, especially the sodium. One very important manifestation of acidosis is the decline both of the free carbon dioxide of the blood and also of the alveolar carbon dioxide which follows its fluctuations. It is uncertain whether the only or even the main cause of dyspnea of renal and cardiac disease is acidosis, although practically every case of nephritis shows some degree of acidosis. Among nephritic cases there seems to be no relation between the degree of the acidosis and the severity of the dyspnea. It would seem that in cardiac cases without renal involvement the dyspnea is due to several different causes, including acidosis, obstruction to the gaseous exchange in the lungs, and hyperexcitability of the respiratory centre.

**Thick and Thin Blood Smears in Malaria.**—H. A. Taylor (*Journal A. M. A.*, March 10, 1917) emphasizes the great value of the use of thick smears as compared to thin ones in the diagnosis of malaria. Thus parasites were demonstrated in five minutes' time in each of 526 thick slides whereas they were found in only 125 of the thin slides taken from the same patients at the same time although thirty minutes was given to the examination of each of the thin slides. The thick slides were dehemoglobinized by immersion for from one to several hours in seventy per cent. alcohol containing two per cent. of hydrochloric acid. They were stained by a modified Giemsa stain, from which glycerin was omitted. The advantages of the thick method, aside from greater ease and a higher percentage of positive results, lie in the fact that both the dehemoglobinizing and staining are automatic, it being possible to leave the slides in the respective solutions over night if desired. The method has the disadvantage of materially altering the appearance of the parasites so that one has to learn their characteristics anew.

**Gastric Symptoms Due to Irritation in the External Ear.**—Milton Goldsmith (*Journal A. M. A.*, February 17, 1917) cites the histories of four instructive cases of gastric disorders due to the presence of a foreign body or impacted cerumen in the auditory canal, which had not been suspected. In each case the removal of the offending material relieved the symptoms. The gastric symptoms were produced by the irritation of the nerve of Arnold, which is a branch of the vagus.

**Delayed Tetanus in Bone Injuries.**—M. Foster (*British Medical Journal*, February 10, 1917) reports three cases of delayed onset of tetanus following gunshot wounds of bone. In each case the patient sustained a fracture and each received a primary prophylactic dose of antitetanus serum. The periods of incubation from receipt of the injury to the appearance of symptoms of tetanus were 86, 106, and 146 days, respectively. All three patients were treated with intrathecal and intramuscular injections of serum and all recovered.

**Appendix Dyspepsia.**—Clarence A. McWilliams (*Medical Record*, February 24, 1917) gives this name to a form of gastric indigestion especially with pylorospasm and hypersecretion or hyperchlorhydria which stubbornly resists the best and persistent medical treatment. Such cases show nothing on careful objective examination over the gallbladder, stomach, or appendix, although at operation they show a pathological appendix. There may be even severe and copious vomiting of blood; in twelve of Moynihan's cases the quantity vomited at one time being over a pint.

**The Effect of Cold upon Malaria Parasites in the Mosquito Host.**—King (*Journal Experimental Medicine*, March, 1917) conducted numerous experiments to determine whether the general impression that the development of malarial parasites in anophelis is arrested at a temperature of about 60° F. is correct; also if the parasites themselves are destroyed at temperatures below this. He found that the parasite of tertian malaria in the mosquito host is able to survive exposure to a temperature of 30° F. for a period of two days, 31° F. for four days, and a mean temperature of 46° F. for seventeen days. In a smaller series of tests than in the above it was shown that the sporonts of the æstivoautumnal parasite were resistant to temperatures as low as 35° F. for twenty-four hours.

**A Clinical Agglutinator.**—R. P. Jarrold (*Lancet*, February 17, 1917) describes a simple and effective apparatus for the rapid measurement of agglutination of the enterica group of organisms by the macroscopic method. The apparatus is essentially a modification of the method described recently by Bass and Watkins and permits the operator to make simultaneous quantitative determinations of the agglutinins for typhoid and the two paratyphoid organisms. The full details of the apparatus are described and its advantages are stated to be those of simplicity, speed, and accuracy. With practice, ten specimens of blood can be examined in one hour and the titre shown by this apparatus in five minutes agrees to within one dilution with that of the elaborate tube method which requires from one to twenty-four hours.

**The Rarity of Conjugal Phthisis.**—Maurice Fishberg (*American Journal of the Medical Sciences*, March, 1917) maintains that the simultaneous or consecutive occurrence of phthisis in husband and wife is extremely rare. In an examination of 170 married couples in which one of the consorts was tuberculous, and who lived under conditions that favored the transmission of the disease, only five, or 2.9 per cent., were found in which both husband and wife were affected. Many cases in which both the husband and the wife are affected with tuberculosis can be found if carefully looked for, but their relative number is small, and they appear to be coincidences analogous to cases of conjugal diabetes or cancer, of which there are many examples in medical literature.

**Volumetric Determination of Calcium in the Urine.**—Charles Mayer (*Presse médicale*, January 25, 1917) points out that the clinical information obtainable from calcium determinations has not hitherto been generally available owing to the tediousness and relative inaccuracy of the chemical procedures recommended for this purpose. He presents a simplified method in which the calcium and magnesium compounds in the urine are first precipitated by boiling with ammonium carbonate. The precipitate is then washed with dilute ammonia in boiling water, dissolved as chlorides with ten per cent. hydrochloric acid, the latter neutralized with ammonia, and a definite amount of decinormal oxalic acid solution added, precipitating the calcium as oxalate. The oxalic acid remaining unprecipitated is then titrated with an equivalent solution of potassium permanganate, and the amount of calcium per litre of urine calculated from the results.

**Anterior Poliomyelitis.**—Samuel A. Jahss (*Journal A. M. A.*, March 10, 1917) analyzes 400 cases of anterior poliomyelitis of the 1916 epidemic and finds that eight per cent. showed no evidence of muscle paralysis, seventy-eight per cent. showed some involvement of the lower extremities, thirty-eight per cent. of one extremity only, and twenty per cent. of some of the trunk muscles. Every conceivable combination of paralysis was observed and in thirteen per cent. one or more of the cranial nerves were involved, the seventh being the commonest. The tibialis anticus and quadriceps extensor were the commonest muscles involved in the lower extremity while the deltoid held first rank in the upper. About twenty-five per cent. of all muscles involved showed some degree of motion. The reaction of degeneration proved an entirely fallacious means for judging the extent of muscular paralysis. A study of the muscles involved in this series emphasized the great importance of the prevention of deformity and brought out the fact that practically every group of muscles, whatever its function, has an antagonistic group. Some form of splint had been applied in practically every case in which the lower extremity was involved, but no appliance of any sort had been used in ninety per cent. of the shoulder cases; in those with unilateral paralyses of the neck or back; in those with complete abdominal paralysis; in those with paralyses of the internal rotators of the hip; or in those with paralysis of the calf muscles.



# Proceedings of Local and National Societies

## SOUTHERN MEDICAL ASSOCIATION.

*Tenth Annual Meeting, Held at Atlanta Ga., November 13, 14, 15, and 16, 1916.*

The President, Dr. ROBERT WILSON, JR., Charleston, S. C., in the Chair.

*(Continued from page 670.)*

**The Treatment of Syphilis with Arsenical Preparations.**—Dr. E. H. MARTIN, of Hot Springs, Ark., said he desired to emphasize the importance to public health of the use of salvarsan in all cases of persistent local infection anywhere without waiting for a positive Wassermann, which often might be found only after many chances of infecting others had occurred. The dangers of the use of salvarsan were insignificant compared with the dangers of contracting syphilis and the bad results were less than those from any other drug having specific effects. In the administration of 6,377 intravenous doses of salvarsan to 1,776 patients in a given length of time he had had only thirty-two instances of angioneurotic edema of sufficient severity to interfere with the administration of the dose; forty-two cases of rash following in from two to seven days thereafter; only six instances of hemolysis, three of which were of sufficient severity to cause a chill and jaundice; and four cases of severe kidney congestion. So in giving from two to twelve doses of salvarsan daily, he gave it with the same feeling of assurance that one would have in giving any other drug, not expecting trouble and rarely finding it, but always getting good results.

**Syphilis as a Factor in the Production of Cardiovascular Renal Disease.**—Dr. DOUGLAS VANDERHOOF, of Richmond, Va., said that clinical evidence of cardiovascular syphilis was almost always a late manifestation of the infection. In spite of the isolated cures and the occasional brilliant recovery of the syphilitic cardiopath on specific treatment, the disease too often terminated fatally. This being the case, physicians must appreciate the great importance of the treatment of early syphilis in the wisest manner possible. As Fordyce said, it could not be emphasized too frequently or too energetically that the fate of the syphilitic individual depended largely upon the early diagnosis of his infection and the intensity with which treatment was carried out in the first six months. It seemed superfluous to insist that the secretion of all venereal sores should be searched for *Spirochaeta pallida*. In this way a positive diagnosis could be made before the Wassermann reaction became positive or any secondary symptoms appeared.

**Relation of Health Insurance to the Medical Profession.**—Dr. B. S. WARREN, surgeon, U. S. Public Health Service, of Washington, D. C., stated that up to the present time the bills proposed for enactment by legislatures had not provided in any way for a preventive medical service. They contained no authority for organizing health machinery or for utilizing existing health agencies. In other words, an economic pressure was created for disease pre-

vention, but machinery was not provided through which it might operate. An excellent opportunity was offered by which the specialist in preventive medicine could be introduced into the plan through the administration of the medical benefits. It would be a simple matter to provide that the medical referee be a medical officer of the health department and employed by that department after careful examination as to his knowledge of preventive medicine as well as skill in diagnosis. This would bring to the service of the health insurance system a corps of trained specialists clothed with all the authority of the health department. Entering the home of every sick insured person to certify as to his disability, they would have an eye trained to see quickly unhygienic conditions and would be equipped with the technical knowledge of remedial measures.

**Meckel's Diverticulum with Special Reference to Umbilical Disorders of Infancy.**—Dr. R. M. HARBIN, of Rome, Ga., drew the following conclusions: 1. Meckel's diverticulum, the incompletely atrophied remains of the vitelline duct, is found in two per cent. of persons. It occupies usually the lower third of the ileum and occurs in males in proportion of three to one in females. It is attached to other viscera in a third of the cases. 2. Clinical investigation should record the presence of absence of any history of polypoid growths, strawberry excrescences, hemorrhages, hernia, etc., about the umbilicus coexisting with diverticula which, before atrophy is complete, perhaps cause a large percentage of the protean intestinal disorders of early childhood. 3. In view of the comparative frequency of this abnormality, it is surprising that so few cases of acute diverticulitis arise. In the acute abdomen from this cause, the symptoms would be those of ileus somewhat modified. The signs of obstruction do not develop so rapidly, and the symptoms of peritonitis are less severe; there are less fever, less tympany, and a less degree of leucocytosis. When the peritoneum is opened the presence of a bloody serum is suggestive. It may be remarked that the gross appearances of the appendix are not always reliable even when actually the cause of the disturbance. 4. Chronic diverticulitis should be more frequently investigated, as an abdominal entity in the diagnosis of the cause of surgical indigestion, and from an anatomical standpoint it is surprising that such a large percentage of Meckel's diverticula are symptomless. These overlooked diverticula perhaps explain a considerable number of cases of surgical indigestion unrelieved by operative treatment. The atypical nature of symptoms may be explained by certain anatomical variations of this abnormality, and is suggestive as compared with certain classical symptoms of dyspepsia due to other causes. Patients with this disorder are frequently able to furnish a history of umbilical disorder in infancy and of having been irritable, colicky babies. In these patients there is a recent history of constipation with the occasional presence of bloody mucus in the stool, causing straining. There usually has



been pain around the navel aggravated by running or by pressure from the outside, an inability to expel gas, bilious attacks without obvious cause, and the patient usually makes use of the expression that the stomach is never "right."

**What the Government Is Doing to Eradicate Trachoma and Prevent Its Further Spread.**—Dr. JOHN McMULLEN, of Lexington, Ky., said that in children when seen early, the disease usually was readily eradicated and they could return to school in a short time. A general anesthetic for the operation was usually necessary in small children and, when tonsils and adenoids were found requiring removal, this was usually done at the same time. The older cases required a longer time to effect a cure and postoperative treatment was necessary for a longer time. As trachoma frequently had a latent period without subjective symptoms, it was often found, particularly in children, much to the surprise of the parent of the child, thus emphasizing the importance of routine school examinations. In this way the disease was discovered in its early stages and when it was usually readily removed before the corneal complications occurred and with the minimum of days lost from school.

The results obtained in this work were extremely gratifying. Adults who had suffered from trachoma for years and were dependent upon their friends or the county for support, some being inmates of the poorhouse, had been relieved, no longer a menace, and had taken their place in the community and were earning a livelihood for themselves and family. Children unable to obtain an education on account of the constant physical suffering and impaired vision, were now in school getting an education, which would have been denied them forever but for the timely interference. The results obtained by the methods adopted by the Public Health Service in the eradication and control of trachoma showed conclusively that this infection could be controlled and the work should be continued until this result was obtained.

**Transmissibility of Pellagra.**—Dr. JOSEPH GOLDBERGER, surgeon, U. S. Public Health Service, summarized as follows: Sixteen volunteers were subjected to experiment. With one exception all were men and varied in age from twenty-six to forty-two years. No restraints were imposed on their customary habits or activities. Seventeen cases of pellagra of various types and of different grades of severity furnished some one or more of the experimental materials. The materials were blood, nasopharyngeal secretions, epidermal scales from pellagrous lesions, urine, and feces. Blood was furnished by four of the volunteers, nasopharyngeal secretions by four, epidermal scales by five, and urine or feces by sixteen, of whom ten furnished both urine and feces, three urine without feces, and three feces without urine. Blood was administered by intramuscular or subcutaneous injection; secretions by application to the mucosa of the nose and nasopharynx, scales and excreta by mouth. Both urine and feces were ingested by fifteen of the volunteers, five of whom also took blood, secretions and scales.

The experiments were performed at four widely

separated localities—Washington, D. C.; Columbia, S. C.; Spartanburg, S. C., and New Orleans, La.—at which different groups of the volunteers were assembled. Observation had been maintained by association with a majority of the volunteers and by visits of inspection, supplemented by reports from the volunteers themselves, thirteen of whom were physicians and by reports from other medical officers of the service with whom they were associated. During a period of between five and seven months none had developed evidence justifying a diagnosis of pellagra. These experiments furnished no support of the view that pellagra was a communicable disease; they materially strengthened the conclusion that it was a disease essentially of dietary origin, by a faulty, probably deficient, diet.

**Diagnosis of Pellagra.**—Dr. M. L. GRAVES, of Galveston, Tex., stated that many symptoms, isolated and unsupported, were suggestive of pellagra and might afford much strong suspicion of the disease, and with combination of two or more systems might amount to certainty. Among these he suggested: 1. Paresthesia, particularly the burning sensations in the feet and sometimes in the hands, and not traceable to alcoholic or other ascribable neuritis. 2. Indefinite pains in the region of the stomach and the back, unassociated with evidences of gallstones, hyperchlorhydria, gastric or duodenal ulcer, or appendicitis, and associated with peristaltic unrest sometimes visible in those with thin abdomens, gaseous distention, and possibly attacks of diarrhea without any cutaneous lesion and few or no evidences in the nervous system. 3. A strong tendency to more or less uncontrollable lacrymation on slight occasion. 4. Loss of weight with any of these symptoms without other sufficient cause. 5. A peculiar muddy pallor with an anxious look, difficult to describe, of the type of toxic pallor, not an anemia, and often associated with mental depression, muscular hypertension, and exaggerated reflexes. 6. The red, slick tongue, with or without salivation. 7. Paraplegic symptoms, usually spastic but sometimes flaccid, although never so flaccid as in the hypotension of locomotor ataxia, of poliomyelitis or of multiple neuritis, and associated with gastrointestinal evidences of pellagra.

Finally, it must be admitted that neither the mouth secretions, the blood, the spinal fluid, the gastric contents nor the stools had yet given any conclusive evidence of this disease. Until they, one or more, did give such evidence or some definite etiological agent was discovered, we should be compelled to rely upon the clinical aspects of the disease for the diagnosis.

**Infant Stools as Diagnostic Aids to the General Practitioner.**—Dr. WILLIAM WESTON, of Columbia, S. C., said that during the first few weeks of life the infant had from three to five loose, golden yellow stools daily. Gradually after this time the stools became fewer in number and of a salve like consistency, so that at about the third month they were reduced to two or three daily. The color was due to bilirubin. The reaction was acid, due to the relative excess of fat over protein in the milk. Sometimes it might be observed that the stools were brown in color. When this was the case the milk was relatively high in proteins.

As to the stools of infants fed on cow's milk, the appearance, reaction, frequency, and odor would depend upon the proportion of the fats, sugars, and proteins, the kind of protein, the kind of sugar used, whether or not starch was used, and to bacterial activity. As to the color of the stools, green was the most usual abnormal color seen, and was usually due to either excessive acidity or alkalinity changing the bilirubin to biliverdin, or to the pyocyanous. A stool changing from yellow to green had no significance. A dark green stool was significant of disease. When the color was due to bacterial action the addition of nitric acid decolorized it. If due to biliverdin, the addition of nitric acid produced a prismatic play of colors. The next most common abnormal color was gray. White stools were due to the presence of undigested fat in the form of soaps. When the stools were black the color was due either to blood or some drug, probably bismuth. Sometimes a stool was seen that was grayish blue in color which was of no particular significance, being due to some change in the bile pigments. Occasionally around the edge of the stool was observed a pink strain. This often occasioned some anxiety on the part of the mother. This was caused by some change in the bile pigment and was of no significance. The stools of fat indigestion had a strong odor of butyric acid or lactic acid. Protein indigestion produced an odor of putrefaction. Indigestion caused by carbohydrates gave the odor of lactic, acetic, or succinic acid.

**Simplified Infant Feeding.**—Dr. GEORGE K. VARDEN, of Atlanta, Ga., stated that little distinction was often made in the type of infant under discussion in regard to artificial feeding. The age, nutrition, development, weight, and digestive history must be accurately known. There was a wide difference in the feeding of an infant of average weight and good digestion and of one who had suffered from some inherent weakness, or who might have been the victim of food injury and who subsequently was an easy victim whenever his limit of tolerance for food was overstepped. All babies could not be fed alike. It should also be said that even all average babies could not be fed by any given method, although good results would follow when certain general principles were observed.

A good milk supply was essential. This meant a low bacterial count with approximately four per cent. each of fat, sugar, and protein. The milk was to be cooled rapidly and kept at a temperature below 50° and when possible below 45° F. Milk must be placed on delivery against the ice in a refrigerator and not allowed to grace the doorsteps or the porch for a variable length of time. All utensils should be clean. This milk contained the elements necessary for nutrition but not in the same proportions as in human milk. Human milk could be imitated in the artificial preparation of the infants' food, but cow's milk, no matter how modified, would never be anything but cow's milk.

The methods of feeding in this country comprised those which involved the use of top milk mixtures and those in which dilutions of plain milk with water or cereal diluents were used; in both sugar was added to bring the proportion up to five, six, or

seven per cent. The sugars in use were lactose, saccharose, and maltose, each of which had its advocates, though lactose and maltose were more generally used. Maltose was considered to be more rapidly absorbed and weight gains were attributed in part to the production of water retention. Lactose was preferred by some because it was the form occurring in breast milk and on account of its favoring the development of the predominant organism of the intestinal tract. He employed all three at different times and occasionally used lactose and maltose combined. For the last ten years it had been his practice to use dilutions of whole or even partially skimmed milk in most of the average feeding cases. A few children had been fed on top milk mixtures and whey and cream mixtures. Scurvy might develop, but it was easy to recognize and control. It could be avoided by the use of either fruit juice or small amounts of potato, but there were some children who were intolerant of one or the other. This might prevent our taking the step in certain instances that would most certainly prevent its occurrence.

It was known that the average child required the protein contained in one and a half ounces of milk for each pound of his weight, but he would often take one or two ounces more of food than he was months of age. This was true up to about eight months. For example, a child weighing twelve pounds at four months would require in twenty-four hours twelve times one and a half ounces, or eighteen ounces of milk. The number of feedings might be placed at seven in twenty-four hours and the interval at three hours, feedings at 6 a. m., 9, 12, 3 p. m., 6, 9, and 2 a. m. Water had been added to make the total quantity thirty-five ounces, and this gave five ounces at each feeding. This amount of milk was insufficient for nutrition and growth and must be increased by substituting milk for water in a quantity varying between one half to one ounce every day or so until the milk equaled twenty-four ounces or about two ounces for each pound of weight. Many children would require more than this.

**Extraperitoneal Cæsarean Section.**—Dr. W. KOHLMANN, of New Orleans, La., said that his personal experience to date was rather limited. He had performed only six sections of that kind, five of which were extraperitoneal, one transperitoneal with clamps, a very small number compared with the reports from the German clinics. Up to a few years ago this operation was not performed at all in this country. Hirst, of Philadelphia, was the first one to report six cases. Some cases were reported by Gellhorn, of St. Louis. In recent years the low incision had met with more favor, although more in the style of the lower transperitoneal route as suggested by Veit, Fromme, and Hirst on account of the surgically simpler technic. Notwithstanding the fact that the absolute extraperitoneal route was more difficult and required more time, a fact which was of great importance, especially in patients exposed to long and protracted labor, this procedure seemed to offer some rather important advantages.

(To be concluded.)



## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

**Anatomical Names.** Especially the Basle Nomina Anatomica ("BNA"). By ALBERT CHAUNCEY EYLESMEYER, B. S., Ph.D., M.D., Head of the Department of Anatomy, University of Illinois. Assisted by DANIEL MARTIN SCHOEMAKER, B. S., M.D., Professor of Anatomy, St. Louis University. With Biographical Sketches by ROY LEE MOODIE, A. B., Ph.D., Assistant Professor of Anatomy, University of Illinois. New York: William Wood & Co., 1917. Pp. XX-744. (Price \$4.50.)

It is the bane of all progress that multiplication of terminology concerning things should crowd about the knowledge of the things themselves and tend to crush it beneath the weight of words.

Old Galen called attention to this form of medical disipation when in commenting upon the many sided activities of his fellows he pointedly said, apropos of hysteria, there was more discussion by medical men of what the word meant than about the thing itself. Dry formalism clings like a cloaking garment to the spirit within.

Fortunately there arises from time to time some one with courage to cut through the many cloaks to the foundations. The present volume is one of these undertakings. Modern anatomy has 50,000 dresses for 5,000 structures and the international BNA nomenclature has cut them down to the necessary 5,000. We here have a foundation volume which should be followed by all students of medicine. Heretofore the matter contained in this book has been available only in German or scattered in many monographs. The authors and publishers have performed a signal service for medicine in getting out so valuable a book.

**Clinical Tuberculosis.** By FRANCIS MARION POTTENGER, A.M., M.D., LL.D., Medical Director, Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, Cal.; Professor of Diseases of the Chest, College of Physicians and Surgeons, Medical Department, University of Southern California, Los Angeles, Cal. With a Chapter on Laboratory Methods by JOSEPH ELBERT POTTENGER, A.B., M.D., Assistant Medical Director, and Director of the Laboratory, Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, Cal. Volume I: Pathological Anatomy, Pathological Physiology, Diagnosis, and Prognosis. With 105 Text Illustrations and Charts, and six Plates in Colors. Volume II: Complications and Treatment. With sixty-two Text Illustrations and Charts, and four Plates in Colors. Volume I, pp. 707; Volume II, pp. 713. (Price \$12 the set.)

Very rarely, to the reviewer of medical books, there comes an opportunity for him to bestow the commendation "*summa cum laude*." Pottenger's work assuredly deserves it. It is impossible within the space available to do more than casually indicate the particularly valuable parts of *Clinical Tuberculosis*, and to recommend most emphatically to every one interested in this subject a careful perusal of each of the 1,300 odd pages of this work. He will not waste his time, nor lose his interest, and after finishing them he will be bettered in his capacity to deal understandingly with the protean aspects of tuberculous infection. The title does not give a just idea of what Pottenger has presented in this book. It is first of all clinical and practical, but it describes in a very lucid and comprehensible way, the technical laboratory investigations and their conclusions, as applicable to bedside practice. Most of us have accepted these findings as *obiter dicta* and rather beyond our understanding, but the author has shown that they lead, very logically, to the rational and reasonable management of tuberculosis in practically all of its phases. Illustrative of the author's common sense position on important matters, we may cite his attitude on extirpation of the tonsils, which in these days is very refreshingly conservative, as is also his conception of the limitations of open air therapy.

A peculiarly valuable chapter takes up in detail the relationship between patient and physician; each line of this

should be underscored. One criticism, better perhaps a comment, on the author's statements concerning the treatment of laryngeal tuberculosis may be permissible. With present day methods, the surgery of the tuberculous larynx offers certain alleviation of the patient's suffering and, in early involvement, a possibility of cure, concerning which he might, with advantage, seek further information.

Altogether, this is the very best work in its field that ever has been published, and we take pleasure in recommending it to the consideration of all practitioners who deal with tuberculosis.

**Transactions of the American Pediatric Society.** Twenty-eighth Session. Held in Washington, D. C., May 8, 9, and 10, 1916. Edited by LINNAEUS EDFOED LA FÉTRA, M.D. Volume XXVIII. Pp. xiii-338.

Another interesting collection of papers is to be found in this, the latest, volume of these transactions. It is manifestly impossible to mention many of the papers specifically as there are thirty-five of them, but such subjects as scurvy, infant feeding, metabolism of the infant, the Schick test, and a score of others are presented by men well able to speak with authority on each. There are two measures for the value of any original communication in medicine: The first is the intrinsic worth of the observations and facts set forth; the second the specific interest that the paper has to any given reader. All of these papers have the first claim to attention, and the fact that they cover fairly adequately most of the newer problems in pediatrics makes the volume as a whole a just claimant for attention on the score of the second measure of value.

## After Office Hours

A note in the *Survey* for February 17th, gave an all too brief account of Doctor Healy's work in Chicago, a propos of his recent transfer to Boston. The former city deserves commiseration as much as the latter is open to congratulation on account of this change. William Healy has been responsible for what is perhaps the best instance of the ideal cooperation of the medical and legal fraternities.

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The editorial page of the *Ladies' Home Journal* for April is devoted to an attack on cats. The editor says, among other things, "Whether the cat is a carrier of disease is as yet an unsettled question. Doctors disagree on this point." Possibly. You will find that the physicians at Willard Parker and other contagious disease hospitals regard the cat as an *animal non gratum*, however.

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A splendid poem, full of the fire of battle, is "How Rifleman Brown Came to Valhalla," by Gilbert Frankau, in the *Century* for April. By the way, why does not some poet sing of the military surgeon? Surely his history is full of brave deeds and many such lie dead upon the field of honor. There is Service's "Rhymes of a Red Cross Man," but are there any others?

\* \* \*

In the present war many medical and surgical oddities have sort of osmoted from medical to lay channels and make their appearance, in a more or less garbled form, in the columns of pictorial weeklies. *Leslie's*, for example, gives a couple of columns to shell shock in the March 29th number. A picture, which is not especially illuminating, accompanies the article.

\* \* \*

The ways of dealing with the liquor problem are legion. In spite of the fact that prohibition is including more and more states in its territory, there are many who feel that laws of this kind are more in the nature of social experiments than carefully considered schemes of legislative control. Of such is Charles B. Alexander, a prominent New York lawyer who, writing in the *Independent* for March 10th, gives his method of approach to the problem. It is succinct and plausible.

\* \* \*

In the *American Review of Reviews* for April, an article on "Compulsory Health Insurance," by Florence H. Simpson, will interest the modern physician, whose ideals are intimately bound up with the social welfare of the community as a whole.



Shades of Oliver Wendell Holmes! Hear this opening paragraph from an article on "Popular Medicine," written by a physician who advertises himself as a Johns Hopkins graduate and whose articles are published in many leading newspapers: "While a little sore spot or a harmless tumor on the retina or in other portions of the eye may make you think wrongly and misjudge people and things by what you erroneously think you see, there are more things before your very eyes which you do not see than there are nonexistent things which some people sometimes feel convinced that they do see."

## Meetings of Local Medical Societies

**MONDAY, April 16th.**—New York Academy of Medicine (section in Ophthalmology); Yorkville Medical Society; Medical Association of the Greater City of New York; Medical Society of the County of Erie; Elmira Clinical Society; Psychiatric Society of Ward's Island.

**TUESDAY, April 17th.**—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Federation of Medical Economic Leagues of New York.

**WEDNESDAY, April 18th.**—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medicolegal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York; Bronx County Medical Society; Dunkirk and Fredonia Medical Society; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology).

**THURSDAY, April 19th.**—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn; Aesculapian Club of Buffalo; New York Celtic Medical Society.

**FRIDAY, April 20th.**—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society; Saratoga Springs Medical Society.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health service for the seven days ending April 4, 1917:*

**CARTER, H. R.**, Assistant Surgeon General. Directed to stop en route at Washington, D. C., for conference at the Bureau, and at Norfolk, Va., for a preliminary survey of malaria conditions, supplementing orders of March 24, 1917.

**DE VALIN, HUGH**, Passed Assistant Surgeon. Granted one month's leave of absence en route to San Francisco, Cal.

**FROST, W. H.**, Surgeon. Granted ten days' leave of absence from March 22, 1917.

**FULLER, J. E.**, Assistant Surgeon. Detached from the Coast Guard cutter *Manning* and assigned to the Coast Guard cutter *Algonquin* for duty.

**LEAKE, J. B.**, Passed Assistant Surgeon. Directed to proceed to Saluda, Va., to make epidemiological study of the presence of cerebrospinal meningitis in that region.

**RUCKER, W. C.**, Assistant Surgeon General. Instructed to deliver an address to the graduating class of Johns Hopkins University March 28, 1917, on the Public Health Service.

**STROMQUIST, W. G.**, Sanitary Engineer. Directed to proceed to Cheyenne, Wyo., for duty in sanitary surveys of villages and cities in the State of Wyoming.

**TOWNSEND, J. G.**, Assistant Surgeon. Bureau letter of March 14, 1917, amended so as to grant nine days' leave of absence from March 9, 1917.

**WHITE, M. J.**, Surgeon. Directed to deliver an address on rural sanitation at the meeting of the Illinois Public Health and Welfare Association at Springfield, Ill., April 12-13, 1917.

**YOUNG, G. B.**, Surgeon. Ordered to proceed to Charlotte, N. C., to make a survey of public health organization in that city; also to stop en route at Lynchburg, Va., to deliver an address on public health.

### Boards Convened.

Boards of commissioned medical officers convened Monday, April 16, 1917, for the examination of certain assistant surgeons to determine their fitness for promotion to the grade of passed assistant surgeon, as follows: Ellis Island, N. Y.: Detail for the board, Surgeon B. W. Brown, chairman; Surgeon E. H. Mullan, recorder. Marine Hospital, New Orleans, La.: Detail for the board, Passed Assistant Surgeon C. P. Knight, chairman; Assistant Surgeon L. L. Williams, Jr., recorder.

Boards of commissioned medical officers convened April 9, 1917, for the physical examination of officers of the Coast Guard for promotion as follows: Marine Hospital, Stapleton, N. Y.: Detail for the board, Senior Surgeon G. W. Stoner, chairman; Surgeon M. K. Gwyn, recorder. Custom House, Norfolk, Va.: Detail for the board, Surgeon G. B. Young, chairman; Assistant Surgeon S. L. Christian, recorder. Seattle, Wash.: Detail for the board, Surgeon B. J. Lloyd, chairman; Assistant Surgeon R. L. Waugh, recorder. Galveston, Texas: Detail for the board, Surgeon L. P. H. Bahrenburg, chairman; Surgeon R. L. Wilson, recorder.

## Births, Marriages, and Deaths

### Died.

**BASKETT**.—In Van Alstyne, Tex., on Monday, March 26th, Dr. George W. Baskett, aged sixty-seven years.

**BELL**.—In Somerville, Mass., on Tuesday, April 3rd, Dr. William A. Bell.

**FINLEY**.—In Finleyville, Pa., on Monday, April 2nd, Dr. Francis M. Finley, aged eighty-four years.

**FISHER**.—In Detroit, Mich., on Sunday, March 25th, Dr. Charles A. Fisher, aged thirty-seven years.

**KILGORE**.—In Belfast, Me., on Thursday, March 29th, Dr. Gustavus Kilgore, aged sixty-seven years.

**LINDER**.—In Union, S. C., on Saturday, March 31st, Dr. S. S. Linder.

**MATSON**.—In Brookville, Pa., on Wednesday, March 28th, Dr. Charles M. Matson, aged eighty-four years.

**MEEK**.—In Camden, Ark., Saturday, March 31st, Dr. John W. Meek, aged sixty-seven years.

**NELLIS**.—In Long Island City, N. Y., on Wednesday, March 28th, Dr. Charles Nellis.

**REDMOND**.—In Potter, Kan., on Thursday, March 29th, Dr. George W. Redmond, aged sixty-three years.

**SIBBALD**.—In Philadelphia, Pa., on Wednesday, March 28th, Dr. James Sibbald, aged fifty-seven years.

**SKINNER**.—In Charlestown, W. Va., on Saturday, March 24th, Dr. Charles L. Skinner, aged forty-two years.

**STROUP**.—In Harrisburg, Pa., on Sunday, April 1st, Dr. Nathan W. Stroup, aged seventy-four years.

**TAYLOR**.—In West Manchester, Vt., on Monday, March 12th, Dr. Joseph Taylor.

**WALLACE**.—In Forked River, N. J., on Wednesday, March 21st, Dr. Gilbert E. Wallace.

**WATSON**.—In Florence, Ala., on Friday, March 16th, Dr. Charles M. Watson, aged fifty-eight years.

**WILKINSON**.—In Catawba Sanatorium, Va., on Wednesday, March 28th, Dr. Walter W. Wilkinson, aged forty-one years.

**WILSON**.—In Dunedin, Fla., on Thursday, March 22nd, Dr. Frank C. Wilson, of Louisville, Ky., aged fifty-six years.

**WINDER**.—In Philadelphia, Pa., on Monday, March 26th, Dr. William G. Winder, aged sixty-five years.

**ZIMMERMAN**.—In Lebanon, Pa., on Thursday, March 22nd, Dr. Joseph D. Zimmerman, aged seventy-three years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 16.

NEW YORK, SATURDAY, APRIL 21, 1917.

WHOLE No. 2003.

## Original Communications

### EMPYEMA OF THE NASAL ACCESSORY SINUSES AND ITS NONSURGICAL TREATMENT.\*

By HARMON SMITH, M. D.,  
New York.

The symptoms of this disease are by no means always characteristic, at least, not sufficiently characteristic to direct the attention of the general practitioner to the existence of sinus involvement in itself as the basis for otherwise unaccountable existing symptoms. Toxemia resulting either directly from absorption or indirectly from the ingestion of pus from the sinuses into the gastrointestinal tract, with a constantly low temperature, loss of appetite, chilly sensations alternating with hot flashes, malaise, night sweats, tachycardia and shortness of breath, is peculiarly in evidence in the course of chronic sinus involvement. In unattended cases there are occasionally impairment of memory, recurrent fits of mental depression, unaccountable irritability, and insomnia, disproportionate to the apparent mental or physical ailment of the patient, and possibly insanity, sometimes of a suicidal tendency.

Watson Williams cites the case of a woman of perfect integrity and of high social standing, who even went so far as to steal a valuable ring from a friend's house and was not aware of her transgression until after an operation had restored her sinuses to a normal condition. Headaches are very frequent, and when the eyes and gastrointestinal tract have been excluded as possible causes, it is expedient to have the sinuses examined for chronic empyema. Neuralgias accompanying sinusitis and the area involved may be the index to the infected sinus, except when, as may happen, the posterior ethmoidal or sphenoidal involvement creates pressure upon the sphenopalatine ganglion, when the neuralgia may be extended to the distributions of the ganglion quite remote from the source of pressure.

Light headedness, even vertigo are frequent, and is particularly experienced upon suddenly rising or stooping over. Many of these cases are treated for disturbances of the semicircular canals or Ménière's disease, when the origin of the trouble is in the sinus. Defective vision, increased lachrymation, amaurosis, otitis media, and Eustachian catarrh may be associated with, or be the sequence of, sinus sup-

puration. Anemia, which would naturally occur from the long continued presence of pus in the sinus, together with dyspepsia, pharyngitis, laryngitis, and bronchitis, are all present in most cases. In regard to bronchitis, sinus empyema, particularly in children, is a very frequent cause of this condition, and it is sometimes overlooked by the general practitioner because children's sinuses being small and their ostia large in comparison and the walls separating the sinus from the nose incompletely formed, there is seldom any pressure pain to indicate the existence of sinus trouble. Rheumatism is due almost entirely to a pus focus somewhere either in the tonsils, the gastrointestinal tract, appendix, teeth, or in the sinuses, and it is looked for more assiduously in all other places than in the sinuses. The long continued sinus suppuration, particularly that of the ethmoids and sphenoid, will produce polypi, and these by their reflex action are unquestionably the cause of asthma, which may have been treated by internal medication for many years by those unacquainted with the existing conditions in the attic of the nose. The removal of polypi and the exenteration of the ethmoidal labyrinth have in my experience overcome a number of asthmatic conditions, and while I am not prepared to say that all asthma associated with these nasal conditions will be cured by their correction, I can positively assert that all such patients who came under my observation were at least benefited by this procedure. A neglected empyema of the sinuses will result ultimately in atrophic rhinitis and pharyngitis, and in order to cure this peculiar type of atrophy it is absolutely essential first to cure the empyema occasioning it. These remarks apply more particularly to the chronic forms than to the acute, as it is ordinarily a very easy matter for the general practitioner to diagnose an acute sinusitis. Before discussing the treatment of these cases it might be well to dwell slightly upon the cause of sinusitis.

*Etiology.*—The etiology is extensive, and I shall only briefly mention some of the most frequent factors. Predisposing to sinusitis is a tendency to colds, which some people have more than others—a deflected nasal septum, directing air currents laden with bacteria into one sinus more than the other and producing direct infection; again, pressure deflections where the deflected septum occludes the exit of some of the sinuses, especially the maxillary, and hypertrophied turbinates and particularly the middle

\*Read before the Eastern Medical Society of the City of New York, February 9, 1917.

turbinate. The exciting causes are first and foremost influenza, and from an attack of influenza I believe seven eighths of the sinus cases can be dated. After this come the infective fevers, measles, scarlet fever, diphtheria, and like infections. Following these, pyogenic conditions around the teeth as pyorrhea, necrosis of the root, apical abscesses, etc. Next comes traumatism, particularly that incident to operative measures and the employment of electrodes for burning the turbinates, snaring polypi, etc., and lastly foreign bodies. The bacteria of sinusitis are numberless in character, but those most frequently found to be the exciting cause are the pyogenic streptococci and staphylococci, and this year particularly *Staphylococcus aureus*. Next comes the diplococcus, followed by the *Friedländer bacillus*. In addition to these have been found the colon bacillus, tubercle bacillus, influenza bacillus, and all the infective microorganisms which exist anywhere else in the body, even the gonococcus.

**Symptoms.**—Those referable to the acute involvement are few in number but of such a type as will direct the attention of the physician to the existence of a sinusitis, particularly if it is of the closed variety where the ostium of the sinus is occluded either by acute congestion, a deflected septum, hypertrophied turbinate, or some other obstructive element. Pain is the predominant symptom and may range from a dull headache to one of excruciating or lancinating character and is experienced either with or without pressure. If the frontal sinus is involved pain is elicited by pressure underneath the brow or upon tapping above the brow. If ethmoidal, pressure at the inner canthus of the eye directed against the nose is painful. If maxillary, pressure over the canine fossa or tapping the teeth with a tongue depressor, particularly the second bicuspid, elicits pain. If sphenoid, pressure backward against the eye and slightly downward causes pain. In addition to pressure tenderness the patient complains of localized pain, headache, dullness, and a stopped up feeling in the head, similar to the sensation of fullness in the head after diving. There may be no secretions whatever coming from the nose, but there will probably be a history of a previous cold, possibly gripe, dating back some days or even a week, during which period there was a lack of nasal resonance. In the acute variety the patient almost invariably has some fever, which varies with the type of infection. This winter in patients affected with *Staphylococcus aureus*, the temperature has been exceedingly high, often reaching 105° F. The pulse is accelerated and there are chilly sensations with creepy feelings up and down the spine and marked mental lassitude.

The objective symptoms are governed by the type of sinusitis present, whether the closed or the open variety. If closed, upon looking into the nostril there is no evidence of pus, but the mucous membrane of the turbinates is red and congested with little evidence of serous outpour. If, however, it is of the open variety, the nostril may be filled with pus or there may be only a thin white line of pus between the middle and inferior turbinate, reaching by osmosis up upon the septal side of the middle turbinate. The mere presence of pus in the nose does not indicate that a sinus is involved, because

there may be a seromucopurulent discharge from the mucous membranes that will resemble the pus from a sinus, but if the pus is present in the middle fossa and if when wiped away it returns shortly in the same spot, then it is definitely conclusive that it is from a sinus, as the mucous membrane cannot generate a secretion so rapidly as to recur immediately after being wiped away. The location of the pus does not indicate beyond doubt the sinus involved, as the maxillary, the frontal, and the anterior ethmoidal cells empty their fluid contents into about the same place in the nose and pus from any of these cavities will be found to discharge into the anterior chamber of the nasal fossa. Pus from the posterior ethmoidal and sphenoidal sinuses will generally drain into the sphenoidal recess and from there into the retropharynx, so that, after all, the presence and location of the pus merely indicate the set of sinuses involved and by other means at our command we have to differentiate the particular sinus infected. In the reclining position during sleep, the antrum and the sphenoid drain best. During the upright position of wakefulness the ethmoidal and frontal sinuses drain best so that the time of pain as referred to these sets of sinuses will be a guiding element in determining which sinuses are involved. In the chronic cases pain is not a permanent symptom, in fact pain in the sinuses before operative measures have intervened, is due almost entirely to pressure and it is only when an acute exacerbation of an old chronic form takes place that these sinuses become filled so as to produce pressure, unless perchance there is polypoid formation which blocks the exit. Symptoms of a chronic empyema, in addition to those mentioned in the first remarks of the paper, are frequent, and continuous discharge, appreciation of odor on the part of the patient, known as cacosmia, mental hebetude, the constant desire to clear the throat, dropping into the nasopharynx, a dull sense of pressure tenderness, particularly over the sinus involved, loss of appetite, low temperature, loss of memory, inability to concentrate, and inability to use the eyes upon fine or concentrated work. Involvement of the sphenoid and ethmoid often results in pain in the occipital region, in the ears, down the neck and behind the eyes, as though they were being pushed forward. There are systemic disturbances as bad breath, nausea, and even vomiting, particularly in the morning after having swallowed pus all night. Objective symptoms in chronic cases vary in proportion to the length of time the sinus trouble has existed. Looking into the nose that has had free drainage one will see a pale, puffy condition of the mucosa, particularly that of the middle turbinate, resembling somewhat the pale membrane of a tuberculous larynx. The pharynx, lateral walls, and tonsils will be reddened and thickened, due to the outpouring of the pus in this region and to the constant hawking and drawing upon that area. In some cases the whole nostril or that area where the greater number of sinuses empty, the middle fossa, will be filled with polypi or there may be a polypoid degeneration of the mucous membrane of the middle turbinate. The polypi may or may not be bathed in pus as they may obstruct the outpour of the sinus and drainage obtains only in certain attitudes as-



sumed by the patient. In chronic cases I find that the patient complains of lessened discomfort after exercising, as playing golf or dancing. Free exercise and movement of the head from side to side seems to induce freer drainage of the sinuses. In addition to the symptomatic elements of diagnosis there are mechanical means to assist the verification of subjective and objective symptoms. One of the most important is transillumination, which, while not infallible, will materially aid in elucidating the problem, especially if only one side of the head is involved. One element of uncertainty in transillumination is the thickness of the sinus bones and if both sides are involved this thickness of bone will lead us to interpret incorrectly concerning the transmitted light and conversely in the cases of thin bone or where the sinus wall has been thinned by the presence of a mucocele, the light will be transmitted too easily for correct diagnosis. The presence in the mouth of a tooth plate which will not transmit the light is misleading. Scar tissue, particularly in cases where the supraorbital nerve has been cut, will obstruct the view and lead one to incorrect conclusions. Previous involvement of the sinuses, where the membrane has been thickened either from a pyogenic abscess or from a catarrhal or inflammatory process, will obstruct, in a measure, the transmission of the rays. Keeping in mind these exceptions, however, and remembering that the tungsten light is sufficiently intense to illuminate any pus filled sinus and that therefore the operator should regulate the intensity of the ray employed, transillumination is of marked value in substantiating other conclusions. The x ray is the most important mechanical aid to diagnosis, but it may be misleading, if previous sinusitis has existed or if any inflammatory or traumatic lesion circumscribes the sinus. The x ray, however, is of infinite benefit in determining the size of the sinus, its absence or presence, its peculiarity of contour and, in the frontal sinus particularly, the distance between the anterior and posterior plate. Internal or external operative measures should always be guided by an x ray photograph.

*Treatment.*—In the acute cases, except where the pus has broken through the wall of the ethmoidal and frontal sinuses into the orbit, operative measures are inadvisable. By shrinking the turgescient tissues in the nose adjacent to the exit of the sinus with cocaine and adrenalin, and by applying suction followed by hot alkaline irrigation, the pus may be induced to flow, and if frequent treatments are administered the sinus ostium will regain its patency and the infection will be overcome. I do not mean to say that all acute sinusitis can be cured by treatment, but the acute symptoms, high temperature, pain, pressure tenderness, etc., can be overcome in the majority of instances. In some cases it is possible under cocaineization and adrenalinization to pass a small sized cannula into either the frontal, maxillary, or sphenoidal sinus, and when this is possible the sinus can be drained, sucked out, and irrigated with infinite relief to the patient. In the majority of instances, however, this is impossible. Hot steam inhalations, which consist of adding to a pint of boiling water a dram of the mixture of oil of pine,

menthol, and milk of magnesia, has in my experience often induced the purulent flow essential to the relief of the acute involvement. Just as in the beginning of an acute cold, it is necessary to induce the tissues to begin to weep, as it were, and thereby throw out the infiltrated products of inflammation, so in the beginning of an acute sinusitis it is necessary, by like measures, to induce the sinuses to begin their outpouring. Consequently, as an internal medical proposition it is unwise to give anything like belladonna, that will tend to contract and dry up the tissues, while, on the contrary, something must be given on the order of ammonium acetate, potassium iodide, sweet spirits of nitre, or Dover's powders, which will induce this outpouring. Free catharsis and hot packs around the head unquestionably tend to start up the secretions from the nose. In chronic cases which have not been treated or in those which have become chronic under treatment, I believe a great many can be cured by the employment of systematic, regular, and persistent treatment as follows: Daily treatment is an essential factor. First shrink the tissues with a one to 8,000 adrenalin solution in aqua rose, after which irrigate from one side to the other with hot water from a Douglass syringe, rendered alkaline by Dobell's, Seiler's, or even salt and sodium bicarbonate, until the pus in the nostril, which has exuded during the night, has been entirely washed out. Care must be exercised not to exert such pressure on the bulb of the syringe as will drive the secretions of the nose or contents of the bulb into the ears, which can be prevented by telling the patient before starting the irrigation to indicate when conscious of any pressure in the ears. It is likewise essential that the patient should hold his head bent well forward and flexed on the chest and with mouth open, the solution will flow from one side to the other around the back of the septum, emptying the nasal chambers. If, on the other hand, one side of the nose is occluded by a deviated septum, spur, or other obstruction, it is advisable to wash through the occluded toward the open side. After having thoroughly cleansed the nose in this fashion, negative pressure is induced by suction, thereby drawing out from the sinus into the nostril the remaining pus which did not empty itself previously.

In the specialist's office there is usually some mechanical means for inducing negative pressure, such as a Sorensen pump, run by an electric motor. A small sized pump is made which can be carried by the physician to the patient's bedside, but which also depends upon electricity for its motive power. To facilitate suction when these other means are not at hand, I have had constructed a large rubber bulb about the size of a Politzer bag which will give ample suction to evacuate the sinuses, and which may be attached, together with its glass pus receptacle, to my sinus syringe, as is indicated in the illustration.

Pus which is sucked into the nostril and not into the receptacle, is again removed by irrigation. The sinus syringe, which I designed for this purpose, is now employed to introduce such medication as is wished to act antiseptically upon the lining pyogenic membrane. In some cases I employ a weak solution of iodine, about 0.5 per cent., increasing the

strength from time to time, which will produce extravasation of serum and set up a condition simulating an acute coryza, but at the same time the outpouring of the mucus brings with it a great deal of the pus that would otherwise remain in the sinus and which unquestionably tends toward a renovation of the lining membrane of the sinus. After having tried this for some time, I change to a sulphate of zinc solution, which is started on one half grain to the ounce and increased to two or three grains to the ounce. The character of the pus frequently changes with the change in solutions, but I am not prepared to say which one brings about the more favorable result. Following the zinc I may use a nitrate of silver solution, beginning at one half grain and increasing to three grains to the ounce. The silver solution creates more disturbance than any of the others and few patients will stand it until it reaches three grains to the ounce. Not that the nasal mucosa will not stand a greater strength of silver, but when a vacuum is induced and the silver solution is forced

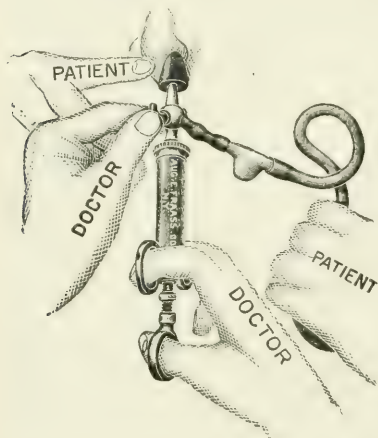


FIG.—Sinus syringe with bulb attachment designed by the author.

into the sinuses which are unaccustomed to the mal-treatment that the nasal mucosa is accustomed to, it sets up a considerable reaction and the patient suffers from headache, lachrymation, etc. Between the employment of these three solutions I may inject a lactic acid bacillus solution, which is made in the laboratory and represents *Bacillus bulgaricus* in suspension. This is by no means irritating and often produces a favorable outcome. After having injected one of these solutions at each treatment, I spray the nose with a menthol and albolene spray, which reduces, in a measure, the irritation due to the astringents. The acute cases yield to this treatment readily, usually within a week, while the majority of chronic cases yield after a time, varying from a few weeks to a few months, and escape altogether any operative interference. The suction, in addition to drawing out the pus, and the syringe, in addition to forcing the medication into the tissues, likewise induces a hyperemia, which tends to rehabilitate the lining membrane of the sinus.

**Method of injection.**—Have a stopcock near tip turned in long axis of syringe, which can then be filled with desired medication by drawing up the piston. All parts are metal except the tip and can be boiled. The stopcock is then turned in the direction of the suction. The nasal tip is placed well in the nostril so that the opening will not suck against the septum or the outer wall of the nose; the other nostril is closed by the patient. To induce a vacuum it is necessary for the palate to fill the postnasal space, which can be done by the patient saying "Ka" or by swallowing, and at the same time applying suction from the hand bulb or from the vacuum pump. Five to ten degrees, as indicated by the Sorensen indicator, is ample, and stronger suction may produce trauma of the mucosa, which does not aid in the treatment. In cases of turgescient membranes it is not uncommon to suck out some blood with the pus, or again the blood may come from the granulations in the sinuses. The presence of blood should in no way deter the physician in the employment of the apparatus.

When the patient gives evidence of the suction having produced a vacuum, the operator again turns the stopcock in the direction of the long axis of the syringe and forces the medication into the nostril and likewise into the sinuses in which a vacuum has been instituted. The medication unquestionably goes into the sinus, for the patient complains of slight pain there after injections, likewise he will blow out from the nose discolored secretions for several days after the injection, if argyrol has been employed. Again, if argyrol has been employed, the nostrils may be irrigated freely until no discolored fluid comes out, and if at the end of two or three days suction is employed and the nose irrigated, discolored secretions will appear. The syringe with the simplified method of obtaining suction brings it within the reach of all practitioners, and enables the specialist to carry it with him to all suspected cases of sinusitis or to those who are too ill to take advantage of the more extensive devices at the office.

I have had some patients in whom chronic empyema had existed for so long that both sides of the nose were filled with polypi, and by this method of treatment alone the sinuses recovered, the polypi disappeared, and the patients have remained well for a period now extending over twelve months, no other measures having been employed to overcome the condition.

44 WEST FORTY-NINTH STREET.

**Multiple Pregnancy, Ruptured Tubal and Uterine.**—E. A. Sullivan (*Journal A. M. A.*, March 17, 1917) reports the occurrence in a multiparous woman of simultaneous tubal and uterine pregnancies. The tubal sac ruptured, was removed, and the bleeding tube ligated and sewed. The abdominal wound was drained and sutured. A fetus could be made out during the operation by pressure on the uterus. The patient recovered from the operation and her uterine pregnancy continued to term, resulting in the delivery of an eleven pound boy.



# HISTORICAL NOTES ON THE MEDICAL SCHOOL OF THE UNIVERSITY OF PENNSYLVANIA, WITH SOME DISCUSSION OF RECENT PROBLEMS IN MEDICAL TEACHING.\*

BY CHARLES K. MILLS, M. D., LL. D.,  
Philadelphia,

Emeritus Professor of Neurology, University of Pennsylvania.

(Concluded from page 677.)

Let us now turn to another more discussed and more disputed phase of the question of the length of time which should be given by medical teachers to the work of their positions, namely, what should be done with regard to the time given by men who do the clinical teaching? Should men who teach in our medical schools such subjects as the theory and practice of medicine, surgery, obstetrics, gynecology, neurology, and other specialties devote their entire time to teaching, or if they are allowed to practise medicine, surgery, etc., how much of their time should be given to the schools and how much to private work?

Various plans have been advocated by those discussing this subject. It is manifestly impossible that physicians, surgeons, obstetricians, and specialists should give their entire time to the work of teaching, unless they are sufficiently compensated to maintain themselves and their families. Most of the suggested plans are concerned only with a discussion of the chairs of medicine, surgery, and obstetrics. They all seem to infer that these departments shall have a supreme head with many associates and subordinates. According to one suggestion, the head of each department should give his entire time to teaching and hospital work, receiving ample compensation for the same. According to another, he should give not less than two or three full days each week to college work and should be allowed to devote the rest of his time to private practice, study, and his personal affairs. Some of those who believe that the heads of departments should give their entire time to teaching and hospital work would also apply the same theory to members of their staffs—associates, assistants, fellows, demonstrators, and instructors. Others, while calling for full time from the chiefs, would permit their understudies to follow the private practice of medicine according to more or less prescribed rules as to time. One plan suggested is that the associates and subordinates of the chiefs of departments should give their entire time to teaching, hospital work, research, and to the writing of scientific papers and books. According to this suggested plan these officers of instruction should be elected to their positions not less than five years or more than ten years after graduation, giving their entire time to the work for ten years and receiving gradually increasing salaries.

Many variations from the plan of full time men for the heads of departments and for positions of less rank have been suggested, as that full time should be given to the work of teaching and research and the other half to medical practice

or other pursuits outside of collegiate instruction. Some have suggested that the morning should be given to the college and the afternoon to private work, or the reverse; and so on through all imaginable adjustments.

The arguments which have been advanced in favor of full time heads of departments or full time subordinate teachers have at first sight much in their favor. In this way it has been held that the student would receive the full benefit of the work for which the professor or other instructor is paid and that the student would benefit accordingly. It must be borne in mind that the particular work in which these teachers of clinical medicine are engaged is that of preparing men for their duties as doctors, that is, for the practising of medicine in the homes of the communities in which they settle. It is true that a large body of students will include a limited number whose future will be largely devoted to teaching, research, and contribution to medical and scientific literature, but those who aim to take up such work will always be able to find opportunities to acquire the knowledge and experience desirable by particular methods.

On the whole, I believe that the best scheme of clinical instruction, both for the heads of departments and for those holding positions below this rank, is one that demands ample time for such work from the educators, but not "full time" in the sense in which this expression is now so often used. It is no doubt true that clinical teachers sometimes neglect their institutional work for their private ends, but this is far from being the rule, even as schools are at present conducted. The picture which has been painted of the ornamental and advertising professor, who spends most of his time in money making, in amusements, and in his family affairs, giving scant attention to his professional work, is a little overdrawn, but it is nevertheless true that such clinical teaching is sometimes hastily and imperfectly done. Men who are willing to become the heads or important subordinates in clinical departments should always be prepared to give sufficient time to the work of their positions. Three or four hours daily, the same number of times a week, will usually do this work well, it being understood, of course, that for the emergencies of medical and surgical practice such as occur in hospitals the additional time necessary would be cheerfully given.

Under some of the plans which have been suggested the teachers are permitted or expected to receive private patients in the hospitals, and this is as it should be. They are permitted also in some of the plans to give a certain amount of time to outdoor private patients who may seek the service of the members of the staff—in other words, to have a sort of hospital office practice. The one privilege shut out from them is that of seeing private patients at their homes or at offices not within hospital walls. It may well be asked, may not some evils result from this hospitalizing of the practice of medicine by medical teachers? The man who confines himself entirely to hospital investigation and practice may become too much of a routinist. He may find himself in a similar situation with many of those who have attached themselves to the staffs of sanitari-

\*Address before the Undergraduate Medical Association of the University of Pennsylvania, delivered January 16, 1917.



ums and hospitals for the insane and other special hospitals. Unstimulated by contact with the outside world, relieved from the necessity of earning money by special effort, largely segregated from the community, he may fall too much into ruts as regards both practice and teaching. Medical work purely intramural or in a hospital is more likely to stale as years go on than is work which has the stimulus of interchange between hospital and private practice. A species of institutionalism may occur with the purely hospital worker.

Medicine, as far as its clinical branches are involved, is preeminently concerned with the homes of a community. Great as is the value of work in a hospital to its staff, after all many of the most difficult and stimulating problems in medicine will always be those which are found through visitation of the sick and injured in the course of private practice. It is true that much of the work of medical practice can be done in the outdoor and indoor services of hospitals. Nevertheless, if the men who are to teach, to practise, and even to investigate have their horizons limited by the walls of the hospital, important as the work there may be, it is not such as will round them out fully or make them the surest and wisest instructors of students.

A second difficulty connected with hospital staffs made up of men entirely dependent for their maintenance on their salaries, would be that of retaining such men for long periods of service. The approved schemes for this method of officering the corps of instruction call for salaries ranging into thousands of dollars a year. Some who have advocated the plan have gaily placed the beginning annual salary for associates and subordinates at three to four thousand dollars, this to be increased until ten thousand dollars are paid. I fear it will be a long day before this happy consumation would be reached. Presuming, however, that sufficient living salaries are forthcoming, it is doubtful whether the hospital and teaching positions would continue their charms for the holders if these men had in them the material which placed them above mediocrity. The temptation to pass from one school to another, and above all to enter upon the private practice of medicine for pecuniary gain, would be constantly present, and this temptation would appeal especially to the able and ambitious.

According to some of the plans outlined it is contended that those holding important clinical positions in the teaching corps of the medical schools should not attain to these positions until five or even eight years after graduation, and should be expected to hold them without the opportunity for private practice for ten years more. This would bring these men to the middle period of life, when they would find it most difficult to enter upon the new rôle of making their living by the private practice of medicine. Of course, out of the whole number of those below the rank of heads of departments, would be some who would eventually reach the highest position, but this number would be relatively small and in not a few instances the medical schools might pass by their own staffs to secure the services of some brilliant exponent of medicine from a distance, a plan which would have many precedents.

Too largely hospitalizing the practice of medicine

may interfere with the rights of the nonhospital practitioner and may add to the evils already so great of the pauperization or semipauperization of the community as far as the practice of medicine is concerned. The multiplication of hospitals, especially of those with numerous outdoor services and wards for the free or cheap care of patients, has done much to rob the everyday doctor of his living. If very large hospitals are connected with our teaching institutions and if the professors and instructors in these institutions are paid salaries with the understanding that outside work shall not be done by them, such a competition may arise for the securing of cases best serving the purpose of the teacher that little attention may be given to the question of the right of such patients to free or largely free service.

Many hospitals at present have regulations as to their ward admissions which prevent patients who might pay their physicians moderately, from paying them anything at all. A patient, for instance, might be able to pay fifteen dollars a week, but not more, for services. The wards of many hospitals, however, are so regulated as to admit patients free or for about seven dollars a week. The rules require that a patient admitted on terms like these shall not be permitted to pay the physician in attendance anything, so that the recipient of the services is put in the position of not doing what he is really able and willing to do in the matter of compensation. It might be argued that the patient should pay the hospital fifteen dollars a week, but the difficulty arises that in few hospitals, especially those connected with teaching institutions, are rooms available at this rate.

Wrongs may sometimes be done to physicians not connected with hospitals by such ward admissions, or by the use of private rooms by the staff of the hospital. Most of the plans for improving medical education with the assistance of the hospitals allow physicians connected with the hospitals to attend private patients in these institutions. This is a procedure which may be open to much abuse. The hospital should never unfairly compete with the physicians and surgeons unconnected with schools and hospitals.

It does not seem to me desirable, all things considered, that the professorships of clinical medicine and associate and subordinate teaching positions connected with these chairs should be made purely academic positions like the chairs, for example, of Greek, or Latin, or history, or mathematics in non-medical departments of a college or university. It is not, in other words, desirable that such chairs should be made purely pedagogic in the sense that their occupants should have nothing to do outside of the business of teaching. While it may be objected that decision regarding such problems cannot be entirely based upon the experience of the past, nevertheless, such experience is certainly not unworthy of consideration. The first object of medical education is the preparation of students for the work of treating diseases, much of which treatment includes, as every practitioner of medicine knows, more than a mere knowledge of diagnosis, prognosis, symptomatology and therapeutics. The practice of medicine is an art. This art if it is to be successfully pursued must include a knowledge of the psychology of patients, using the term psychology here in a broad

sense, and also a knowledge of the psychology of the usual environment of patients, that is, of the families and friends of patients, their home surroundings, and necessities. A successful hospital doctor may fail as a physician in private practice. In private practice quick decision and quick action are matters of supreme importance; the individual is thrown fully on his own resources separated as he often is from the guards and counsellors which go with hospital practice. While hospital and private practice may often be of similar sort, they may present radical differences. If all this is true, it follows that the experience gained in the private practice of medicine should be of advantage. If medical teaching positions are filled by so called full time men and if, as has so often been suggested, they are to be filled by young men who have only their undergraduate and postgraduate instruction and a few years of limited hospital experience, all the developmental influences of private practice on the teacher will be lost.

The great teachers of clinical medicine and the successful teachers below the first rank have been and are men recognized for their abilities as practitioners of medicine, surgery, or the specialties of medicine and surgery. While they have profited largely from scientific and hospital work they have also added largely to their resources by strenuous and stimulative experience in private practice. This practice is educational in the highest sense. Great teachers of surgery and medicine like Agnew, Keen, and Deaver, like Wood, DaCosta, and Pepper, have also been great practitioners. Largely consultants in their later years, they have not failed to profit in the earlier periods of their careers by nonconsulting office and other practice. They come to the hospital and to the rostrum enriched by their outside experiences. They are gainers even as teachers by their opportunities to breathe the air of the noninstitutional world. Bar out men of this type and make the teaching positions purely academic, and the result will be a decline of power on the part of the professor and of interest on the part of the student. Even in professional and technical schools which are not medical—in schools of law, engineering, architecture, finance, and the like—the advantage of having men skilled and experienced in the practice of their respective professions has long been appreciated by those whose duty it is to regulate the curricula of such institutions.

The manner in which the clinical teaching staff should be organized and conduct its work is of vital interest in considering the modern requirements of medical education. Probably for many years to come, chairs like those of internal medicine, surgery, and obstetrics must be given first place in the curriculum, but special subjects will need to be taught under these chairs and also autonomously, if the best results are to be obtained. Each department or subdepartment must be made responsible to its own head and must be called upon for work of the highest quality. Every autonomous department should control its own teaching, investigation, and examinations. This is particularly true of large subjects like neurology. This specialty from both the theoretical and practical sides has become so extensive

that it is allsufficient for one man in teaching and practice. Every neurologist, however, like every other specialist, should be thoroughly trained in the fundamental scientific branches and should also have a good general knowledge of medicine and surgery. This should be obtained by a good undergraduate course, by subsequent hospital experience, and special postgraduate instruction wherever this can best be secured. A short period of private general practice is also desirable for the specialist. Such general knowledge will prevent the mistakes too often made by those who plunge into specialism immediately after graduation. On the other hand, the length of time given to this preparation should not be too long—it probably should not extend beyond five to ten years after graduation. Under our modern requirements men come into the practice of medicine later than was formerly the case, most of them between the ages of twenty-five and thirty, and it is probably best for educational and practical reasons that they should get down to their life work by the time they are thirty-five, while still in the developmental period.

One aspect of the question of medical professors continuing the private practice of medicine is concerned with what might be regarded as the rights of the community. Many distinguished physicians and surgeons, especially the former, have not been connected with medical schools as professors or instructors. Weir Mitchell was a striking example of this fact, and others might be readily cited. While this is true, the rule has been that the most distinguished members of the profession engaged in practice have held positions in the medical schools. Many of these men have made their way to the front rank largely through years of hard work in the teaching halls and hospitals, often climbing to the top of the ladder by successive official steps. Teaching, writing, and investigation with practice in medicine and surgery all play their part in the development of good physicians and surgeons, and have a large influence in the making of recognized reputations. The instructor must keep in advance of his class, not only as to matters long known, but also as to current additions to medical knowledge, daily becoming more numerous, more important, and more accessible. The powers thus acquired are recognized by students who are later to become the guardians and helpers of the community in matters of health and disease. The community itself in a variety of ways sooner or later becomes cognizant of the merits of the medical educator. It happens therefore that in the emergencies of medical and surgical practice in private life, the community naturally turns to the highest type of teacher and practitioner for assistance in the hour of distress. In brief the member of the collegiate and hospital staff is sought after as a practitioner of unusual merit, and therefore as one whom other members of the profession should consult. Some of the plans of full time teaching which have been suggested in recent discussions would shut out men connected with colleges and hospitals entirely from consulting or other work not done within hospital walls.

But has not the community well defined rights in a matter of this kind? Should not the services of



the distinguished members of our hospital staffs be at its command? In connection herewith it must be remembered that the most important consulting work is done necessarily at the homes of those who are sick or injured. Consultation and other practice might be considerably restricted for those who assume positions as teachers, and whom the profession learns to regard as the best counsellors, but the community should not be deprived of the services of this class. If hospitals and medical schools are to be largely endowed, it is to the nonmedical community that the profession must look for these endowments, and the community in turn has the right to expect the services of those who are presumably the highest exponents of professional skill.

1909 CHESTNUT STREET.

## THE FOUR PLUS WASSERMANN.

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The great weight placed on a Wassermann report makes it imperative for one with experience in this work to place before the medical world as well as the lay public a comprehensive résumé of its significance. The time is ripe for unbiased comment by an impartial judge. The Wassermann reaction, on account of its manifold significance, becomes a scientific factor in our hygienic, economic, and social life. It has given food for endless speculation and argument, and libraries have been written about it and its allied subjects, syphilis treatment and prognosis. Today a positive Wassermann report, considered from the points of view above mentioned, possesses an overwhelming significance, and the one directly responsible for the work behind the report, *nolens volens*, has to shoulder part of the responsibility that goes with it. The signer of a positive Wassermann report changes the social status of the individual. It makes the patient realize the hygienic discomfort that syphilis is capable of producing, and he is compelled to suffer economically to rid himself of the disease. A positive Wassermann is no respecter of persons. The loftiest are not immune to its visitation, and although they may suffer less economically socially and hygienically, they suffer much more. Homes have been wrecked, names dragged into the gutter, promising careers have been nipped in the bud, and suicides have followed in the wake of a plus Wassermann report. Should we not be more careful in performing and interpreting our Wassermann reactions? The above contentions certainly ought to make one think twice before signing a report that reads positive. The question, How are we to go about it? can be answered in more ways than one, and I do not say that my plan is the only way, nor that it is original. This communication will treat the subject from its technical, medical, and lay points of view. I shall begin with an analysis of the factors that enter into the performance of the test.

*The hemolytic system.*—This consists of the anti-sheep amboceptor—the complement and the sheep cells. The hemolytic power resides in the ambo-

ceptor complement union, and gives little trouble after a careful standardization. Some workers believe that varying the complement dose with a constant amboceptor dose is preferable to the practice of varying the amboceptor dose, leaving the complement dose constant. In my experience there is no advantage in the former method, as my amboceptor units did not differ to a degree that would justify a new method of hemolysis titration, using the complement and not the amboceptor as the variant. In the Laboratory of the Neurological Institute, New York, the amboceptor variant is used in titrating the hemolytic unit. I have found it slightly preferable to use the amboceptor variant, as the following experiment tends to show:

### TITRATION OF HEMOLYSIN.

Amboceptor dose	0.1	0.09	0.08	0.07	0.06	0.05	0.04	0.03	0.02	0.01
Var. Hemolysis =	90%	90%	90%	90%	90%	90%	90%	90%	85%	85%
Complement dose	0.1	0.09	0.08	0.07	0.06	0.05	0.04	0.03	0.02	0.01
Var. Hemolysis =	90%	90%	90%	90%	90%	90%	90%	85%	85%	40%

The chief factor in determining the working unit is its titration on the very same morning that Wassermann tests are being made, and should be done early so as to give time for a retitration when necessary. This is particularly the case on days before a rain, when the barometer (New York) is at 750 mm. or near it. On such days the unit should be determined with a complement that has been incubated at 37½° C. for one hour previous to its use. It will be noted that there is a difference between the complement used for the actual test and the one employed for the A. S. A. unit work. The latter is not subjected ordinarily to a preliminary incubation, while the complement in the preliminary binding incubation of the serums to be tested is expected to do work, after an hour's sojourn in the incubator in the company of two other biological substances. Trouble in the form of too many positives is very apt to appear on days with a low barometer reading, unless the above precaution has been observed. Concerning the complement collection, it is best to use guineapigs starved for six hours. It is generally agreed that the animals should be bled the day before and the blood kept at room temperature for a few hours, then placed in the ice chest until the next day. I never kill less than two pigs, selecting one lightly and one darkly pigmented, weighing preferably not over 500 grams each. The complement content should be tested by heart puncture before the pigs are killed, as some guineapigs contain very little complement. A pig whose complement gives less than eighty-five per cent. hemolysis in ten minutes at 37½° C. is not to be used for Wassermann tests. Sex does not matter, but I would not use senile pigs, nor an animal that weighs over 500 grams. Their serums contain poor complement, as some of my observations have repeatedly shown.

The sheep cells are to be collected in a bottle with glass beads, previously tested with phenolphthalein as to alkalinity, and properly neutralized. Having immediately defibrinated the blood, it is poured into another bottle containing an equal quantity of formaldehyde, one to 2,000. This makes a one to 4,000 mixture, and is preeminently suitable for Wassermann tests, as the cells remain of the original cardinal red hue that they had when freshly obtained and retain this freshness four days later.



## BEHAVIOR OF CELLS KEPT AND WASHED IN NaCl AND IN FORMOL.

NaCl series.	Unwashed.	Washed 3 times.	Washed 5 times.
Hemolysis % after 72 hours	12.6%	7%	9%
Formol series hemolysis...	2.6%	2%	3%

Too frequent centrifugalization impairs the resistance of the cells, and they should not be washed more than three times for the Wassermann work. They may be washed five times for injecting rabbits for the A. S. A. I usually wash the cells twice the day before, and once in the morning of the performance of the tests. One should never work with less than two antigens, one with cholesterolin, the other crude. It is also advisable to resort to ice chest fixation in doubtful cases. The cholesterolized antigen before being used should be kept at 56° for one half hour in order to dissolve any cholesterol crystals that may have formed at room temperature. This is also a wise procedure in case of the crude extract, as the solution frequently deposits particles that are soluble at 56°. Performed in this manner a positive result will be obtained on a serum that will stand criticism from other laboratories and will also be reported positive when controlled by them. The Wassermann reaction is a test dependent entirely upon controls, and the more controls one uses the better and the more reliable the report. In important cases, and in patients who present an indefinite clinical condition, historically and physically, it is always advisable to collate the results obtained from reports submitted by more than one laboratory, and only when they all agree and the working efficiency of each is known to the doctor, should the summarized verdict be accepted.

*The fixation process.*—Here the serum to be tested is subjected to the action of an antigen, or rather to a syphilitropic extract capable of binding the complement when the serum possesses certain properties, i. e., contains syphilis antibodies or reagins. In the Institute, guineapig hearts subjected to continual alcoholic extraction at 37½° C. furnish an excellent antigen. It is used with and without cholesterolin. Known positive and negative controls are used, but serums from paretics are not deemed suitable for the positive control. Needless to state the other controls are routine measures. The control for autoinhibition contains double the amount of serum than the largest quantity of serum used with the antigens. This eliminates admirably the possibility of reporting positive on serums that contain anticomplementary substances. The incubation for binding and hemolysis is carried out at 37½° and any weakly positives, or where the two antigens vary in the degree of inhibition, the serums are subjected additionally to fixation in the ice chest. The report submitted to the clinician gives the result with each antigen and with each fixation method. The results of incubation are read as soon as the controls for autoinhibition—antigen and serum—clear up, which as a rule requires about ten minutes. The negatives are at once removed, and the weakly positives selected for further work, which consists of ice chest fixation and repetition with the other methods.

*The clinical value of the positive Wassermann.*—I will not bring up again the question of negative Wassermann reactions in luetics. All of them may

have periods of negative phases. I have in mind a taboparetic with a positive gold curve whose serum Wassermann was negative in six laboratories in Europe and two in the United States, covering a period of four years. His clinical condition was passed on by neurological textbook writers of France and England.

It is of vastly greater importance to be able to interpret properly the positive Wassermann result, particularly when the patient presents clinical difficulties. To accept with open arms the verdict of syphilis in such a case is the height of folly and a source of endless misery to the patient. Can not one have a positive Wassermann in his serum without syphilis? What are the known conditions that give a positive Wassermann without lues? The puzzled doctors rarely ask these questions, because in a positive Wassermann report his troubles are at once ended, and he has his etiology, pathology, therapy, and prognosis settled without racking his brain. No wonder a plus report is a welcome guest to the doctor, and any question as to the possibility of a non-specific plus is admitted with great reluctance.

Our collection of nonluetic positives is gradually increasing, and since the work of Oliver we have learned to include in this group even cases that show a pleocytosis, which was proved by the above writer to be undoubted plumbism. Besides this, one must regard with suspicion a positive result in patients with a hepatic disturbance, as some liver diseases where lues can be excluded show a positive reaction in the serum. I recall an instance where a number of laboratories gave a plus report, nevertheless, physically and anamnestically, no lues could be detected, and the patient, regardless of the best method of antiluetic treatment employed, gradually sank and succumbed to a profound cholemia. It has been proved by myself and others that the addition of oxgall to negative serum may give rise to a positive reaction. To give only brief mention of the conditions that at times give a plus Wassermann with lues satisfactorily excluded: We have certain forms of lepra, certain malarias, scleroderma, certain forms of scarlet fever, and of late the study of internal secretions tend to show that certain endocrine types may give a positive result without giving in the anamnesis a hint of lues (*Pseudo-Tabes Pituitaria*, Oppenheim). Such patients do not improve under the specific treatments and must be studied on endocrine lines. Carcinoma may give a positive reaction, particularly when the hepatic apparatus is involved. Achylia gastrica without lues may give rise to a non-specific plus. Diabetes with acidosis gives at times a plus result. We need not go into the many tropical diseases that furnish a nonspecific result; the conditions enumerated and many others still to be observed compel attention and require great care and greater sacrifice on the part of the doctor who sees in the report a possible nonspecific Wassermann. I am not alluding to the plus Wassermann obtained in one laboratory or with one method. I am considering only bonafide results, carefully and painstakingly controlled. One must also remember that certain positives from nonluetic patients may at a subsequent analysis give a negative result, much to the discomfiture of the serologist who gave a pos-

itive at the first instance. I am sure that some cases behave in this manner serologically; it is not to be taken as an error from the laboratory.

Besides the above conditions enumerated, the doctor has to learn how to interpret the designations of collated serum and spinal fluid reports. This should not only interest the neurologist, but the general practitioner as well. There are a number of standard findings that signify usually the same clinical facts. For instance, the following is the "type report" on general paresis:

Serum Wassermann .....	4 plus
Fluid Wassermann .....	4 plus
Cells per c. mm. ....	16
Globulin .....	Excess
Fehling's reduction .....	Present
Colloidal gold .....	5,552,100,000

On the other hand, on extremely rare occasions a full fledged parietic may not give any serologic findings at all—not even the colloidal gold curve, which as a rule is more often found in the spinal fluid of such patients than any of the other reactions enumerated above. Of course, the diagnosis of paresis should come from an authority on neurology and psychiatry and not from the serologist.

Each item of a combined report has a separate meaning. Together they give a clue to the clinical ensemble. The cell count does not mean syphilis even in the parietic's fluid. It stands for meningeal irritation, and when no irritation is present, there is also no pleocytosis, or only a very insignificant one. The globulin excess is an expression of pressure on the nervous apparatus, of disintegrating exudate cells, or breaking down of nerve tissue. The Fehling's solution is as a rule reduced, but when there is no reduction it is significant of active inflammation and goes hand in hand with a very high cell count containing many polynuclear elements. The colloidal gold reaction expressed as in the type report means only one thing—general paresis. Others may ascribe to it an additional importance, strengthening the diagnosis of lues, but in my work I do not find regularity in such a view. No serological report is valuable or complete without a full clinical picture of the patient who furnished the serum and fluid. It is possible to obtain many combinations of the "six reactions" of a serological investigation, each having the significance described above. It is possible to have a four plus Wassermann in the fluid and a negative in the serum, as in my case of taboparesis. It is possible to have a cell count of fifty or sixty or even more without meningitic clinical manifestations and without a trace of clinical lues, and with a negative Wassermann in both media of the patient as well as in the parents of the patient. A globulin excess without any other findings in the fluid is usually produced by conditions causing cord compression. In a few instances of combined sclerosis such a fluid change was also observed, and although many other such cases did not present any such change in the fluid, I nevertheless consider it essential to mention this fact here. Concerning the reduction of Fehling's solution, one can attach a significance to it when the fluid does not reduce the copper. It signifies congestion, but was also found in a few cord

tumor fluids without an inflammatory exudate, such fluids being very xanthochromic. The colloidal gold fluid in a typical gradation from five (complete discoloration) to 0 (no change in color) is in my experience the most valuable test in the neuroserological laboratory, as it is significant when collated with clinical findings of a definite entity and is the only neuroserological report that carries with it a histological significance, namely, that the parenchyma of the brain is involved. I do not consider lues a necessity for the production of a colloidal gold curve as described above, for I have seen typical general paresis curves in fluids and serums otherwise negative, obtained from multiple sclerosis patients who presented mental phenomena peculiar to the advanced forms of this disease. In this neuroserological entity, as is well known, the neural parenchyma is extensively involved, and is perhaps the explanation for the occurrence of the curve in some cases.

The next most vital question to settle is, What is to be done with a four plus in patients with a luetic neurological disease? This depends entirely upon the four plus and upon the disease. The four plus must be considered from the point of view of its resistance to therapy and when the discerning therapist meets a Wassermann fast case it is his duty to recognize in it an immovable body. In salvarsan or any other drug method or combination of drugs and methods, we have by no means secured the irresistible force that will beneficially influence the patient and at the same time rid him of his Wassermann fast serology. In paresis particularly we often meet with such situations and much harm is done by the use of salvarsan until the Wassermann is entirely negative. It appears to me to be a just contention that a positive Wassermann, besides being an index of lues in the infected patient, is also an expression of nature's method to guard and guide the host through life. In many patients with lues the infection is so recent or the degree of neural involvement so mild and superficial, i. e., vascular, that the invader is successfully combated and the number of spirochetes reduced to such an extent that the natural biological response in the host is evidenced by a weakly plus Wassermann or by a negative result. In other words, the patient is rid of lues to a degree that requires no formation of "substances" detectible by the Wassermann method. Statistics will prove that a persistently four plus Wassermann in a patient with paresis, who was treated to such an extent that his reaction became negative, was harmed by the therapeutical procedure and his life shortened considerably. This result is by no means an unexplainable puzzle; it means that the quantity of arsenic introduced into the patient was so great that his natural biological responsive apparatus was damaged to such an extent that it was no longer capable of answering to the call by the formation of protective substances. Hence the Wassermann is negative. His clinical condition is due to the sum total of damage, initiating the downfall by an untimely parietic decline and a premature demise. Parietics thus treated succumb to a low degree of arsenical poisoning, plus parenchymatous syphilis. In the Wassermann fast patient and in the parietic

with a low cell count and a resisting four plus Wassermann, the guide to cessation of treatment should be chiefly clinical findings and the four plus should be left alone. It resolves itself into the question, Is it safer to allow the patient to keep his temporary clinical improvement and his positive Wassermann, or by subjecting him to intensive salvarsanization succeed in removing his four plus Wassermann and expose him to the additional danger of a low grade arsenical intoxication?

*Suggestions to the layman.*—Syphilis, like any other disease, is a misfortune. It should carry no greater odium than gonorrhea, consumption, carcinoma, lead poisoning, etc. Sexual contact is by no means the only way it can be acquired, and if the innocent ways of infection were more popularly known and spoken of at public gatherings by responsible physicians, clergymen, and lawyers, its spread would be greatly curtailed. Even the transmission in *venere* should receive greater popular enlightenment. Lack of courage and puritanical bigotry are the chief reasons why this disease has *carte blanche* among civilized peoples. We are progressing, though very slowly, toward a proper understanding of our duties as physicians to the general public. The paper cup at drinking fountains and the individual communion cup at the church are only minor steps in that direction. In our restaurants we are still exposed to improperly cleaned tableware, and more than one lip chancre is contracted in this manner. The towel in lavatories in public amusement places is capable of harboring the spirochete of lues. The urchin who picks up a cigarette may be punished by contracting lues. Many a kiss, although given by a near relative, may have fatal qualities.

The physician is particularly exposed to innocent infection. Attending confinement the physician has to be extremely careful, and the least scratch or abrasion when in contact with the *materies morbi* of a luetic mother will surely cause luetic infection. In examining suspicious throats the same care is necessary as in the gynecological practice. The ignorant vender of fruits on a push cart who polishes his apple with saliva is an additional source of syphilis.

All these opportunities to acquire the disease are the result of ignorance and lack of enlightenment. Only with most vigorous popular propaganda can a community cope with the question of syphilis, and to make a discussion on this subject permissible is the surest way to overcome the barrier of a false decency and the *nolle me tangere* attitude toward this infection. In its consequences it is much less dangerous than consumption or cancer, and when early recognized and wisely treated, offers fair hope of eradication.

30 BECKMAN PLACE.

**Transmission of "Trench Fever."**—F. C. Davies and R. P. Weldon (*Lancet*, February 3, 1917) report the successful transmission of this disease from an acute case to themselves through the bites of lice allowed to feed on two ill men. The incubation period was twelve days.

## IONIZATION TREATMENT OF CANCER OF THE EYELIDS.\*

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Zinc ionization by the unipolar method appears to be particularly well adapted to destroy small epitheliomas situated at the edge of the eyelids or on their external or internal surfaces because of the small



FIG. 1.—(Case I.) Epithelioma near inner canthus. Condition ten years later shown at right.

current strength needed, making it possible to depend on the electrochemical union of the zinc ions with protoplasm as the destructive force alone, without the development of effective heat for this purpose. One or more very fine zinc needles are inserted in the middle of the growth, from which the zinc ions are radiated in all directions under the



FIG. 2.—(Case V.) Rear view. Multiple epithelioma before and after ionization.

cataphoric action of the direct current, with a negative pad elsewhere on the body surface. By inserting the needles in the diseased tissue alone and observing the progress of the whitening effect, the ionization may be confined to the growth and its actual edges of normal tissue, thus conserving a

\*Read by invitation before the Wills Hospital Ophthalmic Society, January 2, 1917.



maximum portion of the unaffected eyelid. The low voltage of the direct current is an important advantage in the delicacy of this application in this

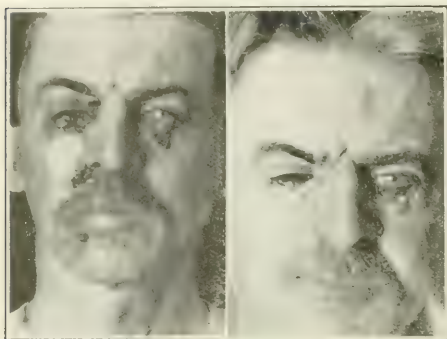


FIG. 3.—(Case V.) Front view, before and after ionization.

situation. Complete destruction of the morbid tissue should be aimed at in one application of from fif-



FIG. 4.—(Case VIII.) Relent epithelioma of inner canthus. The middle photograph was taken ten days after ionization; that at the right one year later. But one application was required.

teen to thirty minutes' duration, with a current proportioned to the size of the growth.

With more extensive growths about the orbit, on the other hand, the bipolar ionization method is quicker and more effective. In this method the positive zinc needles are inserted just beyond the edges of the growth and the negative in the centre. When the growth is large we may save time and insure decisive results with this method by increasing the current up to 500 or more milliamperes without having any material portion of the current traverse the eye structures, since the great bulk of the current flows directly between the two poles. With the larger currents great heat is evolved in the midst of the growth itself, usually a boiling or near boiling temperature, which materially assists in the quick destruction of the growth.

Local anesthesia is usually sufficient for the unipolar method, but the bipolar method may demand general anesthesia for a quick and effective result. The needles are easily cut from the thinnest sheet

zinc—one sixty-fourth inch—with long handled scissors, and attached by wrapping and clamping to suitable lengths of No. 34 cotton covered copper wire. After insertion in place they are kept immovable by guying the wire near the electrode to the skin with adhesive plaster. It is desirable to retract the eyelid during the application if possible, to direct the current away from the eye as an undesirable stimulus, though this was not possible in all my cases. If the finger is not sufficient for this purpose one should not use a metal retractor as it might result in harmful burns. A suitable instrument may be made from hard rubber. Retraction with the finger is usually sufficient in the lower lid.

The aftertreatment is the use of an ointment of one part zinc oxide ointment to eight parts petrolatum until the slough separates and the wound closes by granulation. When deformity results, which is by no means in every case, plastic repair should be postponed until the parts are manifestly free from disease.

Destruction of a growth by zinc ionization alone, or with the heat developed when strong currents disperse the ions, will not only devitalize the infected cells, but will seal the absorbents at the point of demarcation, close the capillaries and small vessels, and by reason of searing nerve filaments encountered cause the wound to be free from pain after the first few hours.

As illustrative of this work I will briefly report twelve cases of operable growths of this region; several were extensive while others were small. Of these twelve patients eleven have remained free from the disease for considerable periods. A summary account will be added of six inoperable, recurrent growths of the orbit, mostly subsequent to excision of the eyeball, in none of which was the disease eradicated.



FIG. 5.—(Case IX.) Endothelioma of inner part of orbit. The photograph at right shows condition at discharge from hospital.

CASE I.—This man, aged fifty-five years, had been treated by the Röntgen ray for nine months for a small ulcerated epithelioma (Fig. 1) when I first saw him in 1905. It had improved for a time and then relapsed under the x ray. When first seen there was an ulceration larger than a dime near the inner canthus. It healed permanently after two applications of zinc ions of four milliamperes for thirty minutes and two milliamperes for five

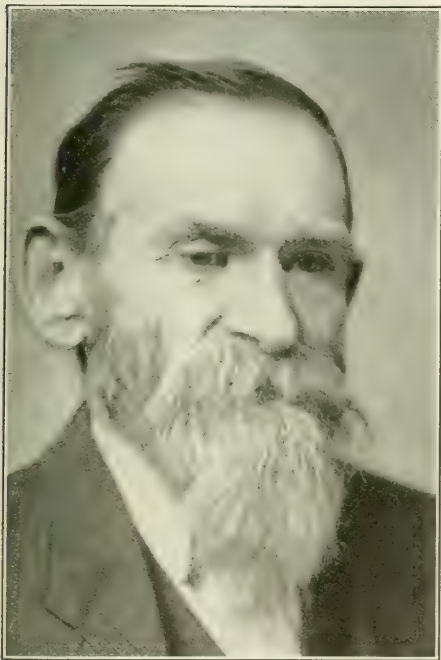


FIG. 6.—(Case IX.) Photograph of condition of scar at inner portion of right orbit one year after ionic destruction of endothelioma.

minutes, the second application two weeks after the first. The patient was looked up and found to be well ten years later.

CASE II.—Mrs. —, aged forty-four years, was referred by Doctor Ladd, of Towanda, Pa., November, 1906, with a small growth on the conjunctival border of the lower right eyelid the size of a grain of wheat, with raised and indurated base. Duration of growth six months, recently increasing in size more rapidly. Two applications were made of three milliamperes and of one milliampere for nearly half an hour each at intervals of one month. A year later a recurrence the size of a birdshot was destroyed by two and a half milliamperes for twenty-five minutes. I have heard of no recurrence since.

CASE III.—This was a painless, hard growth the size of a split pea on the conjunctival border of the lower eyelid of a man of thirty-nine years. Three applications were needed during six weeks, beginning December, 1906, the current varying from one and a half to five milliamperes. There had been no recurrence when seen four years later.

CASE IV.—A railroad track foreman with extensive epitheliomatous erosion of the supraorbital region was referred to me by Doctor O'Malley, of Wilkes-Barre, Pa., in 1906. The unipolar method only was then in use, and under 150 milliamperes major application there was improvement. Repeated subsequent minor applications were so painful and tedious that the patient went home, against advice, in only an improved condition.

CASE V.—A farmer, aged forty-five years, referred by Doctor Williams, of Danville, Ill., April 8, 1907, had twelve or thirteen multiple epitheliomas about the face and neck and both ears (Fig. 2), both lower eyelids having disappeared by erosion. A major application of 250 to 400 milliamperes, unipolar, was made with a large number of fine needles inserted in more than one site of disease simultaneously. This application lasted an hour and twenty minutes, followed immediately by a bipolar application of 400 to 700 milliamperes to the growths at a distance from the eyes. The patient returned a year later for a small application to doubtful granulations in the inner canthus of the right eye. He has reported freedom from the disease by letter since. (Fig. 3.)

CASE VI.—A lady was referred by Dr. G. Oram Ring in 1907 with an epithelioma the size of a pea below the left lower eyelid that had resisted Röntgen ray treatment for some time, though improved at first. Two milliamperes for twenty-five minutes resulted in permanent eradication.

CASE VII.—R. H., aged seventy-six years, was referred by the late Doctor Groff in 1907 with an erosion two cm. in diameter at the inner canthus of the right eye. Twenty milliamperes for half an hour, with four needles, was effective, an excellent scar showing two years later.

CASE VIII.—Mrs. M. R., aged sixty-seven years, was referred by Dr. J. Gaunt Edwards, of Williamstown, N. J., in November, 1907, with a typical rodent cancer at the inner canthus of the left eye. (Fig. 4.) It had existed for eight years. The treatment was a single major unipolar application of fifty milliamperes for twenty minutes, the current then being reduced to twenty-five milliamperes for ten minutes more. The excellent results shown in the two other photographs have continued to the present time.

CASE IX.—B. W., aged sixty-four years, was admitted from Seymour, Ind., in March, 1908, with the growth in the inner canthus and both lids of the right eye. (Fig. 5.) The pathologists reported it to be an endothelioma. The upper eyelid could not be voluntarily raised to clear the pupil. A major unipolar application of 150 milliamperes for fifty minutes was made with three to eight needles. After the separation of the slough several minor appli-

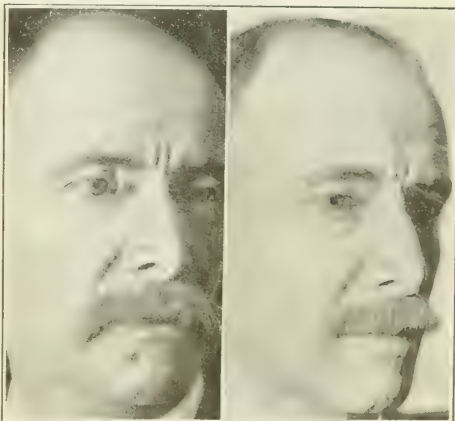


FIG. 7.—(Case X.) Recurrent epithelioma of inner canthus before and one year after ionization.

cations were made to doubtful granulations. The result was excellent, and he reported in a letter recently that the eyelids can be opened and closed at will and that the sight is excellent (Fig. 6).

CASE X.—Captain S., aged fifty years, master of a sailing vessel, was admitted December 8, 1911, with an epithelioma somewhat larger than a dime at the inner canthus of the right eye. (Fig. 7.) It was recurrent after removal at Biddeford, Maine, two years before. A minor

application of thirteen milliamperes, unipolar, for twenty minutes effectually eradicated the growth as shown in the second photograph. Captain S. was still free from the disease when lost at sea with his vessel three years later.

CASE XI.—A lady with a very small recurrent cystic growth, the size of a birdshot, on the conjunctival border of the lower lid, was sent to me by Dr. James Thorington in November, 1912. It was recurrent after excision of the original growth. The patient was fearful of pain and was therefore given the smallest current that promised to be effective, two milliamperes for fifteen minutes, with cocaine instilled in the eye sac. There has been no recurrence.

CASE XII.—Mr. M. W., aged sixty-nine years, was referred by Dr. Theodore D. Rupert, of Geneva, N. Y., April 12, 1916, with a growing nodule in the lower right eyelid the size of a coffee bean, extending downward beneath and in the texture of the skin. A minor unipolar application of fifteen to twenty milliamperes for seventeen

## ARTIFICIAL PNEUMOTHORAX IN PULMONARY TUBERCULOSIS.

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When the late John B. Murphy in his Oration on Surgery at the meeting of the American Medical Association in Denver in 1898 announced a method of treatment for pulmonary tuberculosis which consisted in collapsing the affected lung by filling the pleural space with nitrogen gas, it created considerable excitement. Up to this time the vast majority of the profession had probably not even heard of such a procedure. Chronologically, however, the credit for having first advocated the use of pneumo-

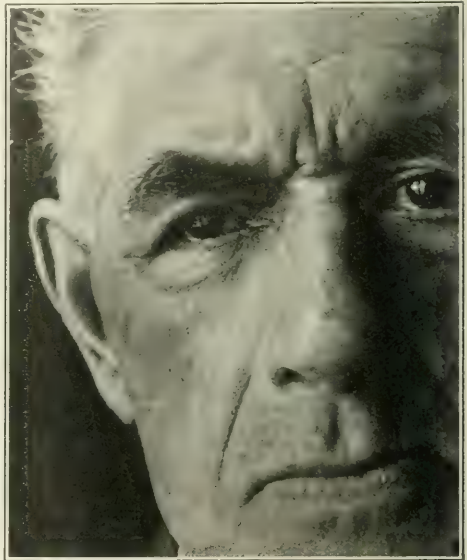
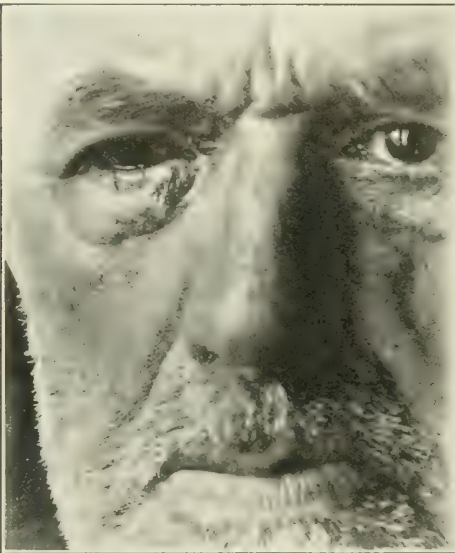


FIG. 8. (Case XII.) Showing at left appearance of whitened slough one day after ionic destruction of epithelioma, and, at right, condition of scar eight months later.

minutes was made, under novocaine endermic anesthesia. The photograph (Fig. 8) shows the slough the next day. A recent letter, eight months later, states that there is no evidence of recurrence.

*Ionization in recurrent malignant disease of the orbital cavity after enucleation of the eyeball.*—During the past twenty years three inoperable sarcomas of the orbital cavity and three similar carcinomas, all recurrent after enucleation of the eye or evisceration of the cavity, have been placed under some form of major or minor zinc ion destruction with one death in the case of a child of five years with a sarcoma the size of a man's fist protruding from the orbit following removal of the eye. Palliation alone resulted in the other cases. Better results might now be possible under more recent bipolar technic, provided, of course, that the disease has not passed beyond the orbital foramen.

1823 WALLACE STREET.

thorax as a therapeutical measure in disease of the lungs, belongs to James Carson, an English physician, who nearly a century ago experimentally employed this measure upon rabbits. At the same time he suggested puncturing the parietal pleura and allowing the atmospheric air to compress cavities in phthisical lungs.

Another physician, Ramadage, early in the last century also conceived the idea of compressing the lung in ulcerative phthisis as a therapeutical measure. Piorry, another physician of that period, strapped the thorax and put heavy weights over the cavity to restrict chest movements. For a period of over fifty years nothing upon the subject appears in the literature. In 1885, Cayley (1) advocated compression of the lung for the purpose of controlling hemorrhage. He reports a case in which hemorrhage was controlled by artificial pneumothorax, although the patient died suddenly several days later.



About the same time Potain, in France, employed artificial pneumothorax therapeutically in pulmonary tuberculosis. He probably was the first to employ nitrogen gas, as from his experiments with various gases he found nitrogen to be less readily absorbed by the pleura. Potain's work, however, apparently

results. In the other two he failed, owing to pleural adhesions. Lemke (6), a pupil of Murphy, later reported some fifty cases. Immediately following these reports little was done in America with this method of treatment. It remained for Brauer (7), then at Marburg and later at Hamburg (8), to take

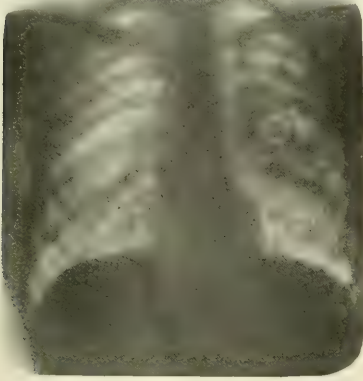


FIG. 1.—Shows general tuberculosis of both lungs; active in left lung; multiple cavities indicated in the upper lobe of the left lung.

attracted little or no attention, for he found no followers.

In 1882, Forlanini (2) advocated the immobilization of the diseased lung for the purpose of arresting the ulcerative process. This proposal met with little or no interest from the profession. It was, however, only in 1888 (3) that he for the first time injected air into the pleural space, and in 1894 (4) he reported his first case so treated. He then

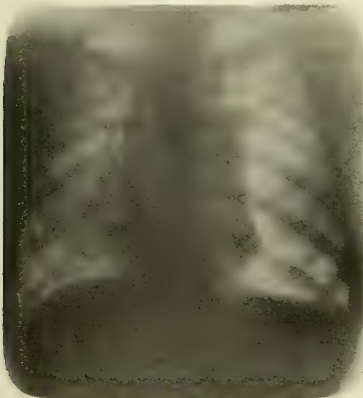


FIG. 2.—From same patient as Fig. 1. Shows collapse of the left lung; compression of upper cavities and obliteration of lower cavity; heart and mediastinum pushed to the right.

apparently dropped the subject until 1906. In the meantime John B. Murphy (5), in 1898, announced his attempt to produce artificial pneumothorax. He reported five cases, in three of which he was successful in collapsing the lung with most gratifying



FIG. 3.—Shows general tuberculosis of both lungs, more marked in left lung; a small amount of gas is seen along the left border of the chest.

up the subject of pneumothorax as advocated by Murphy, and, by painstaking and experimental work, place this method upon a scientific basis. More recently Mary Lapham (9), Floyd, and Robinson (10), in this country, have popularized the method, so that in the past six years a voluminous literature upon this subject has appeared.

Most of the pathological changes which occur in



FIG. 4.—From same patient as Fig. 3. Shows gas in the upper left chest compressing the lung and obliterating the cavities; fluid is seen below and a pleural tint above.

the chest after prolonged artificial pneumothorax are still mooted points. It appears, however, that around the diseased areas there occurs connective tissue proliferation which is dependent in part upon the lymph stasis following artificial pneumothorax.

The alveoli of the lung are reduced to little round glandular looking bodies and the alveolar epithelium returns to its fetal cuboidal shape; there is also seen a narrowing to entire obliteration of the bronchi and bronchioles. Caseous and pneumonic foci show a tendency to cicatrix formation and are surrounded

ical changes occur, similar to those resulting from a spontaneous pneumothorax; these are the collapsed or atelectatic lung, displacement of the heart and mediastinum, and the pleural adhesions. It would appear beyond the possibility of controversy that the vascular change following a collapse or compression



FIG. 5.—Shows generalized tuberculosis of both lungs, left lung more than the right; partial collapse of left lung; left lung shows a single large cavity, almost spherical in shape.

by fibrous tissue. The fluid of the caseous masses is frequently forced into the bronchi, which causes an increase in the amount of expectoration, and the remains of these masses are continuously compressed by the connective tissue proliferation, and finally dry up and become calcified. Similarly cavities, when they are located so that compression is properly exerted upon them, are very often entirely obliterated, surrounded by fibrous tissue, and are



FIG. 6.—From same patient as Fig. 5. Shows further collapse of left lung with cavity assuming oval shape, and heart and mediastinum pushed to the right.

recognized as irregular dense fibrous scars (Forlanini). No fresh tubercles have been found in the compressed lung post mortem.

In addition to these microscopical changes which are produced by the compression, other macroscopic



FIG. 7.—Artificial pneumothorax given for hemorrhage of left lung; an overdose of gas was administered. Notice separation of ribs due to great expansion of left chest; heart and mediastinum completely pushed over into right chest.

of the lung was an ischemia or anemia, yet this point has not been definitely determined, for some investigators have shown the presence of a hyperemia in the collapsed lung. The question, therefore, whether the therapeutical results of the artificial pneumothorax are due to the lymph stasis or to anemia or to the hyperemia produced, or simply to the mechanical rest, is still *sub judice*. We do know, however, that both a hyperemia and an anemia produce fibrous change in the lungs, as has been shown experimentally (Bruns). We also know that the

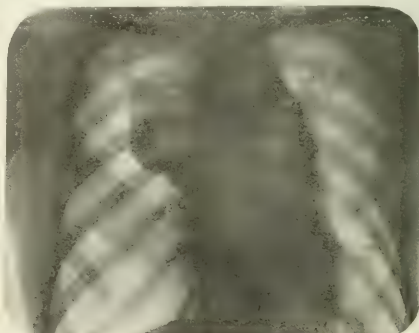


FIG. 8.—Artificial pneumothorax of right lung; lung contracted down to a very small area above the right root.

simple immobilization of a tuberculous joint often brings about a cure. By some, the improvement brought about by a successful compression of the lung is attributed to the lessened absorption of the toxins from the tuberculous process. It is, however,

possible that the improvement is due to a combination of all of these factors.

*Indications and contraindications.*—Most writers upon the subject lay down the rule that collapse or compression therapy is only to be instituted where the tuberculosis is confined to one lung and is far advanced. As, however, it is only exceptional to find tuberculous disease strictly limited to one lung, such a rule would permit the procedure in only a very small percentage of cases. Besides, Forlanini reports upon several cases where the pneumothorax or one lung was accompanied by a marked improvement in the opposite lung. I have had one case in which this occurred, and this led me to experiment upon dogs with artificial pneumothorax for the purpose of finding out just what changes, macroscopical, microscopical, and vascular, occurred in the noncompressed lung. This work is now being carried out at the National Jewish Hospital for Consumptives in collaboration with Dr. Casper Hegner, consulting pathologist. No definite conclusions have been reached on account of the small number of dogs thus far employed. It has therefore been the practice of most phthisiotherapists to employ pneumothorax on the side of the more diseased lung, provided the process in the other lung is not too extensive or too active. It has been my practice where both lungs are considerably involved, the right more than the left, to recommend pneumothorax in the right lung, when I should hesitate or even refuse to employ the procedure in cases where the reverse existed, that is, the left worse than the right. This is purely empirical, as I believe I have seen bad results from dislocating the heart and the mediastinum to the right. In any case it will always be a question of nice judgment on the part of the physician, whether to use or withhold the procedure, and he will have to be guided largely by the patient's general condition.

One author lays great emphasis upon the examination of the urine, in coming to a decision whether or not to employ artificial pneumothorax. If the urochromogen is present in the urine, the outlook is hopeless and pneumothorax should not be employed. The number of cases suitable for the operation is placed as low as 0.5 per cent.

When there is much fever due to mixed infection or to absorption from large cavities, artificial pneumothorax offers much. In patients who have essentially unilateral involvement and have had the benefit of hygienic, dietetic, and rest treatment, together with other usual therapeutical measures, and show no improvement, pneumothorax should be tried. In patients with severe hemoptysis, artificial pneumothorax will often prove effective after all other methods have failed. It would therefore seem wise to employ compression from the outset in such patients, rather than use it as a last resort.

There still is a difference of opinion as to whether artificial pneumothorax should be used in the early stage of the disease. It would be natural to suppose that if this method is beneficial in advanced cases it should prove equally so, if not more so, in early cases. From the fact that changes in the lungs produced by the operation occur only after the compression has been kept up for a prolonged period,

a short course of artificial pneumothorax could not be expected to influence early tuberculosis favorably. It has as yet not been definitely determined whether the connective tissue change in the lung resulting from artificial pneumothorax prevents the spread of the tuberculous disease in the lung, although it often brings about a healing of the existing tuberculous focus, hence, many regard the operation as contraindicated in early cases of the disease (11).

Besides as very often both apices appear to be equally involved in this class of patients, it is rather difficult to decide on which side to employ the procedure. But where the physician can determine definitely by a physical examination and a roentgenogram the more diseased side, and the constitutional symptoms are marked, compression therapy can be employed. If still in doubt, it would probably be better to wait until such a decision can be reached, for often upon an initial examination both apices appear to be equally involved and after a short period one apex tends towards spontaneous healing and the disease in the other apex progresses. Pneumothorax is contraindicated in miliary tuberculosis, in intestinal tuberculosis, in chronic nephritis, and in amyloid disease of the kidneys or other organs.

*Technic and dangers.*—The apparatus employed for inducing artificial pneumothorax consists essentially of two glass jars with a capacity of 2,000 c. c. each, one or both graduated in fifty c. c. quantities, connected by rubber tubing. One jar contains the gas and the other jar an antiseptic solution, usually bichloride of mercury. When it is desired to administer the gas, the petcocks between the jars and leading to the pneumothorax needle are opened, the jar containing the solution is raised slightly and forces the gas out of the first jar through the tubing to the needle. Connected with the tubing leading to the needle, is a water manometer provided with a small petcock which permits of connecting or disconnecting the manometer to the needle. There are numberless pneumothorax apparatus on the market, devised by as many different physicians who claim certain advantages for their particular device; the principle of nearly all is, however, similar. When it comes to the needles, here also there are a great many in use. The type of needle varies from an ordinary spear pointed aspiration needle to a trocar and cannula. Nitrogen gas is most commonly used, although many operators use air; this is open to the objection of being more readily absorbed by the pleura, thus requiring the more frequent repetition of the fillings. Some operators also precede the nitrogen gas by the use of oxygen, it being held that thereby the danger of air embolism is avoided. There are two methods in use for entering the pleural cavity: first, by means of puncture, several methods of which will be described; second, by the open or cutting method. The common site selected is the axillary region, either in the fifth or sixth interspace; this, however, is subject to variation, depending upon pleural adhesions and thickening. The ordinary rules of surgical asepsis being observed, the area selected is painted with the tincture of iodine, which is allowed to dry thoroughly; then with an ordinary hypodermic syringe and needle, the skin, subcu-



taneous tissue, intercostal muscle, and parietal pleura are successively anesthetized with either a 0.5 per cent. solution of novocaine or hydrochlorate of quinine and urea. Then with a narrow tenotomy knife or better still a cataract knife, the skin is perforated. Into this perforation the trocar carrying the cannula is inserted and the trocar pushed until the rib is reached; the trocar is then withdrawn and the cannula is connected with the manometer and pushed through the parietal pleura. If the pleural space has been reached, the manometer will indicate a negative pressure of four to five cm. and the characteristic oscillations with inspiration and expiration are obtained. It is extremely important that these oscillations be distinctly obtained before turning on the gas. A precautionary measure is to get the manometric readings after every 100 c. c. of gas has been allowed to flow into the pleural space. The method above described is that recommended by Doctor Murphy. Forlanini uses an aspiration needle and formerly did not use the manometer, but more recently advocates its use. Brauer, on account of the occasional occurrence of air embolism, strongly condemns the simple perforation method with an aspiration needle. He advocates cutting down through the skin and subcutaneous tissue and intercostal muscle, and then to the parietal pleura. The movements of the lungs can be observed if free and whether the pleura is thickened or normal and translucent, then with a cannula having a side opening, the pleura is perforated. A catheter is introduced into the cannula and the pleural space explored for adhesions. If found free, the catheter is connected with the manometer and readings obtained, and then the gas is turned on. After sufficient gas has been allowed to flow into the pleural space, the cannula is withdrawn, the intercostal muscles and skin are sewed, and the wound dressed. Brauer allows 1,000 c. c. or more of gas to enter the pleural space at the first operation. In subsequent fillings he employs the puncture method, since the lung being partially collapsed there is no longer any danger of air embolism. He claims for his method greater safety, avoiding the danger of injuring the visceral pleura and lung and the danger of air embolism. The objection to Brauer's method is that it takes on the character of a surgical operation, to which a large percentage of patients would object. It cannot be denied that with the technic as recommended by Murphy and Forlanini where the gas was kept turned on before the pleural space was reached, the danger of air embolism was present. But under the present method with careful observation of the manometer, such an occurrence is very rare. The slight traumatism inflicted upon the visceral pleura does no serious harm unless the operator happens to strike a tuberculous focus in the lung and by unnecessary manipulation infects the pleura; this possibility, however, appears to be exceedingly remote. Hanius, of Berlin, has devised a pneumothorax needle with which he asserts it is practically impossible to have air embolism occur or to injure the visceral pleura. It consists of a spear pointed hollow trocar, into which is inserted a blunt cannula with a lateral opening near the point. He perforates the skin, subcutaneous tissues, and intercostal muscle

with the trocar, then pushes the cannula through the parietal pleura, the cannula being connected with the manometer and gas jar in the usual manner. I employ an ordinary needle of about twenty-one gauge, which has the usual opening at the point closed with solder and an oval fenestrum near the point. The advantage of this needle is in avoiding the occlusion of the opening by the visceral pleura during inspiration which occasionally happens when the administration of the gas is begun. The needle which fits a Record syringe, is used for injecting the local anesthetic and gradually and slowly pushed through the intercostal space as the anesthesia permits, when the pleural space has been reached the syringe is detached, and the needle, left *in situ*, is now connected with the manometer by means of an adapter and rubber tubing. The needle is carefully manipulated until the proper oscillations are obtained, when the gas is turned on and allowed to flow into the pleural space. The danger of air embolism in one of the cerebral arteries has been mentioned. These have in a number of instances proved fatal, and in other instances have left the patient with a permanent hemiplegia. The symptoms of cerebral embolism are loss of consciousness, respiratory and cardiac failure, dilatation and loss of pupillary reflex, twitching of the facial muscles, and occasionally convulsions. But as has already been stated, if the operator will avoid turning on the gas until he is convinced by his manometric oscillations that the needle is in the pleural space, this accident is not in the least likely to occur.

Pleural shock or reflex is another danger which has been described as following the introduction of nitrogen gas below the body temperature. It occurs most unexpectedly just when the needle has penetrated the chest, seldom after the injection has been performed. The symptoms are similar to those of cerebral embolism, except that they are much milder. Brauer and others deny that pleural shock or reflex occurs, and attribute the symptoms described to small air emboli, which produce the evanescent symptoms of the more serious complication. In any case this complication, like that of air embolism, has been exceedingly rare with the present day technic and proper local anesthesia. A further danger is the too rapid displacement of the mediastinum and heart, but this can be avoided by not allowing too much gas to flow into the pleural space at each filling. It is much safer to use not exceeding 600 c. c. of gas at a time, and have the intervals between the fillings shorter; in that way first collapse and later compression of the lung is safely and painlessly obtained, and the dyspnea present is not greatly increased. Pleural effusions occasionally complicate or rather follow artificial pneumothorax. When they are of a serous character they do little or no harm, unless they greatly increase the intrapleural pressure to the point of producing serious symptoms, when some of the fluid should be aspirated. Usually they are absorbed without any symptoms; indeed the presence of the fluid is often accidentally discovered through the fluoroscopic screen. Where the effusion is pyogenic it is somewhat more serious although here also the simple aspiration of the pus

is all that may be necessary, and the artificial pneumothorax is continued.

Superficial emphysema of the skin is a common sequela of artificial pneumothorax. It can often be avoided by proper technic, in withdrawing the needle and applying pressure over the site of puncture. Aside from the fact that it causes slight discomfort for several days, it is not at all serious. Deep emphysema is another complication. Here the gas gets into the subpleural connective tissue or even into the lung, due to wrong technic. It gives rise to unpleasant symptoms after a day or two as the gas ascends along the esophagus and trachea and causes distress from the pressure. However, it always disappears after a number of days and never ends seriously. Recently there has appeared a report of a case in which following artificial pneumothorax, gangrene developed in the collapsed lung.

If the pleural puncture attempt fails to give the proper oscillations, another site should be selected. For that reason some operators anesthetize two or more areas in the fifth or sixth interspace before attempting the initial puncture. If after a number of punctures no manometric oscillations are obtained, the attempt should be abandoned for that day and the operation repeated several days later. A thickened and generally adherent pleura will of course render all attempts to obtain a pneumothorax futile. In fact this unfortunate complication very often prevents the carrying out of artificial pneumothorax in a case otherwise ideally suited for the operation. Röntgenograms are only occasionally of assistance in pointing out the favorable site for puncturing; percussion and auscultation lend more aid. Brauer and Spengler recommend thoracotomy for this class of cases. Sauerbruch, Friedrich (12) and others have successfully performed the operation in a moderate number of cases. The operation consists in removing most of the ribs on the affected side and in that way permitting the atmospheric pressure to collapse the lung. Sauerbruch removes all the ribs except the first and twelfth. Other surgeons, among them Wilms, have removed all the ribs including the first and the clavicle. Over ten years ago, Freeman (13) of Denver, operated upon a patient under my care at the National Jewish Hospital for Consumptives, by resecting the ribs over a cavity near the apex of the lung, without perforating the parietal pleura. He then applied pressure over the cavity by means of a pad, held in place with a steel spring truss over the shoulder, attempting in this manner to produce obliteration of the cavity. In Brauer's clinic, thoracotomy is performed under local anesthesia and the periosteum of the ribs is not removed, so that regeneration of the ribs takes place and there results comparatively little deformity of the chest. The operation is always more or less exhausting to the patient even if performed at several sittings. Surprisingly good results have, however, been reported in otherwise practically hopeless cases, and when the operation becomes more common it will doubtless yield even better results.

Occasionally a small area of free pleural space is entered and a 100 c. c. or less of gas is allowed to flow into this space, and the manometric readings become strongly positive. Where this does not pro-

duce much pain some more gas can be allowed to flow for the purpose of attempting to break up the adhesions and thus obtain at least a partial collapse or compression, for even a partial collapse or compression of the lung is often productive of some benefit to the patient in arresting subjective symptoms that may be present. There is some danger, however, in attempting this, as was shown in a case of mine, in which I attempted a pneumothorax in a woman with advanced tuberculosis of one lung. With some difficulty I entered the pleural space and upon allowing gas to flow into the chest, she complained of severe pain and the manometric readings became strongly positive. The patient was, however, anxious to have me continue, but with each attempt to allow gas to flow the pain became very severe, until I determined to desist. Next day the patient complained of a headache which grew progressively worse, and in five days all the symptoms of tuberculous meningitis were present. The patient died ten days after the pneumothorax was tried.

The best method of producing compression of the lung is to give the gas in small quantities and at three to five day intervals. Usually complete collapse of the lung is obtained in six to eight fillings, the intervals are then gradually lengthened, compression being maintained by monthly injections. It is exceedingly important that compression therapy be continuous, for if too long an interval is allowed to intervene between the fillings, the lung will expand and dense adhesions develop which will often preclude further fillings. No fixed rule can be laid down as to how long the treatment should be kept up. Each case must be decided upon its own merits. The average time appears to be about a year. We are guided strictly by the abatement of symptoms such as cough, expectoration, fever, etc., when to allow the lung to expand. Sufficient data have been obtained from post mortem examinations of patients who have had pneumothorax therapy, to indicate that a collapsed lung does not expand to its former size. Many factors contribute towards the reduction of its volume such as permanent atelectatic areas, contractions from fibrous tissue formation in the diseased parts, and from the dense scars replacing cavities.

In summarizing the subject of artificial pneumothorax, we would say that a large percentage of cases in which compression is properly obtained, show arrest or marked improvement in the disease; the most annoying and harassing symptoms such as fever, cough, etc., are often benefited even when a complete collapse is not obtained. The beneficial results of artificial pneumothorax are mainly due to the mechanical rest of the diseased lung, combined probably with some vascular change which accelerates fibrous tissue formation. Patients who fail to improve under other methods of treatment, even though the condition is not unilateral, should be given the benefit of this treatment. Patients with severe hemorrhages, or persistent bleeding when the source can be located should be given compression. With reasonable care there is little if any danger in carrying out the Forlanini technic. The treatment will always be limited, due to the small number of suitable cases, and among these dense and inseparable ad-



hesions between the visceral and parietal pueura will further reduce the number in which successful artificial pneumothorax can be performed.

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## A SUCCESSFUL TREATMENT FOR PNEUMONIA.

### Original Research. A Preliminary Note.\*

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In this preliminary note problems are presented in the study of pneumonia which suggest a scientific explanation of the origin of the disease and furnish a successful remedy. These researches, though radically different from contributions heretofore submitted, may be confirmed in the following epitome and correlation of accepted and established facts, as set forth in the standard textbooks on the respective subjects.

#### NORMAL PHYSIOLOGY.

The body as a whole may be described as a composite mass of cells of complex chemical construction. Each cell has its function, which is indirectly if not directly correlated. All are dependent upon body metabolism for their growth and sustenance. This is maintained in various ways, the chief being through the blood. As the blood reaches all tissues it follows that the cells may select whatever substances the blood may contain. The blood carries in

solution or suspension the various products of metabolism and assimilation, both endogenous, internal and other secretions, and exogenous—foods and gases, whereby they are able, through proper interchange and elimination, to maintain the harmonious relations existing in health. Any interference therewith in any manner is associated with functional or physiological derangement. A continuation of this process will induce defenses in which the law of compensation becomes a factor. Should a deranged condition continue, however, or should the compensatory efforts of the body tissue fail, organic or pathological changes inevitably follow.

Functional changes of the organism may be independent of or associated with pathological processes. It is evident, however, that all pathological changes in addition to tissue alterations are accompanied by physiological variations. Fisher's postulate here deserves emphasis, that "the transition from physiologic to pathologic is not abrupt, although an imperceptible one." Heretofore the failure to observe the physiological changes associated with the pathological findings have contributed in part to our failure in this and other diseases. The pathological processes which invite these physiological alterations should therefore be studied seriously and intensively in order to treat the various diseases intelligently and successfully.

The blood, the body's most vital element, as one of the chief factors in pneumonia is physiologically well worth close attention and consideration. Physiologists describe the blood as a fluid or plasma holding in solution or suspension salts, cells, and other organic and inorganic matter. It is alkaline or neutral in reaction: the sodium and potassium carbonates and phosphates are its principal alkalies. The alkalies constitute an integral part of the protoplasm, keeping in solution—note well—the albumins with which they are combined and modified. Von Noorden (1) believes the body organism has a tendency to maintain its own alkalinity, and reduction being followed by serious consequences. To other possible qualities of alkalies I will refer later. The plasma contains fibrin which under normal conditions remains in solution, its precipitation within the body tissue usually accompanying some pathological process, for instance, its presence in the alveolar spaces in pneumonia. As regards the causes of the precipitation, or coagulation, of fibrin, one authority contends that inflammation is essential to coagulation and precipitation, and points to fibrin ferments produced by this change as the factors that produce this result. Others think cellular destruction, whatever the cause, is the means of liberation of fibrin ferments. Fisher (2), in his work on edema, nephritis, and colloid state, attributes it to acids or excess of alkali, principally the former. Another cause is the presence of any foreign body within the blood. No serious attention, however, need be paid to the academic discussion relative to the merits of the various theories concerning the production of fibrin and its ferments, for at some stage of the progress of pneumonia one or all of these conditions may be present.

Of the cellular elements we need to note only the red blood cells. The fundamental function of these corpuscles is that of a vehicle for gaseous elements.

\*Read before the Atlantic County Medical Society, December 8, 1916.



They carry oxygen from the lungs to the tissues and promote the elimination of carbon dioxide from the metabolic processes of the body. To properly promote these changes, alkalies and hemoglobin supply the medium. Hemoglobin may be described as a highly complex protein body contained within the red blood cell. By virtue of its iron content, it is very stable, being able to absorb but not to oxidize oxygen. Combined with its powers of ready dissociation it facilitates both physiological processes—absorption of oxygen to provide for oxidation, the body's chief source of energy, and elimination of carbon dioxide, one of the most important waste products of metabolism.

Mathews (3) recognizes two kinds of oxidation occurring within living matter: aerobic and anaerobic; aerobic, from exposure to air—absorption from the lungs; anaerobic, produced by reduction of foods or changes in body metabolism. Any interference with these most vital physiological processes may be attended with serious consequences to body metabolism. Moreover, these, as I hope to show, are most important factors in the production and correction of pneumonia. Oxygen free in the blood is in union with hemoglobin as oxyhemoglobin. Carbon dioxide and carbonic acid are waste products of tissue change and the metabolism of digestion or of any oxidative process. Retention within the body of these waste materials will lead to serious harm and as such are important contributing factors in the processes of pneumonia. As already noted the absorption of oxygen and the elimination of carbon dioxide are dependent upon alkalies, the chief ones being sodium and potassium carbonates and phosphates.

A study of the method of exchange of these elements so vital to cellular life shows that the blood corpuscles containing carbon dioxide and carbonic acid in solution or suspension, as phosphates, carbonates, or bicarbonates of sodium and potassium, or as methemoglobin, convey this substance to the excretory organs of the body. We are here chiefly concerned with the lungs and their method of exchange of carbon dioxide, carbonic acid, and oxygen. According to Graham's law, the diffusibility of gases is inversely proportional to the square root of their densities. Therefore, the lighter gas, air, with its oxygen will descend. Moreover, the tension of the oxygen of the air is higher than that of the blood, and the tension of carbon dioxide of the blood is higher than that of the air. Necessarily, therefore, the oxygen of the air passes through the lungs into the hemoglobin in exchange for carbonic acid and carbon dioxide. This sets free the alkali with which it is in suspension or solution. The alkalies are thus liberated in the blood to saturate other carbonic acid affinities. The oxygen is hereby procured and this necessity to all oxidative process is provided for.

Consider now the results of any interference with this cycle of exchange of oxygen, carbon dioxide, carbonic acid, and the consequent liberation of alkalies. First, the chief source of supply of oxygen for oxidative purposes is withdrawn either partially or entirely. Mathews notes that this produces cellular acidosis. Carbon dioxide, if retained, owing to

its affinity for water, increases the carbonic acid content of the blood and tissue, thereby producing acidosis. Oxidative processes are inhibited which secure molecular and tissue changes and alter viscosity. If delayed in elimination, it promotes tissue asphyxiation. Free alkalies are also lost to the system by reason of their combination with carbon dioxide and carbonic acid to assist in removing these waste products from the tissue. This loss is also to be noticed in withdrawing an essential physiological element in maintenance of the albumins in solution and maintaining normal viscosity. Do we not therefore at once interfere with the normal physiological equilibrium, and, if persisted in, insure pathological processes? We do, and this is in part the *modus operandi* which if continued readily induces other physiological changes referred to later, which when completed present the pathological picture of pneumonia.

The physics of pneumonia is also not to be ignored. The laws of physics, like those of chemistry, are universal. Though they may be coincident they are undoubtedly independent and as such play an important rôle in normal and perverted physiological states. In discussing blood viscosity, Heminway (4) says that when the viscosity is increased the velocity of the blood current will be reduced, unless the force behind it is increased. It requires four pipes with a diameter of one inch to equal the capacity of one of two inches. Since the circumferential friction is increased inversely with the diminution in the square of the diameter of the vessel, it is easy to see that the smaller the vessel the greater will be the retarding effect of viscosity on the blood current. This effect is especially noted in the capillaries through which all the blood of the body passes; complete capillary stasis may ensue. Later in his article he adds, given obstruction through the capillaries with heart power normal or above normal, the tendency is to force the more fluid portion of the blood into the tissue or to produce rupture of the weaker vessels. Is this not suggestive of the cause of cardiac failure so common in pneumonia? Would it be rash here to suggest that the increased blood pressure so indicative of cardiac failure is an index of the degree of altered viscosity, or are we to assume it to be an incident of the disease? To me it asserts itself as cause and effect and is another factor in establishing this physiological perversion. To digress from my subject, it may be asked is increased blood pressure in clinical medicine a symptom of the complex of the disease in question, is it a disease *per se*, or is it not, as in pneumonia, the physical effect of altered viscosity? Here surely is a fertile field for investigation. Mathews notes a four per cent. increase of viscosity by variations of temperature of 5°, surely within the range of most febrile states. The same author adds that carbon dioxide is a factor increasing viscosity, while oxygen diminishes it. That there are a surplus of the former and a deficiency of the latter I shall later show.

Of other important factors of viscosity the colloid bodies are noteworthy. All the factors and theories concerning the colloidal state cannot be discussed here. They are accepted facts, however, since Gra-

ham's contribution in 1851, and they constitute a large portion of the body protoplasm; they are susceptible of physiological and physical variation which under favorable conditions assume pathological importance.

Quoting Noyes, Fisher distinguishes two types of colloids: those which are viscous, gelatinizing, and not readily coagulable with salts—colloid solution—and those which are nonviscous, nongelatinizing, and not readily coagulating with salts—colloids in suspension. Fisher states that the essential difference between the two groups resides in the relation of the colloid to the solvent. The first type united to much solvent is called lyophilic; if soluble in water, hydrophilic. The second group is called lyophobic. The hydrophilic class contributes the larger part of the body protoplasm. Of the colloids with which we are chiefly concerned the pulmonary cells deserve only passing mention. The blood plasma and corpuscles cause us most concern. I have already noted the presence of fibrin and serum albumin in solution with alkalis. To this we should add fibrinogen, serum globulins, lipid and fat like bodies, all colloids in soluble state; it is upon the colloid bodies that Fisher builds. He believes them subject to changes and says that they swell in the presence of acids. Hydration and dehydration are the influences of water. Mathews calls attention to the reaction of all protoplasm as generally being faintly alkaline (personal opinion amphoteric).

In speaking of the physical and chemical changes which ensue in protoplasm when its reaction is rendered less alkaline or more acid, Mathews says that that they are extremely important and profound. That acids are supplied to these bodies I shall show. Combine this with the withdrawal of alkalis and we incidentally supply in part the means to produce coagulation or gelatinizing of these colloid states (gel), and confirm Hemenway's finding that altered viscosity may show its effect locally, namely, gelatinizing state colloids in lungs and these when present and completed add to the physiological alterations that produce the pathological state of consolidation in pneumonia.

#### PATHOLOGY OF PNEUMONIA.

The three stages, congestive or red hepatization, consolidative or gray hepatization, and resolution, require only passing notice.

*Histology.*—All standard textbooks note that in the congestive stage there are blood, distended capillaries, and alveolar tissue. In the consolidative state the picture is altered to include fibrin, cellular and granular debris, both red and white cells, bacteria, and serum. Resolution adds to this picture mainly the liquefaction, necrosis, and its mucoid character.

*Bacteriology.*—We need be little concerned with the many cocci or bacilli, distinguished by their presence or their supposed responsibility, as causative factors in pneumonia. Biochemically they are classified by Vaughan (5) as essentially particulate specific proteins, and in his work on protein split bodies he lays great stress upon bacteria as particulate proteins producing aminoacids. Abderhalden's (6) defensive ferments confirm Vaughan's work (5) in aminoacids and in accounting for the failure to pro-

vide specific toxins or vaccines to combat their effect, states that 40,200 distinct chemical bodies may be produced from eight bodies, elements, or substances. Any single chemical protein of the aminoacid type contains four elements: carbon, hydrogen, oxygen, and nitrogen. It is of course reasonable to presume it capable of producing at least a few acids or a single aminoacid. Should this fail Abderhalden again comes to the rescue in saying, "We can well imagine decomposition of the bodies of dead microorganisms to occur without the direct participation of the microbes themselves, to give rise to various disturbances in the harmonic host, without the microorganisms exerting any direct action." Combine these findings with Mathews's observation that every acidosis is combined with proteolysis in the cells and the appearance of ammonia, and we surely have proof presumptive of the primary and secondary action of bacteria in producing pneumonia.

We may now profitably review and correlate these studies in physics, physiology, pathology, bacteriology, etc. The occurrence and progress of active hyperemia or congestion in pneumonia is dependent upon weather exposure, and bacterial invasion. This is followed by increased arterial influx of blood in the capillaries which, if continued, alters the normal densities and tension of oxygen and carbon dioxide in the affected alveolar air. The failure of proper interchange of gases, owing to loss of equilibrium in tissue tension, density, free oxygen, and alkali effects this exchange. The compensatory powers of the body protoplasm now enter and as long as this is equal to the occasion, physiological processes, though retarded, may be completed; with interference continued, the physical factors add to the already labored functions. I have spoken of altered viscosity first by physical interferences with capillary circulation. This adds to the carbon dioxide retention and failure to supply oxygen to already overburdened and undernourished tissue. This provides the acidosis of tissue, according to Mathews's views, which I have noted as due to faulty oxidative processes, and an increased ammonia output by proteolysis, as cited by Vaughan and Mathews. It is probable that at this stage the growth of bacteria has sufficiently advanced to supply aminoacids of Vaughan, and disturb the harmony to host as quoted by Abderhalden, which adds to the already overburdened parts, edema of the pulmonary or alveolar tissue as a factor of obstruction to capillary circulation and in the affected area, continues and increases the retention of carbon dioxide; the diminishing oxygen supply, the advancing production of carbonic acid, and the withdrawal of free alkalis—all these contribute their share in the embarrassment of pulmonary tissue and produce at this stage fully advanced congestion. We now gradually emerge from physiological to pathological conditions, confirming Fisher's postulate of imperceptible transition from normal to pathological. Continue this lung embarrassment and the colloids add their share of troubles, hydration first, withdrawal of alkalis, advancing acidity, tissue and cell proteolysis, aminoacids of bacteria, later dehydration, and passage from soluble colloid state to gela-



tinizing state or coagulation of the blood within the affected area, i. e., the consolidative state or red hepatization of pneumonia. As to fibrin, somewhere in the latter stages of evolution all the processes for precipitation of fibrin already noted, namely, inflammation, acidity, cellular destruction, proteolysis, etc., have been provided for. Other probable compensatory problems are the giving up of the sodium and potassium bases of the sulphates to become sulphides and sulphuric acid. The latter, according to Bunge, would also be a product of hypoalkalinity and the perverted catabolism of proteins, both present in pneumonia.

At autopsy with section of the lung we would now have the pathological picture of a firm, dark red, dry, granular lung, bulging alveolar spaces of acute lobar pneumonia, histologically showing red and white cells, bacteria, cellular debris, and fibrin. As to the cellular content present in this stage, they are the victims of circumstances, like rats in traps, so to speak, enmeshed during the gradual change from soluble gelatinizing solution to coagulation.

The various factors in the production of pneumonia having been accounted for, we are now concerned with restoring the diseased state to normal. Here a brief survey of gray hepatization shows this pathological process to be one of the body's defensive efforts at restoration and the first advancing sign of resolution, the body's endeavor to restore harmonic relation. It is not within the scope of this preliminary note to describe all the changes in the transition from pathological to physiological; I note only, that the resolution of pneumonia must essentially be the provision of correctives that the body's efforts to return to normal physiological equilibrium may be accomplished. It should be said that when we are more familiar with the body processes we may well marvel at the wonderful immunity defenses and compensations present. I might further add that most of Nature's so called cures can and will later be accounted for in compensatory reactions of the metabolic processes of the body which, though seldom absent, may be delayed. Probably a few of our so called states of immunity may be accounted for by intensive physiological observations. It is upon these most fortunate circumstances that our neighbors often succeed mysteriously where we have failed, much to our chagrin and, incidentally, financial embarrassment. It is surely not due to any vaunted skill or virtue they may profess to have.

#### TREATMENT.

Empiricism, indeed, has too long dominated our applications of remedial measures. We have surveyed the normal physiological relations necessary to continue and promote health. Attention has also been directed to the perversions and the means by which they were effected. As recovery from disease necessarily consists in restoring normal functional activities to or near the state in existence previous to diseased alterations, it follows that the cure of pneumonia depends upon a restoration of normal physiological conditions of pulmonary and other tissue metabolism. Here a word of caution: it is neither essential nor safe to provide highly complex, doubtful, or dangerous meth-

ods; simplicity may be combined with safety and, what is more to be desired, specificity. All these desirable qualities may be readily at our command.

The one element essential to most physiological processes is oxygen. This important constituent is most essential to all successful cellular changes, and is necessary to continued health. Carbon dioxide elimination must be provided for. Coagulation or consolidation and its production and associated interferences with physiological relations have been referred to, and here it would be worthy of note that the primary motive and success of any remedial agent should aim at the solution and maintenance of this coagulative state.

To aid us we may draw upon normal physiological relation in the body. Here we find that the combination of organic acids of foods, the citrates, malates, oxalates, tartrates, and benzoates, has with sodium or potassium bases the function of keeping in proper balance and solution the various albuminous substances of the blood and body tissues. To supply any of these acids, citric, malic, oxalic, tartaric, while logical, is not without its attendant dangers and limitations, and in so doing we ignore fundamental principles of intelligent therapeutics. This is best expressed by Fisher's thought of the many drugs to use. One can foresee, of course, that those will give the best results which can have no specific poisonous effect, and which have the maximum power in restoring normal physiological relations. In selecting acids, citric acid seems to have answered most of these demands. If for a base we supply sodium in place of potassium, we again materially gain and supply all the good features and avoid any possible dangers from careless or ignorant application. Further, sodium is stimulating to the heart and striped tissue. In general, potassium is depressant and in maximum doses may be toxic. Sodium citrate is converted in the system to sodium carbonate, a most essential element to normal body metabolism. By this drug we are enabled to promote resolution of the coagulated areas; with citric acid and its base we are enabled to provide for oxidation by supplying free oxygen in its base, sodium carbonate. We also provide for elimination of carbon dioxide and carbonic acid which, according to Haldane's newer physiological conceptions (6), are life's basic factors. We provide for hydration and dehydration accompanying this condition. We keep in solution the albumins essential to normal viscosity. Combine this with the dilution of toxins of the bacteria by virtue of the freedom of use possible with this drug, and we need not therefore fear the virulence of bacteria.

Sodium citrate has now served me in twenty-four cases of pneumonia, all with recoveries. I have treated patients from eighteen months to seventy-five years of age with pneumonia of varying types—nephritic, tuberculous, alcoholic, postoperative—and one patient with poliomyelitis with frank lobar pneumonia. Of three patients treated by other men two died, one recovered. The two patients who died were moribund when treatment was instituted; one had complicated Caesarean section for eclampsia, the other had ileus.



As to dose two drams are given every two hours with eight ounces of water for its diuretic and diaphoretic effect and to aid gastric tolerance. Some results of this treatment were as follows: Respirations that had been rapid, labored, and limited, with accompanying pain, showed almost immediate amelioration. A respiratory rate of 40 to 60 was lowered to an average of 28 to 35, and usually with greater amplitude and freedom from pain or distress. Temperature, the usual febrile state, 102.5° to 104.5° F., declined rapidly to 99° and 100.5°, within twenty-four to forty-eight hours. Results were obtained by lysis, not crisis, within from four to six days, without the intense prostration usually accompanying the disease. Any discontinuation of treatment before five to seven days is usually followed immediately with recrudescence and return to original state. Diuresis and diaphoresis were also obtained. Diaphoresis and diuresis are most pronounced. In the majority of my cases diaphoresis was so marked as often to evoke comment, often concern, lest the patient catch fresh cold. As to its beneficial effects, we are enabled to draw upon the skin as a valuable aid and excretory organ in the elimination of waste and other products. I speak of carbonic acid and carbon dioxide, etc. Hypodermoclysis is unnecessary, and as Fisher notes, dangerous, because it may and often does invite sloughing.

A word of caution as to the selection of drugs should be added. It is well to observe that chemistry is the sole guide in the study of the body metabolism. Even if most tolerant, as laboratory experience will attest, she is a most exacting mistress. Hence the need for care in the selection as well as in the use of drugs, the ordinary commercial product being contraindicated.

I have thus described in detail lobar pneumonia as the most intensive state of this disease. Other pneumonia processes, bronchopneumonia, catarrhal pneumonia, etc., are subject to the same interpretation. Differences depend upon the extent of involvement. This may be accounted for by intensity of infection and compensation, affording immunity to the graver consequences of more extensive involvement.

I may add that even pulmonary tuberculosis, for a long time our nemesis, will fall under the application of the foregoing facts. Are not many of the factors present that I have described? There is a catarrhal pneumonia in the capillary bronchitis of this disease. Are there not all of the histological findings to which I have alluded, plus tubercle bacilli? I might add that Vaughan in his work upon this disturber of our health and happiness has separated glutamic acid in addition to other split proteins, which adds specifically to our knowledge of this disease. I am positive that these studies can be applied with a definite expectancy of marked benefits, if not of a cure, and so save us from the ridicule we have so long been subjected to by our failure to provide remedial aid for this group of cases.

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## DONT'S IN PROCTOLOGICAL PRACTICE.

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In making an examination of the rectum and anus, and in carrying out treatment of these parts, it is essential for the surgeon to plan his campaign carefully in order that he may know in advance exactly what he proposes to do. Circumstances may arise however, when it is even more important to know what not to do. It is better to do nothing than to do the wrong thing, for if the surgeon can do no good he ought at least do no harm. We may go a step further and set it down as a truism that he should endeavor to do the right thing, and do it in the right way. These are elementary ethical principles which must appeal to every understanding.

Surgery of the rectum rested on an uncertain basis until recently, because of the fallacy that a surgeon could accomplish in every part of the body what he can accomplish in one part of it; manifestly an erroneous conclusion, unless we assume that he has taken the pains to familiarize himself thoroughly with the special problems which each region presents in its anatomy, physiology, and pathology.

As a matter of actual practice, surgical operations upon the rectum and anus are often left to the resident staff in most institutions. The postoperative care, on which success depends in a large measure, may be delegated to some physician in the dispensary to whom all wounds look alike, except that those soiled with fecal discharges may be particularly disgusting. He would cheerfully pass them along to an orderly or nurse if he could, and he frequently can. This attitude is naturally enough reflected on the final results, and many patients operated upon for rectal complaints in general hospitals return for repeated operations for the same disease, its complications, or its sequelæ. It is not uncommon to find a patient who has had two or more operations for a fistula, before he is cured; even one who has had two or more operations and is not cured. Indeed, he may have had two or more operations and is not only not cured, but he may have acquired a postoperative stricture or an incontinence of the bowel besides from operative injury. The writer has had a number of patients under his care, both in his hospital work and private practice, whose cases are illustrative of just these possibilities; nor is this experience an exceptional one. The records of other proctologists tell the same story. It is evident that some men have not yet learned to appraise rectal work at its true value, and regard all surgical affections of the anorectal region as minor surgery because some of them are. Hemorrhoids are cured by ligation, excision, resection, torsion, cauterization, electrolysis, and even by injection, and fissure gives no further trouble whether one incises or cauterizes it, or divulves the sphincter. Ergo, it may be argued, no matter what is done, cure is inevitable. Nature is sometimes very kind to the hapless victim of rectal disease—sometimes, but not always. Much poor surgery is covered by her efforts to obtain good functional results by calling upon her reserve forces or providing compensatory function, if

we only give her a fair chance, and many times if we do not give it to her.

It would seem then that no apologies are needed in bringing this subject to the attention of a medical audience. The writer proposes to put his points in negative terms for the sake of emphasis and to make them stand out more prominently. It is easier to get the point of view if we look at a problem from different angles. It goes without saying that the field cannot be covered with that degree of completeness which obtains in affirmative teaching; neither is it the writer's intention to do so. He is quite content to bring out such features in diagnosis of rectal disease as seem to require more careful elucidation.

*Don't* fail to take a good history. To interpret the symptoms properly, one must learn certain facts about the patient and his illness. A good history includes all the essential conditions which may have a bearing on the patient's illness, and excludes everything else. It is immaterial from the surgeon's standpoint whether a brother died of scarlet fever or a sister of mumps, but it is quite important to know whether the patient's bowels move once in nine days, or fifteen times in twenty-four hours; whether the feces are normal in character, or contain blood, pus, or mucus; whether they have the normal consistency before they are expelled, or are hard, dry, and lumpy, or thin, soft, and watery; whether there is any pain before, during, or after defecation, and the nature of it; whether there are any protrusions from the anus; whether there is any gain in weight, or a progressive loss for which the patient cannot account. His age, occupation, habits, duration of illness, previous operations or illnesses, the presence of any possible reflex pains, all these may have a bearing on his present trouble, hence require investigation. Such a history has a clinical and statistical value far beyond the time spent on it.

*Don't* fail to inspect the anoperineal region carefully. It furnishes mute but eloquent evidence of many rectal conditions. The appearance of the skin and soft tissues, the presence of skin tags, fissures, excoriations, protrusions, tumors, abscesses, condylomata, chancroids, and signs of emaciation about the buttocks are some of the things with which patient endeavor will reward watchful care.

*Don't* fail to palpate the anoperineal region carefully, for old abscesses and tracts of an old fistula are readily located in this way. A little pressure on the soft parts around the anus will often furnish a valuable clue to the cause of a persistent discharge by disclosing the site of a blind internal fistula.

*Don't* fail to put your patient in the proper position, for unless you do, your work will have been in vain. Generally speaking, two positions are made use of by proctologists, the lateral and the genupectoral, though the lithotomy, squatting, and inverted positions have their proper place in rectal diagnosis. In the first one, the patient lies on his left side, with his back to the source of light, buttocks raised, and brought well over the edge of the table, thighs flexed on hips, legs semiflexed on thighs, back curved to allow head and knees to become approximated. If you have no assistance, the patient may help you by raising the right buttock

with the corresponding hand, or you may strap the gluteal prominences tightly away from the anus by means of broad strips of adhesive plaster in order to get the necessary exposure, as suggested by Silliman (1). When one examines in this position, it is a good plan to alternate with the index finger of the right and left hand, so as to bring the tactile surfaces of each to bear on both anterior and posterior wall. For examination in the genupectoral position, the patient should be placed on the table on his knees, elbows separated, chest and shoulders low and close to the table, thighs perpendicular, forming a right angle with the surface on which the patient is resting. This position may be maintained comfortably the necessary time to permit of the proper examination of the parts; it throws the contents of the abdominal cavity downward, puts the rectum on the stretch, straightens the rectosigmoidal kink, and allows visual inspection of the entire pelvic colon. The assertion that the distal portion of the descending colon may be thus brought into view, cannot be sustained on good authority (2).

*Don't* attempt to pass a bougie, proctoscope, or any other instrument into the rectum without first introducing your finger to judge of the size, patency, and direction of the canal and the character of its walls. It is possible to tear, rupture, or otherwise injure the gut by rough manipulation, if it is thinned from inflammation, ulceration, stricture, or carcinoma. A tear above the rectovesical or rectouterine septum is a serious mishap, and liable to result in the death of the patient from infection of the peritoneal cavity.

*Don't* use force in passing any metallic instrument into the rectum or pelvic colon. Were force needed, its introduction would be dangerous. Once you have overcome the contraction of the external sphincter, the ordinary instrument, seven eighths of an inch in diameter, will readily sink into the cavity of the rectum, and needs only your guidance, not your strength.

*Don't* apply pressure to the handle of the proctoscope in introducing it, but let the effect be transmitted wholly through the obturator. Hold it firmly in the palm of your hand, and guide it gently in the direction of the canal, otherwise you may catch a portion of the mucous membrane between the distal end of the tube and the obturator and wound it. Remember the direction of the anal canal and rectum, and follow it.

*Don't* attempt to pass a colonoscope while the patient is under the influence of an anesthetic. His sensations are an important guide as to whether you are using enough force to do harm.

*Don't* fail to explore the lower portion of the anal canal carefully. There is competent authority for stating that eighty to ninety per cent. of all rectal troubles are located in the lower inch of the anal canal (Gant).

*Don't* fail to divulse the sphincter as a preliminary step in operations on the rectum. Divulse it, but do not tear it. Many cases of incontinence are caused by unskilful dilatation. Wait until the patient is well under the anesthetic, then pull the fibres of the muscles apart with gentle traction, avoiding sharp, sudden, or violent



force. Divulsion of the sphincter provides more room, a better operative field, freer drainage, and easier aftertreatment. An exception to this rule may be found in extensive prolapse of the rectum through the anal canal, when the sphincteric ring is already overstretched and we wish to diminish the size of the outlet to secure better support from the soft parts. It is unwise to dilate the sphincter in suppurative condition of the perianal or perirectal tissues until the tension has been relieved by free incision, otherwise one may force infection into the healthy parts.

*Don't* attempt radical cure of a fistula in the presence of a large ischiorectal abscess. Technically it is a better procedure to incise the abscess and relieve the patient of pain, prevent excessive burrowing, and provide proper drainage. A secondary operation for the cure of the fistula may be undertaken at a later date when the abscess cavity has contracted down firmly (MacAlpine). There is less mutilation of the parts, diminished risk of incontinence, and shorter postoperative disability.

*Don't* fail to make careful search for all branch sinuses; there are usually one or more of these communicating with the main sinus, because when the abscess, which is the condition precedent in fistula, begins to burrow, one small opening does not provide enough drainage; unless one is dealing with several independent abscesses (rare) he should be able to follow all the tracts, connect them on the outside, then make a single incision through the sphincter at right angles to its fibres.

*Don't* ligate external or thrombotic hemorrhoids, or use the clamp and cautery on them. The external pile is resected, the thrombosis split open, the clot turned out, an elliptical piece of the skin cut out, and the wound packed. If one ties off an external pile, a number of sensitive peripheral nerve endings will be caught in the ligature, and give the patient exquisite pain lasting several days. The same holds true of similar treatment of the thrombotic variety, with the further objection that the thrombus which is thus imprisoned would sooner or later become infected from the stump, with the formation of abscess or fistula. The use of the clamp and cautery on the perianal skin sears the nerve endings and results in painful burns and possibly in stricture.

*Don't* attempt to replace gangrenous internal hemorrhoids. Having lost their nutrition they are foreign bodies, which require surgical treatment, just as a loop of gut does under like circumstances.

*Don't* attempt to reduce inflamed or edematous external cutaneous, or sentinel, piles above the sphincter muscle. They will not stay there, because they do not belong there, and manipulations will assuredly add to the patient's suffering, without any compensatory advantage.

*Don't* cut away too much skin in operating for external hemorrhoids, else you will expose your patient to postoperative stricture. One is not doing plastic surgery of the face, and it is unnecessary to remove every wrinkle to cure the patient. In point of fact, the perianal folds have physiological function in preventing fissures, cracks, and abrasions of the anal structures during the passage of large hard fecal masses. The elasticity of the skin is not so

great as that of the mucous membrane, hence to make up for that condition, Dame Nature very wisely threw the circumanal skin into folds in order to equalize matters and prevent disaster.

*Don't* take it for granted that the patient has piles because he says so himself, or because he has protrusions or bleeds from the rectum. Most laymen will describe any trouble about the rectum as piles, and some physicians will do no better. The writer recently saw a case of specific condyloma which was described on the records as thrombotic hemorrhoids. Protrusion may be caused by prolapsing internal hemorrhoids, procidentia, cysts, polypi, or other pedunculated neoplasms of the rectum and anal canal. Bleeding is only one of the symptoms of piles, and may occur also in benign and malignant tumors, as polyps, carcinoma, sarcoma, papilloma; in traumatism, stricture, proctitis, or colitis; in the various forms of dysentery; in simple ulceration from diverticulitis, chronic constipation, or fecal impaction, or that due to specific factors like tuberculosis, syphilis, or gonorrhea; to a lesser degree in fissure, cryptitis, varicosities, intestinal parasites, abscess, and foreign body. It is well to remember that bleeding from the rectum is by no means confined to local pathological conditions of that organ; constitutional causes may be responsible for it, such as are found in certain acute infections, in leucemia, pernicious anemia, malaria, chronic interstitial nephritis, cardiac decompensation, and arteriosclerosis; poisoning by mercury, arsenic, turpentine, phosphorus, nitrobenzene, etc.; secondary to operations upon the pelvic colon, rectum, and anus, and lastly in surgical conditions as invagination, volvulus, mesenteric thrombosis, and appendicitis. Each one of the prominent symptoms of piles may be duplicated in other diseases, and all of them may be present in some of them. Errors occur so commonly that in a well known treatise on surgery the bald statement is found that the author never saw a case of carcinoma of the rectum which had not at some time or other been regarded as hemorrhoids and treated as such (3).

*Don't* fail to investigate every case of chronic diarrhea for possible stricture or malignancy. Many a patient is under treatment for enteritis for weeks or months, who in the end is found to have a cancer of the rectum. Diarrhea with or without alternating constipation in an individual whose bowels have heretofore moved regularly, is a significant symptom and requires explanation. The age of the patient is less important than was formerly taught. Tuttle (4) cites six cases of malignant disease of the terminal part of the intestinal tract in children between five and ten years of age, taken from the Vital Statistics of the City of New York, and the writer saw two patients within the last year, one twenty-three years old, the other twenty-seven, both of whom were suffering from carcinoma of the rectum. Bleeding need not necessarily be present unless ulceration into a bloodvessel takes place. In the medullary variety it is an early symptom, in scirrhous, a late one, if present at all. Rapid loss of weight in conjunction with disturbed intestinal function is strongly suggestive of malignancy, though the weight may remain stationary for a time; in fact



a gain in weight even in extensive malignant infiltration is usual, as soon as suitable provision for intestinal drainage has been made by means of a colostomy. In cases where the growth is low down the examining finger will be able to palpate either a hard, irregular, infiltrated mass with more or less occlusion of the lumen of the gut, or deep ulcerations between nodular areas, which bleed readily, and convey a cadaveric odor said to be characteristic. In the last ten cases of carcinoma of the rectum examined by the writer, the growths in nine were low enough to be readily felt. The glands into which lymph vessels from the involved area drain will be found to be enlarged. Those from the anus and skin around it pass by way of the perineofemoral folds into the medial subinguinal glands, superficial and deep; those from around the mucocutaneous junction, according to Poirier and Cuneo, empty into the hypogastric glands, and may be felt in the posterolateral wall of the pelvis; while those from the anal canal and rectum proper, pass along the superior hemorrhoidal vessels into glands which lie medial to the anterior sacral foramina, and may be felt in front of the sacrum (5).

Finally *don't* consider your work completed until you have made a careful examination of the rectum as a routine measure in every case. Because the organ is poorly supplied with sensory nerves, it may be the seat of grave pathological lesions with only slight subjective disturbances. The physician may be painfully surprised to find that what was considered a trifling disorder is on closer examination found to be a formidable disease, quite beyond the reach of the most skillful surgeon.

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17 EAST THIRTY-EIGHTH STREET.

## DRUG ADDICTION AND THE HARRISON ANTINARCOTIC LAW.

By J. C. DENSTEN, PH. D., M. D.,  
Scranton, Pa.

Drug addiction differs materially and physiologically from alcoholic addiction and it is this difference in physiological effect which has called for drastic legislation governing the use and abuse of narcotic drugs.

Alcohol is an intermediary end product of starch, a nonnitrogenized food, whose ultimate end product through further cleavage results in carbonic acid anhydride; and being a pure carbohydrate carbon, hydrogen and oxygen are consumed entirely through respiration.

Drug addiction by narcotics, derived through opium or its alkaloids or through cocaine or its derivatives, becomes a different physiological problem, since these drugs contain not only carbon, hydrogen, and oxygen, but carbon, hydrogen and oxygen plus nitrogen, whose end product is principally protein, or tissue building material, and hence a nitrogenized food.

Alcohol, though a food, will not resupply, build or rebuild new tissue without nitrogen; hence alcoholic addicts soon regain their prenatal equilibrium after a debauch, the effects of which are soon eliminated by continued abstinence and a return to normal, natural food products.

Morphine ( $C_{17}H_{19}NO_8 + H_2O$ ) and cocaine ( $C_{17}H_{21}NO_4$ ) are isomeric and belong to the carbon, oxygen, hydrogen group plus nitrogen, and hence become a food, whose end product is protein, which is tissue building material. These drugs not only produce narcotism but also contain food elements sufficient to build new tissue and resupply waste.

A drug addict requires less culinary food in proportion as he increases his artificial "dope" food, which an addict invariably does, and retains his usual avoirdupois and in some instances gains decidedly in weight.

After protracted use of narcotic drugs, the addict finds a marked flood and ebb of his overstimulated faculties and longs for the narcosis which lulls, soothes, quiets, and stupefies, but he soon learns that this stage is reached only by and through the stage of excitement which becomes more and more satisfying and desirable as he increases the lethal dose. Thus the physiological habit formed becomes a constitutional necessity, and when this stage has been attained, no mortal will seem strong enough to break the bands which bind, unless assisted by a physician having absolute control of the patient, the drug, and his environment, with but one object in view, and that—to cure.

Laws have been suggested and passed, with a view to lessening the evil of drug addiction. So far law has failed in its purpose. There are good laws and bad laws, effective and ineffective laws. A law which fails in its ultimate purpose is ineffective and bad. A law passed for the purpose of benefiting weak humanity is commendable, altruistic, and well meaning. But a law which benefits or cures a drug addict must have as a motive more than these attributes of sentiment; it must also contain sympathy and intelligence. A law whose ultimate object is revenue does not have philanthropy, sympathy, or intelligence behind it.

The Harrison Antinarcotic Law exhibits to a superficial judgment the trinity of good intention, sympathy, and intelligence, but becomes perfidious in its execution and ultimate endeavor and fails miserably in its purpose. The addict is seldom benefited and the physician becomes the depository for censure, criticism, and failures to cure through the law's unintelligence.

A law to be effective in curing the drug addict must be liberal, demanding, and commanding: Liberal in providing eleemosynary institutions throughout the States, each with a presiding physician and a necessary number of interns, whose sole and bounden duty it shall be to use every means, method, and contrivance, to effect a cure of the addiction; demanding in compelling every known addict to enter one of these institutes and not to be released until cured or dead; and commanding in holding the respect of patient and public in the choosing of physicians and interns whose qualifications shall be sobriety, sympathy, intelligence, a dominant will,

forbearance, and honesty. This law should be a Federal law and should be ratified by each State, so that it would be nationwide. Not one addict should escape its demands, for a drug addict if not cured must have the drug, go insane, or die. It becomes as necessary for him as food. It is food to the addict.

The present Federal law could be amended to meet new requirements and still stand in principle. The law as it now stands is defective and inoperative in effecting the aims and ends intended and hoped for. I venture the assertion that instead of lessening "dope fiends" it has increased them, for it has licensed unscrupulous usurers who have co-horted with the sinuous, criminal underworld to whose established stations of licensure and distribution the addicts, avoiding the physician and treatment, have become steady and profitable customers with many new converts. The pervading criminal atmosphere, the underworld channels of unscrupulous licentiates and pedlers reek of "coke" and "dope," while none but legitimate and respectable channels are watched and reported. Thousands and thousands have been licensed by the Government to barter and trade in narcotic drugs, and small fortunes have been realized in advanced prices because of the law.

It would follow from a compulsory treatment law that within a limit of three years there would not remain one drug addict in the United States. They would have all been cured or dead. The underworld would have gone out of business for want of patronage and the number of new converts would have become nil. The morals of every community would benefit by the object lessons and exposure of the addict who will have been compelled to take treatment.

The demand for any article regulates and determines its value. The great and increased demand for narcotic drugs since the passage of the Harrison Antinarcotic Law would prove *a priori* an increase in price or value, and since the demand regulates the supply it would follow *a priori* that an increased demand would increase the supply. This is the condition of affairs in the United States since the Antinarcotic Law has been in effect.

It was stated by those high in political authority that the object of the Harrison Law was and is to give the drug addict a chance to be cured. The physician was licensed and expected to undertake the cure of these unfortunates, but he was and is looked upon as a person who needs watching. Inspectors are appointed to visit the drug stores and look over the prescription files, and as has often happened, some physician has been called to account for issuing too liberal a prescription, when mitigating circumstances have proved the physician well within the limit of the law. In my opinion the present law has never aided in the cure of a single addict. The unscrupulous physician was not made one whit more scrupulous because of the law, and scrupulous physicians continued their endeavors to cure as before the law, while the number of addicts increased through the congested efforts of the underworld.

A drug addict presents himself to a physician under pretense of a desire to be cured and solicits a

prescription. The physician inquires as to the daily amount now used and prescribes a four or six ounce mixture, to be taken in dram doses at stated intervals, in which, a less amount per diem is ordered, the purpose being to reduce gradually the amount of the drug until the patient is cured. My experience in such cases has been that the addict seldom if ever takes the dose as prescribed. He figures about how much is in the bottle and takes it to suit his needs, and will often have taken in two or three days or less the amount prescribed for a week and comes back again for a renewal. He will sometimes have two or three physicians prescribing for him at a time, and continue the rounds at stated intervals to correspond with the legitimate time to have each prescription renewed. The fact is I have yet to find one addict who ever really wanted to be cured.

So what good effect has this present law? As it stands it is good for revenue only. That is really one of the cardinal principles of every political party, and the one incentive of every politician in drafting a law.

Meanwhile, We, Us and Company are contributing our little dollar yearly to support and maintain a small army of inspectors who, in ignorance of our difficulties, necessities, conditions, environments, and privileges, seek to confirm their suspicions of us and stand ready and seemingly anxious to brand us as criminals, and the dear people, for whose benefit this law was enacted are shunning scrupulous physicians and honest treatment, having been initiated into the inner circle of the underworld supply, whence the drug addict emerges, laden with addiction commensurate with the size of his roll.

116 ADAMS AVENUE.

## Abstracts and Reviews

### THE PLACE OF A PSYCHIATRIC CLINIC IN A PRISON SYSTEM.\*

BY BERNARD GLUCK, M. D.,

Director of the Psychiatric Clinic, Sing Sing Prison.

In starting the work of the psychiatric clinic at Sing Sing Prison there was no well defined precedent to follow. The problems that confronted the directors were met according to individual reaction and not according to rules laid down for them. This situation constituted a distinct advantage and aided the workers in obtaining a broad view and a keen interest in the vital issues. The functions of the psychiatric clinic might and ought to be made to reach far beyond the limitations of mere diagnostic activity so that its usefulness might make itself felt in other directions. The clinic constituted a rational, scientific approach to the problem of antisocial behavior.

One of the functions of the clinic was as a therapeutic agency. In a prison, hundreds of individuals of the most diverse constitutions were kept against their will in a highly specialized and intensely painful environment under a strict daily régime. Mental disturbances, not necessarily certifiable psychotic conditions, naturally existed in a ratio of about ten

\*Summary of a paper read at a meeting of the New York Neurological Society, March 6, 1917.



to one as compared with the incidence of mental disease among a free population. Many of them were in the nature of reactive manifestations of a peculiarly predisposed personality to a particularly stressful situation. Timely interference might frequently prevent an attack. Men had come to the clinic of their own accord in states of profound depression which might easily have developed into active mental disorders, but they were met with understanding and subsequently things were readjusted for them to such an extent that the prison records showed that during the past four months not a single case of mental disorder had developed. This was readily explained when one compared the régime under which the prisoners lived at Sing Sing with that which prevailed in other prisons. As a member and voter of a civic organization the prisoner was given opportunity for self expression in many ways and had the means of keeping alive his interest in many directions; he was led to a stimulation of initiative by the opportunity which was open to him of gaining a certain recognition from his fellow-prisoners and his self respect was restored by the knowledge that he was taking part in a movement which was working out one of the most wonderful social experiments of the age. This state of mind was reflected in the group psychology of the entire population, the result of which was that there existed in this prison a degree of discipline which had a splendid effect and a beneficial influence on the individual prisoners and on the administration. The word discipline used here meant the doing of the proper thing in the best way possible at the proper time and this was a result of a systematized effort to bring out the best in the individual prisoner by making him realize the benefits to the general population as well as to himself which proper behavior naturally brings about. This discipline had been manifested on several occasions when unexpected emergency situations developed when the men for a short time acted on their own initiative.

For the present, attention was being especially focussed on two problems which seemed to be of particular importance, namely, that of the defective delinquent and that of vocational training of prisoners. With respect to the first, it was necessary to determine the precise relationship between mental defect and antisocial behavior. Though a large percentage of prisoners were mentally defective, it by no means followed that all the feeble-minded were potential criminals and that every feeble-minded woman was a potential prostitute; there was no justification for believing that because a certain defective had been convicted of a crime that he was inherently more inclined to criminal behavior than his fellow defective who might be found in an institution for the feeble-minded. There were other potential factors of an extraneous nature which determined whether a given defective would find his way into a penal or medical institution.

With respect to the second problem, it was being determined on the one hand what prison industries were most likely to fit the prisoner for greater economic independence upon his release, and on the other hand the suitability of certain prisoners for certain trades.

The clinical facilities of prisons for teaching pur-

poses had never been available to medical colleges, notwithstanding the fact that crime was a problem of behavior and information concerning it should be sought in the individual who behaved in a criminal manner. It was to be ardently desired that some affiliation might be brought about between Sing Sing and some of the New York universities. This would bring within the reach of the university very valuable clinical facilities; it would bring into the prison the education facilities which would render the inmate teaching staff more fit to perform its duties; it would enable a certain number of students to do part work toward a degree within the various fields of activity of the penal institution.

The third field of the psychiatric clinic was in the nature of an agency for propaganda and education in the broader sense. In line with this, a systematic campaign of education had been quietly carried out which was being reflected in a very gratifying way in the attitude of the personnel. For instance, since August, 1916, when the clinic was established, the clinic had been furnishing reports of examinations of the men about to be paroled to the Parole Board and these reports were consulted before the paroles were issued. Prison officials were beginning to realize that the problem of the individual delinquent was primarily a problem in abnormal behavior, and that those experienced in matters touching abnormal behavior might well be consulted. In short, the influence of the psychiatric clinic was definite and its effects very much in evidence. There had even been a great improvement in the general medical activities of the prison since last August.

The fourth direction in which the psychiatric clinic might and should be active in penal institutions was as a reformatory and reconstructive agency. The hours and labor spent with the prisoners about to be released were pleasant and interesting and in a few instances the efforts put forth in a reconstructive capacity had been fully repaid. The psychiatric examinations of the men necessarily led to a dependable estimate of the individual; of his capabilities and disabilities; of his weak points and desirable qualities which was of tremendous advantage in the process of helping the man to reform.

It was a fact that a large percentage of prisoners were physically or mentally defective. In one instance, out of fifty consecutive admissions, thirty-seven, or seventy-four per cent., were definite medical cases suffering from the following disabilities:

Syphilis plus other grave affections.....	5
Syphilis alone.....	2
Syphilis of the central nervous system.....	2
Mental defect plus syphilis.....	2
Mental defect alone, showing an intelligence of twelve years or under.....	13
Alcoholic deterioration plus other grave affections.....	3
Morphine deterioration.....	1
Insane: those demonstrating delusions, hallucinations, or both.....	7
Strongly suggestive of definite mental disease.....	2

In addition to the above findings, a number of other grave affections of a physical nature, such as organic disease of the heart and pulmonary tuberculosis, were found. With this type of population, the program outlined for the psychiatric clinic would seem entirely justified and if it did not succeed, it would not be because the clinic had not made the most of its opportunities.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

### Philadelphia Medical Journal and The Medical News

*A Weekly Review of Medicine*

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A. R. ELLIOTT PUBLISHING COMPANY,

Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single copies, fifteen cents.

Remittances should be made by New York Exchange, post office or express money order, payable to the A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, APRIL 21, 1917.

### MEDICAL ASPECTS OF DEFENSE.

The Council of National Defense has organized a medical board which includes among its members the surgeon general of the Army, of the Navy, and of the Public Health Service, the director of the Military Relief of the American Red Cross, and thirty-seven other physicians and surgeons. This general medical board has organized an executive committee and eight subcommittees on the following subjects: state activities and examinations, legislation, hygiene and sanitation, research, dentistry, medical schools, publicity, and hospitals. These subcommittees have begun active work and will undoubtedly be of great service in the organization of the medical aspects of defense. The Committee on Schools, for instance, says that it is important that this country should not repeat England's blunder at the outbreak of the war, in permitting disorganization of the medical schools either by calling the faculties into active service or by sanctioning the enlistment of medical students into any of the line organizations. For this reason men now in college looking forward to medicine as a career should be encouraged to complete their education in this field as a patriotic duty to the nation. The medical schools are requested to graduate their

senior students promptly and to provide clinical faculties and students as a medical personnel of base hospital units into which men may be graduated directly and thus obtain in active service the required hospital experience and at the same time be giving service to the nation. This is called the Italian plan, and telegrams have been sent to the deans of all medical schools urging its adoption.

The Committee on Hospitals has undertaken the work of inducing the civil hospitals to reorganize their staffs so as to release as many medical men as possible for membership in the reserve corps of the Army and Navy, but this is to be done in such a way as not to interfere with the operation of the civilian hospitals. This committee is also preparing a tabular statement of the hospital facilities available in the various civil hospitals, with details as to the accommodation in special hospitals. It will be seen from this outline that the general medical board is actively engaged in most important work looking toward the organization of the medical personnel and facilities of the United States.

In addition to the work of the general medical board, there has been appointed by the Council of National Defense a committee on standardization of medical and surgical supplies, composed of leaders among the manufacturers of medicinal chemicals, pharmaceuticals, and surgical supplies. The members of this committee have already been in active session, and their advice and cooperation will be of the greatest possible value to the Government.

### FAMILIES OF AMERICAN MEN OF SCIENCE.

It has been for long a matter of ordinary comment that native born Americans, and especially those whose ancestry dates back for some generations, have constantly decreasing families. The size of the family may be said to decrease, perhaps, in proportion to the length of their ancestry. Also, it has been stated frequently that scientific men have particularly small families and that American men of science are unique in this respect. Now it may be taken for granted that native born Americans do have small families, smaller by far than the families of immigrants, and, therefore, it is logical to presume that the men of science come within the same category, and, further, seeing that men of science the world over are notorious for their restricted families, it would seem to follow that American men of this class should have the smallest number of children.

J. McKeen Cattell, writing on the subject in the *Scientific Monthly* for March, 1917, bears out these presumptions. Vital statistics show that scientific men of this country marry at the average age of 29.5 years and their wives are on the average 26.6 years old.

In another table is given information in regard to the size of families of the parents of scientific men in accordance with their nationalities and occupations. The Germans have families of the average size of 5.7, the British of 4.8, and the native Americans of 4.5. In yet another table the figures are given of the number of children of scientific men in accordance with their nationalities. The Americans have, on the average, a family of 2.19 children, the British of 2.43, and the Germans of 3.21.

The marriage rate for scientific men in this country is high. But according to another table from which figures are quoted by Cattell a scientific man has on the average about seven tenths of an adult son, and consequently, if three fourths of his sons and grandsons marry and continue to have families of the same size, a thousand scientific men will leave about 350 grandsons who marry to transmit their names and their hereditary traits. It is obvious then that their families are not self perpetuating, and in view of the fact that only fifty per cent. of the graduates of colleges for women marry, the extermination of the stock will be more rapid in the female lines.

In order to emphasize the significance of the restricted families of native American stock, it will be apt to point to a special study by Kuczyski, in which it is shown that the birth rate of the native population of Massachusetts, a typical American State, has been sixty-three to a thousand women of child bearing age, as compared with eighty-five in France, 104 in England, and 143 in Russia.

The birth rate of the native population in this country is low, while the families of the scientific men are the smallest. Into the causes of the low birth rate prevailing among the scientific and professional part of the population, there is no space to enter at length. Some of the causes are economic, that is, the universities upon which three fourths of our scientific men depend for support cannot afford to or do not pay them sufficient to enable them to raise and educate well a good sized family. It is a national misfortune that such is the case. Many, perhaps the majority, of these men of science are of the salt of the earth, physically and mentally, and it is a vast loss to the country that their stock should not be perpetuated on a large scale. There is a good deal of truth in Cattell's assertion that scientific research and the bearing and rearing of children are

the two most important services that can be rendered to the state. When society understands its obligations to its scientific men it will acknowledge them by insisting that they be paid enough to bring up some four or five children in comfort. In existing circumstances it is rather the survival of the unfit than of the fit, and if it continues at the rate it is proceeding the ultimate consequences will be deplorable.

#### TONGUE AND EAR, EYE AND HAND.

To the man who communicates with his fellow-men only in speech, conveyed ideas are embodied in certain combinations and permutations of sound groups. Tongue and ear are the channels of this most primitive line of communication, and sound is the vehicle of thought. His kinesthetic writing centre and his reading centre we can imagine in hyperbole as areas of beautifully smooth, glistening brain substance with not a wrinkle, dent, or irregularity. Face this man with the soul staggering task of establishing association paths between the sound—God save the mark!—say, of *przyjsio* and the mental concept of the verb "to come" when he sees the written word, and drilling in granite or sawing steel rails is easy and simple by comparison.

The problem of overcoming illiteracy is the task of accomplishing just this. To a man who cannot read and write an avenue of communication which most intimately concerns his social status and prospects is closed. He is cut off from mental and spiritual participation in as many human activities as a person of moderately active imagination can picture.

Dr. Winthrop Talbot in a report on Adult Illiteracy (Department of the Interior, Bureau of Education Bulletin No. 35) presents statistics and interesting comment on this subject. Five and a half million people in the United States over ten years of age are illiterate: 1,534,272 native whites, 1,650,631 foreign born, and 2,227,731 negroes. Since 1880 the number of illiterates among native whites and negroes has decreased rapidly, while the number of foreign born illiterates has increased. The country is taking care of its native population in the formative period of mental development and is decreasing steadily and appreciably its percentage of adult illiteracy. The problem applies in the last analysis to the illiterate foreigner, particularly the man from the southern and southeastern part of Europe. It is to be hoped, and not without justification, that the terrible radical surgery, social and political, that Europe is undergoing will eradicate all the poisonous products of autocratic intoxication and will result in social and educational opportunity for the poorest

which will neutralize corroding discontent, suspicion, and class hatred. Meanwhile the problem of reducing the existing percentage of illiteracy among the present foreign born population is a matter of political, industrial, and social importance, which, Dr. Talbot concludes, should command the attention of educational experts and specialists.

#### PUBLICATIONS IN BEHALF OF THE MENTALLY ILL.

Although we have made vast strides forward in the last few decades in our treatment of the mentally ill we have still much with which to reproach ourselves. The late Dr. Weir Mitchell was one of the first prominent neurologists publicly to hold up the mirror to superintendents of hospitals of that sort and to reproach them that they were nothing but boardinghouse keepers on a vast scale, that they were too apt to regard such hospitals or institutions, as they were nearly always referred to in those days, as gigantic caravanserais where the poor afflicted lunatics crept to end their days. The change in the common appellation of such places from institutions to hospitals is indicative of a deeper and more significant change of attitude toward the inmates. This is the tendency to regard such persons as mentally ill and as such not entirely beyond the pale of humanity. With this changed conception of mental disorder has come an effort to find out if possible the mechanisms of the disordered mental activities.

An encouraging sign of progress along these lines is seen in an effort of the staffs of hospitals for the insane to establish a direct communication with their patients, not only by their everyday meetings, but on a higher, more permanent plane. Thus periodicals are beginning to appear, issued by such hospitals for the joint benefit of patients and employees. The *Psychogram*, published by the New Jersey State Hospital at Morris Plains, has been appearing since last July once a month. It is a chatty, sociable sort of a magazine, somewhat after the style of high school and college publications. There is much gossip about the staff and the older employees and some humor. The patients contribute liberally to this magazine, under initials and pseudonyms, seeming to prefer poetry as a medium of expression. Last week there appeared for the first time the *Sun Dial* from St. Elizabeth's Hospital, the Government hospital for the insane, Washington. It is edited by the superintendent, Dr. William A. White, and three members of the staff—Dr. John E. Lind, Dr. R. M. Chapman, and Dr. E. J. Kempf—and among the contributors to the first number are several of the patients as well as members of the medical staff. It is an exceedingly interesting and

dignified periodical, and in its department of "Talks with Patients" contains material which might well be utilized to advantage in our metropolitan dailies and weeklies.

We hope that the day will come when every hospital of this kind will have its own publication. The mentally ill, as a class, are finding their champions abundantly now, since Clifford W. Beers stepped forward to take up the cudgels for them. There has just appeared a quarterly magazine issued by the National Committee for Mental Hygiene and called *Mental Hygiene*. The first issue contains articles by White, Salmon, Fernald, Beers, Campbell, and other workers along this line, and is intended for laymen as well as physicians, particularly social workers, lawyers, physicians, clergymen, and educators.

This is only one of the many activities of the National Committee, which is ever on the alert to distribute broadcast any information which may benefit the insane or lead in the right path those who may be threatened with mental disorder.

#### CONJUGAL CONTAGIOUSNESS.

The close communion which exists between husband and wife results sometimes in curious phenomena. Many of the cases of mental telepathy, so called, involved the alleged conveyance of thought from one member of a married couple to the other. Then there are the cases of conjugal tabes, or conjugal paresis, that is, instances where diseases not usually regarded as having any contagious property have been transferred from husband to wife, and vice versa. What the French call *folie à deux* is a case in point. One member of a family acquires a paranoid state, a delirium of interpretation, and goes about speaking freely of his delusions and ordering his life to accord with them. After a time another member of the family acquires the same, or a similar set of ideas, supposedly from the first one, as if by actual contagion. It is also said that fear and other emotions are contagious.

Pneumonia, although infectious and communicable, is not usually regarded as a contagious disease. But now comes Dr. F. S. Lister, writing in the *Medical Journal of South Africa*, who reports a case where a woman, ill with pneumonia, had been nursed by her husband who, eleven days later, fell a victim to an exactly similar attack. Doctor Lister isolated the pneumococcus from the husband and found it to be a strain rarely found in South Africa, but identical with the germ found in the wife's case. This leaves, to Lister's mind, little doubt that the husband acquired the disease from the wife.

A factor which the writer did not discuss was the



closeness of the spiritual communion between the persons involved. In the reported cases of mental telepathy, e. g., the participants are said to be in such close accord that emotions affecting one are also felt by the other. We all know of cases where the husband suffers from morning nausea during his wife's first pregnancy, or is even tortured with labor pains at the time of delivery. In successive pregnancies the sympathetic sufferings are apt to diminish or disappear, but then we cannot expect the honeymoon to last forever.

It may be then that we shall have to be governed when we issue instructions for any contagious disease by the length of time the father and mother of the family have been married.

School in 1883. After graduation he served as resident physician at the Children's Hospital and as demonstrator at the Episcopal Hospital. Later he became a lecturer at the University of Pennsylvania Medical School. For many years Doctor Mitchell was attending physician to the Philadelphia Infirmary for Nervous Diseases and consulting neurologist to the Pennsylvania Institute for Feeble Minded. Doctor Mitchell was co-author with his father of a book on *Fat and Blood* and published several monographs of his own. He was a member of the American Medical Association, the Association of American Physicians, the American Neurological Association, and the Philadelphia Neurological and Psychiatric Societies. He was a gentleman of charming manners, and will be greatly missed by all who knew him.

### A NEW BACTERIOLOGICAL JOURNAL.

"The growth of bacteriology is largely a matter of contemporary history. From the study of a few obscure diseases the subject has expanded until it covers the entire field of human activity. From a pure science it has broadened to include every branch of applied science. All procedures—medical, agricultural, industrial—recognize the value of bacteriological technic or information. Bacteriology as a pure science cannot be disregarded. Conjoined with the older science of chemistry, bacteriology is approaching more and more closely the solution of the mystery of life. United, and working in harmony, these two will ultimately arrive at an explanation of the very nature of the vital processes."

This we take from the foreword of *Abstracts of Bacteriology*, a new journal, an adjunct to the *Journal of Bacteriology*, the official organ of the society, which has been published for only a year and even now it is assured of a place among the most valuable periodicals dealing with the bacteriological material.

The cordial reception granted the *Journal of Bacteriology* has seemed to warrant the society in establishing another journal, *Abstracts of Bacteriology*. The need for such a journal has long been felt, and has now become imperative. With the foreign reviews of bacteriological literature cut off, scientific work in this country is seriously handicapped. Thus it is both opportune and fitting that an American review of bacteriological literature should be instituted at this time under the auspices of the Society of American Bacteriologists. This journal will be published bimonthly and will cost five dollars a year.

### Obituary

JOHN K. MITCHELL, A.B., M.D.,  
Philadelphia.

Dr. John K. Mitchell, son of the late S. Weir Mitchell, died at his home in Philadelphia on April 19th of heart disease in his fifty-seventh year. He was graduated from Harvard University in 1880 and from the University of Pennsylvania Medical

**The Physicians' Motor Club.** of Philadelphia, has undertaken to enroll one thousand automobiles belonging to its members, each of which is to be equipped with emergency racks carrying two stretchers. The service will be drilled on Belmont plateau, in Fairmount Park.

**University of Pennsylvania War Hospital.**—During the continuance of the war, the new buildings of the Evans Dental Department of the University of Pennsylvania, at Spruce and Fortieth Streets, Philadelphia, will be converted into a hospital for the army and navy. It will have two hundred beds.

**Medical Reserve Officers for the Army.**—Commissions for 104 additional medical reserve officers as first lieutenants in the army were issued last week. Thirty-six of the physicians are from New York city. These officers will probably be ordered to active duty as soon as their services are required to aid in the medical examination of recruits.

**Substitutes for Doctors in War Service.**—A committee has been appointed in Philadelphia to procure substitutes to take care of the practices of physicians who are called to duty in war service. Dr. W. W. Keen is chairman of the committee, Dr. F. P. Henry is secretary, and Dr. G. A. Knowles, Dr. J. Torrance Rugh, and Dr. G. D. Fussell are members.

**Burke Foundation Offers Its Facilities to the Government.**—The Winifred Masterson Burke Relief Foundation, which conducts a convalescent home in Westchester County, N. Y., near White Plains, and two branch institutions, has placed the facilities and service of these institutions at the disposal of the government in time of war. The total capacity is approximately three hundred beds.

**American Gastroenterological Association.**—The twentieth annual meeting of this association will be held at the Hotel Traymore, Atlantic City, Monday and Tuesday, April 30th and May 1st, under the presidency of Dr. William Gerry Morgan, of Washington, D. C. Physicians are cordially invited. Dr. Franklin W. White, of 322 Marlborough Street, Boston, is secretary of the association and will be glad to furnish full information regarding the meeting.

**Assistant Director, Pathological Laboratories.**—The Municipal Civil Service Commission announces an examination for Assistant Director, Pathological Laboratories, for which application will be received up to May 1st, 4 p. m., at Room 1400, Municipal Building, New York city. From the resulting list appointments will be made at Bellevue and Allied Hospitals. The duties of this position are to assist in the direction of a pathological laboratory and to perform research work. For further particulars apply to the Municipal Civil Service Commission.

**Hospital Ships Sunk.**—Two British hospital ships have been sunk in the English channel. One, the *Gloucester Castle*, carrying a large number of wounded soldiers, was torpedoed on March 30th, but all were saved. Fifty-two persons went down with the other ship, the *Salta*, which struck a mine on April 10th. There were no wounded on board.

**State Health Department Offers Its Services to the Government.**—At the April meeting of the Public Health Council of the Health Department of the State of New York, ways and means were discussed by which the department could be of the greatest service to the Federal Government in the present war crisis. A resolution was adopted placing the council on record as offering the federal authorities all the facilities of the department.

**A Urological Institute to Be Established at the New York Hospital.**—By the terms of the will of the late James Buchanan Brady, the New York Hospital is named as a residuary legatee and will receive several million dollars, to be used to establish the James Buchanan Brady Foundation for a urological institute similar to that at the Johns Hopkins Hospital, which Mr. Brady endowed some time ago with \$200,000, and to which he bequeathed an additional \$200,000.

**Yale University to Establish Mobile Medical Unit.**—The corporation of Yale University has appropriated \$150,000 to provide a mobile military hospital unit, which will be made up of the clinical faculty and of medical students. Although in active service, the studies of the students will be carried on, and as these students are graduated they can become junior officers in the medical department. Yale is the first university in this country to adopt the plan, which has been followed successfully in the Italian army.

**Mobilization of Medical Resources of Massachusetts.**—An auxiliary committee of the Medical Committee for National Defense has been organized in Massachusetts for the purpose of mobilizing the medical resources of the State and to aid in obtaining officers for the army and navy medical corps and to arrange suitable instruction in medical military preparedness. Dr. R. P. Strong, of Harvard University, has been appointed chairman of the committee, and Dr. John Warren, secretary.

**Personal.**—Dr. Charles Baskerville, director of chemical laboratories, College of the City of New York, delivered an illustrated address at the Franklin Institute, Philadelphia, Thursday, April 19th, his subject being hydrogenation of oils.

Dr. George H. Clapp, president of the board of trustees of the University of Pittsburgh, has been appointed chairman of the research committee organized by the university to cooperate with the National Research Council.

**American Scientific Commission Sent Abroad.**—Six Americans have been sent to England and France to report on matters relating to the scientific aspects of the conduct of the war, as follows: Dr. Joseph S. Ames, Johns Hopkins University, aeronautical conditions; Dr. Richard P. Strong, Harvard University, camp sanitation; Dr. Linsley R. Williams, assistant health commissioner of New York State; George A. Hulett, Princeton University, chemistry of explosives; Dr. Harry Fielding Reid, Johns Hopkins University, scientific map making and photography from air planes, and Dr. George R. Burgess, of the Federal Bureau of Standards, metals suitable for guns and rigid dirigibles.

**American Proctological Society.**—Preliminary programs have been issued of the nineteenth annual meeting of this society, which will be held in New York, June 4th and 5th, with headquarters at the Hotel Astor. Dr. Alfred J. Zobel, of San Francisco, is president of the society, Dr. Granville S. Hanes, of Louisville, Ky., vice-president, and Dr. Collier F. Martin, of Philadelphia, is secretary-treasurer. The subject of Doctor Zobel's presidential address will be The Place of the Proctologist in a Diagnostic Group. In addition to the reading and discussion of scientific papers, rectal clinics will be held by Dr. Samuel Goodwin Gant and Dr. Jerome M. Lynch. Complete programs will be issued later.

**Synthetic Substitutes for Cocaine Not under Narcotic Law.**—The Treasury Department of the United States has announced that decision No. 2194, holding that any synthetic substitute for cocaine, alpha or beta eucaine, or their salts or derivatives, come within the provision of the Harrison Act, has been suspended and that such synthetic substitutes are not considered by the department as coming under the act.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, April 23d, Section in General Medicine of the College of Physicians, North Branch of the County Medical Society, Tuesday, April 24th, Medicolegal Society, West Philadelphia Medical Association, Academy of Stomatology, Mount Sinai Hospital Clinical Society; Wednesday, April 25th, County Medical Society; Thursday, April 26th, Pathological Society, Northwest Branch of the County Medical Society; Friday, April 27th, Neurological Society, Northern Medical Association, South Branch of the County Medical Society, Medical Club.

**American Association of Immunologists.**—The annual meeting of this association was held at the New York Academy of Medicine, April 6th and 7th, under the presidency of Dr. Richard Weil, of New York. Next year's meeting will be held in Minneapolis, Minn. Officers for the ensuing year were elected as follows: President, Dr. John A. Kolmer, of Philadelphia; treasurer, Dr. Willard J. Stone, of Toledo, Ohio; secretary, Dr. Martin J. Synnott, of Montclair, N. J. The council is made up as follows: Dr. Richard Weil, of New York; Dr. Arthur F. Coca, of New York; Dr. John A. Kolmer, of Philadelphia; Dr. A. Parker Hitchens, of Gleneden, Pa.; Dr. William H. Park, of New York; Dr. Martin J. Synnott, of Montclair, N. J., and Dr. Willard J. Stone, of Toledo, Ohio. At the close of the meeting the association unanimously adopted resolutions offering the services of the association as a body and of its members as individuals and the facilities of their laboratories to the Federal and the respective State governments.

**A General Medical Board of the Council of National Defense** has been named as follows: Dr. Franklin Martin, member of Advisory Commission, Council of National Defense, chairman; Dr. F. F. Simpson, chief of Medical Section, Council of National Defense, vice-chairman; Surgeon General William C. Gorgas, United States Army; Surgeon General William C. Braisted, United States Navy; Surgeon General Rupert Blue, United States Public Health Service; Colonel Jefferson R. Kean, director of Military Relief, American Red Cross; Dr. William H. Welch, professor of pathology, Johns Hopkins University; Dr. William J. Mayo, of Rochester, Minn.; Dr. Edward Martin, professor of surgery, University of Pennsylvania; Dr. Victor C. Vaughan, dean of University of Michigan, Ann Arbor; Dr. George H. Simmons, of Chicago; Dr. Richard P. Strong, professor of tropical medicine, Harvard University; Dr. Joseph M. Flint, professor of surgery, Yale University; Dr. Stuart McGuire, professor of surgery, University of Virginia; Dr. John Young Brown, professor of surgery, University of St. Louis; Dr. Charles H. Mayo, of Rochester, Minn.; Dr. Thomas W. Huntington, professor of surgery, University of California; Dr. Hubert A. Royster, of Raleigh, N. C.; Dr. Charles H. Peck, professor of surgery, University and Bellevue Hospital Medical College; Dr. Winford Smith, superintendent, Johns Hopkins Hospital; Dr. Frederic A. Besley, professor of surgery, Northwestern University; Dr. George W. Crile, professor of surgery, Western Reserve University; Earl Phelps, of Washington, D. C.; Dr. John M. T. Finney, professor of clinical surgery, Johns Hopkins University; Dr. Edward P. Davis, professor of obstetrics, Jefferson Medical College, Philadelphia; Dr. Edward C. Kirk, dean of Dental Department, University of Pennsylvania, Philadelphia. This board has been organized as an executive committee with eight subcommittees, and it is expected that these subcommittees will make a complete study of the medical and sanitary aspects of the war with a view to the best possible utilization of our military medical resources.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 709.)

In the last issue data from the U. S. Bureau of Chemistry's inquiry on the harmful effects of acetanilid, antipyrine, and acetphenetidin, conducted in 1909 by Kebler, Morgan, and Rupp, were presented, tending to indicate that the increased risk of fatal poisoning from the use by the physician of acetanilid instead of antipyrine or acetphenetidin is less than has generally been supposed. The difference between the three drugs in this direction being relatively slight, there seems little reason why the inexpensive acetanilid, under certain restrictions, should not be substituted by the physician for the other two agents, the cost of which is now so great as to be at times almost prohibitive—pure acetphenetidin, indeed, having of late been practically unobtainable.

Aside from the risk of fatal poisoning, however, that of milder poisoning, causing such unexpected effects as cyanosis, prostration, dyspnea, collapse, or skin eruptions is to be considered, and in this respect the difference in risk between acetanilid and the other two agents, especially acetphenetidin, appears to be greater than in respect of fatal poisoning. Upon careful examination of the abstracts of cases of poisoning collected by Kebler and his coworkers from medical literature, the relative frequency with which acetanilid has been reported to cause cyanosis and even collapse is apparent, though coupled with this is derived the impression that such effects are produced with a considerable degree of impunity as regards fatal termination, only a small proportion of those placed in a state of collapse by the drug having actually succumbed.

The cyanosis resulting from overaction of acetanilid or acetphenetidin has been considered due rather to a change in the hemoglobin of the blood to methemoglobin than to circulatory depression. Piccinini (1912) noticed experimentally in dogs, however, that discoloration of the blood due to laking occurred even after doses insufficient to induce methemoglobin formation, as shown by spectroscopical examination of the blood. A third factor, which he believes chiefly responsible for the cyanosis clinically observed, is thus introduced. His experiments showed, moreover, that both acetanilid and acetphenetidin cause a marked and persistent decrease in the total oxygen in arterial blood, while antipyrine causes at first an increase and only subsequently a decrease—the latter in general less pronounced than in the case of the other two agents, and never accompanied by detectable methemoglobin formation.

Clinically, cyanosis is encountered in almost every instance of acetanilid and acetphenetidin poisoning, the chief exceptions being cases in which some form of skin eruption is the outstanding feature. Anal-

ysis of the summary of literature already referred to shows that the least amount of acetanilid which may be expected in occasional instances to bring on cyanosis in adults—barring cases of marked idiosyncrasy—is five grains repeated every four hours for three, or at least two, whole days. Cases of cyanosis following these doses continuing for less than two days have occurred chiefly in patients with acute infections, such as typhoid fever, in whom the drug has been used for antipyretic purposes; in patients with albuminuria, and in children before or at puberty, for whom no reduction from the adult dose had been made. O. R. Summers in 1900 reported the case of a woman of twenty-six years who upon ingestion of eight grains of acetanilid in two doses taken at an interval of one half hour developed nausea, vertigo, dyspnea, deep cyanosis of the lips and finger tips, and collapse, with ultimate recovery. This, however, exemplifies an unusual degree of sensitiveness to the drug, and is hardly less exceptional than the case of fatal poisoning by acetphenetidin reported by G. L. Tobey in 1907. A girl of sixteen and a half years, in good general health but suffering from headache and a feeling that she had taken a cold, took two proprietary headache tablets containing this drug and went to bed; about two hours later she became cyanotic and soon after died, having presented signs of cardiac failure and edema of the lungs. Again, among the fatal cases of phenacetin poisoning elicited in the statistical inquiry of Kebler and his associates, we note instances of lethal action from five grain doses of this drug taken every three hours for not over six doses in a case of influenza; from two and a half grains every two hours up to twenty grains in a case of typhoid fever; from fifteen grains in twelve hours in a case of brain tumor, and even from two three grain doses taken two hours apart by a woman aged seventy-six.

In antipyrine poisoning cyanosis is an uncommon symptom. A wide variety of other disturbances have, however, been reported, including skin rashes, edema, symptoms of collapse, prostration, dyspnea, dizziness, coryza, stomatitis, temporary failure of vision, and suppression of urine. While formerly large single doses of antipyrine, such as fifteen or twenty grains, were frequently given, accounting for many of the reported cases of intoxication by this drug, smaller doses, such as five or ten grains, have repeatedly caused alarming symptoms. Among the five cases of fatal antipyrine poisoning discovered in Kebler's inquiry was one in which ten grains, followed in an hour by fifteen grains, had been taken for headache. In another, five grains had been taken every three or four hours for two days, the total amount being one dram.

On the whole, it seems clear that, while one should not deny the slightly greater risk attending the use of acetanilid, the difference between the effects of this drug and those of acetphenetidin and antipyrine are not such as to prevent the careful physician from



substituting the former for the latter under present conditions, at least in the majority of cases. That acetanilid may be successfully prescribed by the physician with little risk of ill effect is suggested by the report of G. Guttman, in 1887, that out of 248 cases in which the drug had been used he had met with but four instances of cyanosis of the lips and cheeks, uniformly disappearing within an hour. The cyanosis produced by acetanilid ranges from a mild bluish tint to an intense dark discoloration, and as a precautionary measure, directions should be given to discontinue its use without fail upon the least evidence of this condition. The doses employed should be moderate from the start and no attempt made to push the drug beyond ordinary doses where the expected therapeutical results fail to appear. In asthenic states and as an antipyretic acetanilid should preferably be avoided, as the risk, even from moderate doses, seems distinctly greater in these cases. Its action in reducing the oxygen carried in arterial blood contraindicates it in all cases associated with or tending toward partial asphyxia. In children, precise reduction of the dose according to age should not be overlooked. Finally, the possible unfortunate consequences of exceeding the dose ordered should be pointed out to the patient or his attendants.

(To be continued.)

#### Salvarsan and Neosalvarsan in Syphilis.—

Oliver S. Ormsby (*Journal A. M. A.*, March 31, 1917) writing from an experience of more than six years' use of these drugs says that no one will deny their remarkable influence on syphilis, but that they have disadvantages, the chief of which are: the difficulty of administration, the reactions and occasional untoward results, and the fact that they are not curative except in a small proportion of early cases. From five to fifteen per cent. of all injections of neosalvarsan are followed by some reaction, the proportion being somewhat larger with salvarsan. Early reactions are marked by flushing of the face, suffusion of the eyes, dyspnea, fullness in the head, and some precordial distress, usually lasting only a few minutes, but occasionally for some hours. At times vomiting occurs before injection is completed, at other times one to four hours afterward, when it is associated with chill, fever, nausea, headache, and diarrhea, all lasting a few hours. Rarely are the early reactions so severe as to cause apprehension. Delayed reactions occur from one to several days after the injection, begin with a chill, fever, nausea, and vomiting, and at times jaundice or a skin eruption appears in the severe cases. The more intense reactions are rare, but great caution must be observed in the future treatment of cases showing them. After every precaution to avoid them has been taken, reactions may still occur, and it can be shown that they are attributable mainly to individual susceptibility and to varying degrees of toxicity of the commercial drug. Traces of a toxic impurity have been found, and the severity of early reactions probably depends on the proportion of this material present. Such precautions should be taken in the use of these drugs as the following of a correct tech-

nic, the use of small initial doses—salvarsan, 0.1 or 0.2 gram, neosalvarsan, 0.2 or 0.3 gram—catharsis, and restricted diet preceding the injection. Each patient should be considered separately, as well as the stage and severity of his disease. In general he should receive from five to eight injections of salvarsan and twelve to twenty of mercury, or an equivalent in inunctions. The salvarsan injections should be at seven to fourteen day intervals, with mercuric chloride in fifteen milligram doses every other day, or the salicylate in doses of 0.6 to 0.12 gram weekly. A single course as above is usually sufficient if begun in the chancre stage; mercury should precede salvarsan in active syphilis and three courses should be given with intervals of six to eight weeks between; in tertiary and latent cases several courses are required, often along with potassium iodide. Both salvarsan and neosalvarsan give similar clinical results, but serologically the former seems the more efficient.

#### Surgical Treatment of Postpuerperal Sterility.

—H. S. Lott (*American Journal of Obstetrics*, March, 1917) calls attention to a condition, usually occurring in primiparae but sometimes later in the childbearing period, in which the patient complains of pain and of failure to conceive for several years. Inquiry elicits the fact that in the first week of the former puerperium a chill had been experienced, followed by fever for several hours, then a normal convalescence. Upon reappearance of the menses, their rhythm was irregular, with pain during the flow—the latter either scant or too free—and a moderate leucorrhœa just after the menstrual epoch. The appetite remained fitful and the food was not digested well, constipation and loss of weight resulting. The symptoms in such cases are the result of a mild pelvic infection, just sufficient to seal the fimbriae of the Fallopian tubes to the ovary and cause slight permanent injury to the appendix. Physical examination shows tenderness *per vaginam* to the right and left of the uterus, which swings free, and externally, likewise over the ovaries. In addition, the reflex epigastric discomfort ever coincident with appendix involvement is elicited. The patient suffers pelvic discomfort when walking and particularly when stepping downward, and experiences a pulling sensation when recumbent, especially if lying on the right side, sometimes sufficiently severe to prevent sleep. In such cases Lott makes a free right rectus or median incision, removes the appendix and frees any bands that may favor normal rotation of the cecum, lowers the patient's head, and gently frees the fimbriae, if welded to the ovary. If pain during menstruation has been marked, each fringed extremity may be carefully surrounded with gauze, the ostium abdominale exposed, and a filiform bougie passed to the uterine cavity to reestablish patency. A half pint of normal saline solution, to keep the fimbriae floating free for a short time, is introduced into the abdominal cavity just before closure. Clinical results from the procedure were gratifying, the pain points disappearing, ability to walk or lie on either side with comfort being restored, menstruation resuming its normal cycle without discomfort, and the patient gaining in weight.

**Purulent Sinusitis.**—William F. Clevenger (*Indianapolis Medical Journal*, March, 1917) says that habits and mode of living, as well as inherited physical characteristics, have influence upon sinus infections and are significant. Age must also be considered in connection herewith. Climatic effect upon the nose and its sinuses is marked. It is apparent that a changeable atmosphere, with or without excess of moisture, must have a directly irritating effect upon the mucous membrane of the respiratory passages, and influences this region especially through the vasomotor system. Chilling of the surface of the body, induced by rapid atmospheric changes, is responsible for many congestions in the respiratory tract, and this statement applies to poorly ventilated houses, overheated or underheated, and especially vitiated air during the hours of sleep. Variations from the normal of the nasal passages have much to do with practically all chronic sinus infections, as defective drainage means retention of secretions, and retention of purulent septic matter for any length of time results in permanent change in the mucous membrane lining the walls of these cavities. Treatment of sinusitis therefore is surgical and systemic. Regulation of irregular habits and correction of poor hygienic surroundings is entirely necessary in elimination of predisposing causes. It must be remembered that so called "colds" are simply, in all lingering nasal conditions, evidences in the vast majority of instances of sinus infections, significant or merely temporary from imperfect drainage or from faulty care of the body.

**Technic of Cervical Paravertebral Anesthesia.**

—A. D. Santoni (*Presse médicale*, February 1, 1917), testing the effects of solutions of varying tonicity in the production of conduction anesthesia, noticed that whereas hypotonic solutions yield a rapid anesthesia lasting, however, but one hour, hypertonic solutions acted more slowly but also more persistently. In most instances good anesthesia was obtained by infiltration with a solution of novocaine in one to 400 sodium chloride solution. In instituting cervical paravertebral anesthesia Santoni has the patient lie on the side, with the head slightly flexed so as to render palpable the seventh cervical spinous process. A line of intradermal infiltration is established three centimetres from the median line and, the seventh cervical having been located, the needle is introduced at a level five millimetres above it until the resistance of the transverse process is felt. The external border of this process is next groped for with the point of the needle and as soon as the bone is missed the needle is pointed 20 to 25° downward and introduced ten to fifteen millimetres further. The seventh cervical nerve has now been reached and three c. c. of a two per cent. novocaine saline solution are injected locally in all directions. The points of injection for the other cervical roots are, respectively, fifteen, thirty, forty-five, sixty, seventy, and eighty millimetres above that for the seventh. For operations on the arm the last four cervical roots and the first thoracic are injected. The last named, after emerging, winds round the neck of the first rib and passes in the infraclavicular space. To inject it the needle is introduced in the same vertical line as for the cervical

roots, but one fingerbreadth below the point for the seventh cervical. The needle, having come to a stop against the first rib, is carried to its inferior margin and introduced one centimetre further, after which the anesthetizing injection is made. The technic described gave excellent results. Not over thirty c.c. of the two per cent. novocaine solution should be used.

**Vaccine Therapy in Typhoid Osteomyelitis.**

P. Emile Weil (*Bulletin de l'Académie de médecine*, January 23, 1917) refers to the recently exemplified inefficiency of operative measures in curing typhoid osteomyelitis, very many cases of which have been seen in the European typhoid epidemic consequent upon the war. By means of vigorous treatment with stock vaccines, the author has obtained a large number of complete and rapid cures. In the five cases he reports the typhoid nature of the condition was proven either by determination of the bacillus in the pus or by the agglutination test. Three were cases of discharging costal osteochondritis and two of "closed" costal osteoperiostitis and osteochondritis. One patient, with the disease of two years' standing, after seven operations had been performed without success, was cured in three weeks. Another, ailing for eleven months, with three operations, was cured in one week. Improvement bordering on cure was noted in two weeks in two additional long standing cases, one plastic and the other suppurative. In the fifth patient the results were interfered with by a sequestrum, which required operative removal before the vaccine could be expected to cure. The vaccine injections were given twice weekly, the initial four doses being 0.25, 0.50, 0.75, and one c. c., with the latter amount continued thereafter. Slight general and local reactions followed. Similar results may presumably be expected in paratyphoid osteomyelitis from the corresponding vaccine. Proper differentiation of the organism responsible is, of course, a prerequisite for success.

**Intraspinal Injection of Insoluble Substances.**

A. Carniol (*Presse médicale*, February 15, 1917) points out that substances hitherto injected into the spinal canal have been soluble drugs which are largely absorbed at the level of injection owing to the marked permeability of the meninges from within outward, and have therefore not been adapted to the direct treatment of the cerebral tissues through circulation of the cerebrospinal fluid. By intraspinal injection of insoluble substances, however, he finds that distinct effects on cerebral disturbances can be produced. Thus, injecting intraspinally from 0.3 to 0.7 gram of calcium carbonate in suspension in one c.c. of distilled water or olive oil in cases of epilepsy, he noted a change in the condition of the patients such that, where two or five paroxysms had been experienced daily, intervals of five to eight days elapsed without a seizure. Preparations of nearly insoluble substances are advantageous in that, whatever their concentration, they do not become hypertonic. These injections sometimes induced headache, backache, and a rise in temperature to 99.3° or 101° F. lasting two days. The calcium carbonate is believed to have dissolved very gradually in the cerebrospinal fluid and thus come into contact with the cerebral cortex in a prolonged, steady manner. The absence of temporary paraplegic spinal

manifestations, such as had followed similar injections of the soluble calcium chloride showed that from the insoluble carbonate but little of the compound was absorbed directly at the level of injection. As a control test, lycopodium was injected intraspinally in two epileptics, with negative results. Injection of 0.5 gram of calcium carbonate in four women with chronic mania likewise gave no results. Injections of 0.3 to 0.5 gram of luminal in epilepsy caused manifest improvement without exerting an actual hypnotic effect. Mercury salicylate, 0.003 to 0.007 gram, was injected in aqueous suspension in syphilis of the central nervous system. Little reaction followed; sufficient time for therapeutic effects had not as yet elapsed at the time of writing.

**Zinc Chloride in Uterine Hemorrhage.**—H. J. Boldt (*Journal A. M. A.*, March 17, 1917) has found the proper application of zinc chloride to be a very satisfactory method of controlling and curing the hemorrhage resulting in cases of uterine myoma and metrorrhometritis. It is applicable in those cases not suitable for operation, not demanding it, or in patients who refuse it. From five to ten drops of a fifty per cent. solution or somewhat more of a ten to twenty per cent. solution should be brought into close contact with the uterine mucosa by being slowly injected into a strip of gauze previously wrapped around an intrauterine syringe applicator and inserted into the uterus. As the solution is expelled the applicator should be withdrawn to secure even distribution and special care must be taken to avoid getting any of the solution in contact with the cervix. Following the instillation of the fluid the remainder of the gauze strip should be firmly packed into the uterus and a string tied to the free end to permit its removal by the patient. This should be done after about three days. From four to twelve applications usually suffice to produce amenorrhea. In milder cases pure phenol may be used in place of the zinc chloride.

**Paralytic Deformities of the Feet.**—Charles R. McClure (*Northwest Medicine*, February, 1917) discusses some of the more important functions of the feet with reference to the treatment of paralytic deformities and states that treatment by apparatus or braces is irrational and unsuccessful. The treatment should be designed to correct deformity, or to avoid it and to restore stability to the joint or joints with the preservation of as much normal motion as possible. The mildest means for correcting deformity is the one to be used in each case. The methods include manual stretching, stretching by plaster or apparatus, stretching under anesthesia, tenotomy, fasciotomy, myotomy or osteotomy. Function should be improved by such procedures as tendon transplantation, preferably into periosteum or bone; the use of silk tendon extensions; tendon shortening, or tenodesis—the implantation of both ends of a tendon so as to make it function as a ligament. For the production of stability it may be necessary to resort to arthrodesis or astragalectomy. By adapting one or more of the methods mentioned the majority of cases of paralytic deformity of the feet can be restored to a very satisfactory degree of function and usefulness.

**Encapsulated Empyema.**—Astley P. C. Ashhurst (*Southern California Practitioner*, February, 1917) does not consider it a good plan to refuse to operate when the needle fails to reveal pus at the time set for operation if pus has previously been found. In operating, local anesthesia is to be preferred, the intercostal nerves above and below the ribs to be resected being blocked with an injection of the anesthetic fluid, preferably novocaine or cocaine. For an abscess of the lung thoracotomy is preferred to the production of an artificial pneumothorax by Forlanini's method as the former gives the better opportunity for locating and draining the abscess.

**Enterostomy.**—John Wesley Long (*Journal A. M. A.*, March 17, 1917) describes a simple and perfectly effective method for performing enterostomy in cases of intestinal obstruction. It consists, in brief, of placing a pursestring suture in the distended intestine and slowly opening the gut by means of the pencil point of a cautery, followed by the insertion of a soft rubber tube and the tying of the suture with inversion of the intestinal edges. The omentum should then be stitched to the intestine about the tube. The method is rapid and completely prevents soiling of the peritoneum by leakage as well as providing for the prompt healing of the wound after the need for drainage has passed.

**Primary Suture in Wounds of the Soft Parts.**—H. Barnsby (*Presse médicale*, February 15, 1917) states that, in treating wounds at the front, at first he opened them up without ever suturing, later he adopted the plan of secondary suture after the use of Dakin's or magnesium chloride solution, and finally, in May, 1916, attempted primary suture in patients seen within a few hours after the injury. Only extrafascial wounds of the soft parts, or superficial, tangential, intramuscular wounds that can be well opened up are considered. In these the procedure to be followed consists in complete excision of the margins and track of the wound, removal of foreign bodies and all necrosed tissues, partial myectomy if the wound is subfascial, painstaking hemostasis, washing with ether, and interrupted suture without drainage or with a small drain at the lower angle of the wound if there is the least oozing of blood. Among 312 cases thus treated, 294 healed by first intention. In the remaining eighteen the sutures had to be cut and secondary healing awaited, without the least harm to the wounded. Primary suture is indicated whenever a wound of the soft parts has been sustained less than ten hours before and is sufficiently superficial so that its fundus and the smallest recess may be seen and peeled out. Careful asepsis and a competent surgeon with good armamentarium and assistants are required. Postoperative observation of the wounded for a certain period is also necessary. In recent but deep wounds of the soft parts, with large muscle perforations, or accompanied by osseous injuries, as well as in wounds received over fifteen hours previously or clearly infected, intermittent irrigation with Dakin's solution should be preferred, bacteriological control determining the proper time for secondary wound closure.



**Community Treatment of Malaria.**—A. J. Ochsner (*Journal A. M. A.*, March 17, 1917) points out that the cure and prevention of malaria in localities in which it is endemic has been unsatisfactory, but that it is easily feasible to accomplish both of these ends by the following plan of attack. For the cure of the infected individual: Prescribe hot soup as an exclusive diet for a period of ten days during treatment. Give sixty mils of castor oil on the evening of the first day and begin at 6 a. m. the next day with a capsule of 0.13 gram of quinine bisulphate, with the capsule top removed, and given with half a pint of hot water. This dose is to be repeated every two hours night and day until thirty have been taken. Be absolutely sure not to miss a dose, thereby maintaining an adequate concentration of quinine in the bloodstream throughout. Give absolutely no quinine for the next six nights and five days, but give a pill of one milligram of arsenious acid every three hours from 6 a. m. to 6 p. m. daily. On the evening of the fifth day repeat the castor oil and the next day repeat the course of quinine just as before. Follow by the administration of tonics and simple, nourishing food. For prevention employ adequate screening and remain away from the places in which mosquitoes abound.

**Quinine in the Prophylaxis of Malaria.**—James Cantlie (*Journal of Tropical Medicine and Hygiene*, January 15, 1917) quotes various observers who have had doubts as to the efficacy of quinine in malarial prophylaxis, and states that his own belief on this point has likewise been gradually growing toward conviction. In fact, he never now prescribes quinine by itself, either as a prophylactic or remedial measure. In chronic malaria as met with in Great Britain he believes the advantages of combining quinine with arsenic, opium, and calomel are convincing and undoubted. Thus, a man from West Africa with spleen extending three fingerbreadths below the ribs took five to fifteen grains of quinine daily in England for four months, without improvement. When given a pill of quinine hydrochloride, three grains; arsenic trioxide, 1/24 grain; compound soap pill (B. P.), one grain, and calomel, 1/12 grain, to be taken twice daily for a week and afterward once only, he returned in a month with the spleen imperceptible to the touch; he had no "low fever," had gained in weight, and felt well. Without opium the efficacy of quinine and arsenic is lessened, and mercury also plays a definite part in the cure. More frequently, however, Cantlie gives compound ipecac powder, three grains, in place of the compound soap pill, one grain, already mentioned. The powder is given in a cachet or suspended in water or milk. If the pill—more easily carried—is used, it should be split to its centre with a knife before being taken, to insure against its passing through unabsorbed. The combination might be objected to as a prophylactic on the ground that the arsenic would in time cause intestinal catarrh, necessitating discontinuance. Practice has not thus far justified this objection. Among a number of men under observation taking the combined drugs, whether old malarial subjects or freshly exposed, none has as yet had recurrences of malarial attacks.

**Vasoconstrictor Action of Sodium Nucleinate in the Kidney.**—Busquet (*Presse médicale*, February 15, 1917) reports experimental work which showed that a dose of 0.00005 gram per kilogram of animal sodium nucleinate exerts a vasoconstrictor action on the kidney. This action is selective in this organ and does not appreciably extend to other vascular areas. It is due to a direct effect of the nucleinate on the walls of the renal vessels or upon the peripheral sympathetic ganglia, without any necessary intervention of the vasomotor centres in the brain and cord. Deterioration of the sodium nucleinate solution, with liberation of the phosphoric acid, does not prevent the solution from causing renal vasoconstriction.

**Typhoid Fever in Children.**—George C. Sincereaux (*New York State Journal of Medicine*, March, 1917) states that prophylaxis and sanitation are the most important phases of the treatment of typhoid fever and should include measures to avoid the chief sources of infection, the isolation of patients, adequate disinfection of the excreta, investigation of the sewage, and the provision of a good water supply. The room in which the patient is confined should be cheerful, airy, quiet, and free from odors. Baths and sponges should be given for cleanliness as well as for the reduction of fever. The teeth and mouth should be kept clean. Nothing but sponges should be used for the control of the fever and an ice cap should be used only when the fever is very high. Oil enemata are usually sufficient for constipation. Collargolum or colloidal silver may be given in capsules in doses of thirty to sixty milligrams every six hours, and salol in doses of sixty to 120 milligrams every four hours. An abundance of boiled water should be allowed and the diet should consist of milk, broths, gruel, eggnog, well cooked cereals, orange juice, and home made ice cream containing eggs, milk, and lactose.

**Mesothorium Treatment of Eye Diseases.**—N. J. Cuperus (*Archives of Ophthalmology*, March, 1917) says that in many cases of eye disease where the usual remedies are without avail, treatment with radium or mesothorium is favorable, particularly in chronic blepharitis, chronic inflammations of the conjunctiva, cornea, iris, or vitreous. Vision is not improved in old opacities of the cornea, although the opaque areas become less dense. The proper moment at which to begin treatment is the one when nothing further can be accomplished by the usual methods of treatment. One or two treatments are sometimes followed by a surprisingly good result. The treatment should be applied cautiously if the keratitis or iritis is acute and painful. No analgesic action was observed. A rather important point is that even if the eyes are kept quiet during the treatment the application of these remedies is sometimes followed by an unpleasant irritation which may last for months. The writer's method of procedure is to cocaineize the eye and then apply the remedy directly to the cornea for from four to fifteen minutes, while the lids were held apart with the fingers, if an action was desired on the interior of the eye. The length of time depends on the reaction that followed a previous treatment.

# Miscellany from Home and Foreign Journals

**Tuberculous Glands of the Mesentery.**—Arthur T. Jones (*American Journal of Obstetrics*, March, 1917) urges that in children and young adults with a history of right sided abdominal pain, inflamed mesenteric glands should be always considered a possibility. In five of his nine cases, intestinal obstruction was the condition indicating operation. In two cases no histological evidence of tuberculous infection could be detected in the specimens, the primary condition apparently being a chronic appendicitis. Jones believes the mesenteric gland inflammation, however, often to be a primary disease of true tuberculous type. In many children the bovine type is undoubtedly present, but does not produce symptoms, the glands remaining quiescent or tending to subside. Correct anteoperative diagnosis is not, as a rule, possible, unless glands are palpable through the abdominal wall or by the finger in the rectum. Tuberculous glands may exist without causing symptoms, the latter usually being due only to complications which occur when the glands are beginning to break down. Two clinical types may be recognized: a slightly progressing one, generally with palpable glands; and an acute, fulminating type, usually simulating appendicitis, from which differentiation is generally impossible. In the subacute stage, the prognosis without operation is good. In the acute stage, an exploratory laparotomy should be done, but the glands not removed unless there are definite indications in the way of adhesions, ulceration, or a mass of such size as to cause pain or distinct obstruction. When the glands begin to break down the symptoms may be those of tuberculous peritonitis, intestinal obstruction, or acute appendicitis. The glands are most frequently found in the right lower quadrant, for three reasons: the delay in the passage of the food when it reaches the cecum; the great number of organisms there; and the general frequency of inflammation in this region.

**Nervous and Psychic Disturbances Due to Concussion.**—Henri Aimé (*Presse médicale*, February 22, 1917) asserts that whereas, in the first six months of the European War nervous disturbances arising from concussion were as a rule evanescent, the inauguration of fixed trench warfare led to the development of a more serious and almost unvarying concussional syndrome. Among 168 cases, however, he recognizes six different groups: 1. Twelve cases of mutism with or without deafness and with or without true auditory lesions. Most of the cases of uncomplicated mutism recovered spontaneously or under reeducation and reassuring words. 2. Twenty-one cases of painful concussion, with frontal headache persisting for months, mental depression preventing sustained work, slight dizziness, unsteadiness in the standing position, and unilateral deafness, slowly recovered from. 3. Seventeen cases of labyrinth concussion of all grades, from a simple dazed condition to marked ataxia and astasia abasia. 4. Fifty-four cases of the typical concussion syndrome, characterized by mydriasis persisting from two weeks to sev-

eral months; exaggerated tendon reflexes persisting three days to two weeks; cutaneous hyperesthesia; marked vasomotor disturbances with acrocyanosis and paroxysmal sweating of the hands and feet, persisting for a number of weeks; apathy and aboulia for the first few days, followed by hypermotivity, pusillanimous fears, and sometimes irritability and a lachrymose tendency; interrupted sleep or insomnia. 5. Forty-seven cases of mental confusion, with lacunar amnesia, oneiric delirium and agitation, and cataleptiform attitudes, occurring especially in artists or professional men, and always in subjects showing evidences of former alcoholism or of functional defects in the abdominal organs or ductless glands. 6. Seventeen cases of miscellaneous disturbance, such as persistent extrasystoles, localized and transitory paralyses, convulsions which would formerly have been qualified as hysterical, and a variety of sympathetic disturbances due to partial burial under masses of earth, including persistent meteorism, regurgitations, hiccough and aerophagia, sweats, loss of abdominal skin reflexes, constipation, attacks of enuresis, etc. In the asthenic type of case, epinephrine and strychnine were used in large doses with benefit, even in the cases with labyrinthine neuritis. Dietetic and physical measures proved useful in confusional states, sedative drugs being carefully avoided. Mutism was sometimes overcome, after a necessary period of watchful expectancy, by sudden, active stimulation of phonation by means of inhalations and of ether injections.

**Etiology of Gastric and Duodenal Ulcer.**—G. A. Friedman (*Archives of Diagnosis*, January, 1917) points out that none of the theories thus far advanced to account for the frequent development of peptic ulcers has proven satisfactory. Thus, while stasis in or disease of the gastric vessels, embolism, thrombosis, or arteriosclerosis occasionally lead to ulceration, they are by no means the common causes. Friedman favors rather the view that ulceration results from nerve irritation, this causing spasm of the smallest vessels in the gastric or duodenal walls, or even occlusion of these vessels through spastic contraction of the musculature surrounding them. The symptoms and signs usually found in peptic ulcer show a marked similarity to those of vagotonia or sympathicotonia, the underlying cause being in each case a disturbance in the vegetative nervous system. Gastric ulcer cases frequently show symptoms of vagotonia, duodenal ulcer more often those of sympathicotonia. Other suggestive facts are the susceptibility of these patients to drugs acting selectively on the vagus and sympathetic; the resemblance of the blood picture of duodenal ulcer to the polyglobulia and eosinopenia noted after experimental adrenaline injections, and the frequent resemblance of the blood picture of pyloric ulcer to that of hyperthyroidism. Bearing in mind that the vegetative nervous system is the regulator of the glands of internal secretion, and that, as shown by Asher, a vicious circle may be set up between the vegetative nervous system and one of the ductless



glands, Friedman supports the theory of a disturbance in internal secretions as the usual cause of peptic ulcer. Experiments performed by him are summarized as follows: 1. Adrenal insufficiency causes lesions or ulcers in the stomach in various species of animals. 2. An excess of thyroid, produced by repeated intravenous injections, was probably responsible for the gastric lesions in three out of four animals experimented upon. 3. Thyroid hypofunction caused duodenal and gastric lesions. 4. Excess of adrenaline by repeated injections led to duodenal lesions in dogs and rabbits. 5. Simultaneous adrenal and thyroid hypofunction did not lead to any lesion in the stomach, nor in the duodenum of rabbits. 6. When, after removal of an adrenal, the other occasionally became hypertrophied, lesions were seen in both viscera in rabbits.

**Acute Appendicitis.**—Paul F. Morf (*Journal A. M. A.*, March 24, 1917) presents some of the results of an analysis of 822 cases of acute appendicitis submitted to operation. The total mortality was slightly over seven per cent., but of the fifty-eight patients dying seventeen had general peritonitis at the time of operation. Excluding these deaths as not being due to operative treatment of acute appendicitis, the mortality for the series fell to slightly below five per cent. This emphasizes the importance of operating before this serious complication develops. A total of 445 patients were operated upon for simple acute appendicitis and of these only five died, giving a mortality of a trifle over one per cent. Of 266 patients operated upon for acute appendicitis with suppuration, gangrene, or perforation, and abscess only six died, giving a mortality of 2.2 per cent. On the other hand there were 127 patients with gangrenous appendicitis without abscess formation, in which group the mortality was 5.5 per cent. This showed that the fact of abscess formation should be regarded as an indication of some degree of resistance on the part of the patient.

**Spontaneous Rupture of the Right Auricle.**—P. R. Joly (*Bulletin de l'Académie de médecine*, February 27, 1917) reports the case of a man thirty-two years of age who had been wounded in the buttock and perineum by a shell fragment, a perineal fistula forming and remaining open for about six months. At the end of this period, severe manifestations of cardiac impairment were noted. Medical treatment proved temporarily beneficial, but about a month after the closure of the fistula the patient suddenly expired. Autopsy showed an enormous clot in the pericardium, a ragged opening nearly the size of a silver quarter in the wall of the right auricle, marked dilatation of the other heart cavities, patches of thickening and induration on all parts of the mitral valve, an aneurysm of this valve, and long, cauliflower vegetations on the aortic leaflets. The ascending infection from the perineal wound is believed to have originated the heart lesions. The combined action of stenosis and insufficiency of the mitral and aortic valves, of the hypertensive influence of infectious renal sclerosis, and of tricuspid insufficiency caused a rise of pressure in the right auricle greater than in any other portion of the heart, the wall of this auricle finally yielding. Coronary sclerosis also existed.

**Stethoscope Attachment.**—David S. Hillis (*Journal A. M. A.*, March 24, 1917) describes a simple device for the fixation of a stethoscope to the head of the surgeon by means of a band similar to that employed for the usual head mirror. The band passes from the front to the back of the operator's head and the bell portion of an ordinary stethoscope is attached to it through a ball fixed to the bell by a short spiral spring. The ball fits the universal joint used for the mirror. This arrangement permits the surgeon to attach the instrument and adjust it before his surgical preparation and holds the instrument in position for use in listening to the fetal heart sounds, yet out of the line of the operator's vision. The method of attachment actually increases the clarity with which these heart sounds can be heard through the aid of bone conduction by the metal parts.

**Relation of Type of Organism to Type of Meningitis.**—Alexander Mills Kennedy and C. C. Worster-Drought (*British Medical Journal*, February 24, 1917) state that they have studied twenty-three cases of cerebrospinal fever with a view to correlating the type of the disease with that of the causative organism. They followed the classification given by Gordon for the types of organisms. Eight cases were observed which were infected with the type I coccus and all were extremely severe, six being fatal. In five of the patients the onset had been sudden and all were delirious or unconscious when admitted to the hospital. In sharp distinction to this type were the eight patients with type II coccus, all of whom recovered, and only three of whom were severe, none fulminating, four moderate, and one abortive. There were six cases infected with type III coccus, two of which were very severe with fatal outcome, and four were only of moderate severity, of which only one ended fatally. The onset was generally subacute. No cases with type IV infection were seen.

**Trinitrotoluene Poisoning.**—H. S. Martland (*Journal A. M. A.*, March 17, 1917) reviews the salient features of this comparatively new form of intoxication and reports the necropsy findings in two cases developing in this country. He points out the striking facts that the majority of cases have occurred in persons less than eighteen and over fifty years of age and that the symptoms almost always develop between the fifth and sixteenth weeks of exposure. The first patient was twenty-four years of age and manifested his first symptoms after exposure for seven weeks. He complained of obstinate constipation, abdominal cramps, tenderness in the liver area, nausea, vomiting, and progressive prostration. He showed a progressively deepening jaundice, low delirium, and anuria, and died in coma. At necropsy the striking feature was a toxic hepatitis with extensive destruction of the liver parenchyma, which showed extreme fatty degeneration, necrosis and autolysis of the liver cells. The second case was atypical in the development of a profound anemia with hemorrhages from the mucous and serous membranes, delirium, fever, coma, and death. Necropsy features were multiple hemorrhages, excess of pigment in the spleen, and the replacement of red bone marrow by fat tissue.



# Proceedings of Local and National Societies

## SOUTHERN MEDICAL ASSOCIATION.

*Tenth Annual Meeting, Held at Atlanta, Ga., November 13, 14, 15, and 16, 1910.*

The President, Dr. ROBERT WILSON, JR., Charleston, S. C., in the Chair.

*(Concluded from page 718.)*

**School Inspection by the County Health Officer and How to Secure a Correction of Defects.**—Dr. D. E. SEVIER, of Asheville, N. C., stated that all county health officers should have the assistance of an efficient and sympathetic trained nurse that she might follow up defective children and explain to the mothers the great importance of having an early correction of the defects. When possible a free dispensary should be established in order that people unable to pay for an operation could have their children's defects corrected. When a child with pronounced defects could be selected, the corrections made, and improvement demonstrated, this could be thoroughly explained to other parents and would cause them to consent readily to having corrections made in their children. The most important factor of all was to have the cooperation and assistance of a tactful teacher, who could accomplish more in the way of securing correction of defects than any one connected with this great work.

**Local Health Work Under State Board Supervision with Special Reference to School Inspection and Typhoid Fever.**—Dr. G. M. COOPER, of Raleigh, N. C., chief of Bureau of Rural Sanitation, North Carolina State Board of Health, summarized as follows: 1. When a county contains a city of more than 10,000 people, there should be a thoroughly organized health department with a graduate physician in charge who has had experience in public health work. There should be at least four school and public health nurses, a food inspector, and a second physician to look after medical cases. 2. Where the above resources do not exist, and especially in small, poor counties, certain units of health work can best be done under State board supervision. This is true of the following units: school inspection; typhoid vaccination, including all soil pollution control; and quarantine of contagious diseases. This arrangement makes for low per capita cost, effective work, and efficiency, and dissociates health work from petty politics. 3. With increasing demand on the part of the public for medical inspection of schoolchildren, no time should be lost in devising a standard for this class of work. A free dental and medical dispensary with the county as unit ought to be provided for. The free dental clinics in Detroit cost \$30,000 a year. The country children of the South need this service as urgently or more so than the city dwellers of the North. 4. An analysis of reports from 1,099 practising physicians in a State where the State itself had administered antityphoid vaccine to 100,000 people and only four deaths are reported following the three treatments proves conclusively that if three complete

treatments of a fresh, properly prepared and properly preserved vaccine are given in maximum doses at least every two years the protection is equal to that given by smallpox vaccine against that disease. 5. Any method that gets 130,000 people out of a population of 670,000 to quit their work and pleasure to go miles to attend a public health dispensary, 100,000 of them three times, is worthy of serious consideration. These 130,000 people may be depended upon to regard public health measures in an entirely new light. Twenty-one counties during a period of sixteen months appropriated direct to the State Board of Health a sum exceeding \$12,000 to supplement the funds of the board. A dollar from a county will do just as much as a dollar from the General Assembly provided it is expended with the same scrupulous care.

**A Simplified Technic in the Application of Schick's Reaction for Testing Immunity to Diphtheria.**—Dr. WILLIAM LITTERER, of Nashville, Tenn., read a paper on this subject, a summary of which appears on page 517 of the March 17 issue of the JOURNAL.

**Treatment of the More Common Fractures.**—Dr. LUCIUS E. BURCH, of Nashville, Tenn., directed attention to the following points in the treatment of fractures: 1. Always compare the injured with the uninjured member. 2. Check up the diagnosis with x ray pictures taken anteriorly, posteriorly and laterally. In young children have an x ray made of the uninjured member for the purpose of comparison. 3. Remember that splints are merely for the purpose of immobilization and not for reduction. The Hodgen's splint is an exception to this rule. 4. Use an anesthetic when reducing fractures. 5. Avoid tight bandages. 6. The majority of the common fractures when properly reduced give little pain and are easily kept in position by simple splints. 7. Massage and passive motion should be started at an early date.

**Diaphragmatic Hernia.**—Dr. JAMES F. MITCHELL, of Washington, D. C., said that diaphragmatic hernia was a condition which might be either congenital or acquired. The diagnosis depended upon the history and physical examination. The majority of cases had been discovered only at autopsy. Many gave no symptoms during life. Giffin stated that in 650 cases the diagnosis was probably correctly made during life in only fifteen. Congenital or traumatic hernias might exist for many years without trouble, but sooner or later there arose symptoms of obstruction or inflammation which demanded surgical intervention.

There were two routes of approach, the thoracic and the abdominal. Each had its advantages, and in some cases the two must be combined. It was asserted by advocates of the thoracic route that adhesions could be more easily separated and the diaphragm more readily sutured through the pleural cavity. In acute injuries the abdominal route offered the advantage of better inspection and safer

repair of wounds of the abdominal viscera. The thoracic route was indicated in recent stab wounds which had penetrated the chest, and the nature of the incision depended largely on the wound. Simple enlargement of the wound with resection of a rib or two might be all that was necessary to enable the operator to replace the displaced abdominal organs and repair the injured diaphragm. He reported a case which illustrated a successful repair of a diaphragmatic hernia by the abdominal route and had many interesting features.

The results of recent operations for diaphragmatic hernia showed that older statements did not hold good at the present time, and present results could not be based on past statistics. Scudder, in 1912, stated that fifty-three operations had been done for diaphragmatic hernia. In eleven cases the operation was through the thorax; seven recovered and four died. In forty-two the operation was through the abdomen; seven recovered and thirty-five died. The diagnosis was made before operation in only six of the cases. This would give fourteen recoveries and thirty-nine deaths in fifty-three operations, a mortality of 73.6 per cent. On the other hand, taking the more recent cases the author found ten recoveries in eleven operations. Taking into consideration the fact that successful cases were more apt to be reported than failures, it was quite evident that the operation under present methods offered an excellent chance of success.

**Radical Versus Conservative Operation upon the Pelvic Organs.**—Dr. C. N. COWDEN, of Nashville, Tenn., stated that the desirability of applying conservative surgery to the Fallopian tubes after pus formation was a question that had come up for settlement with the profession. Under conservative surgery patients had been known to recover and become pregnant afterwards, but those cases were rare exceptions, and secondary operations for infected stumps were very frequent. Where he had a choice, he was in favor of total and complete ablation of pus tubes down to the horn of the uterus. Really conservative operation on the tubes he would limit to a very narrow field. In cases of tubal pregnancy in the outer half where there had been no great destruction of the tissues, in cases of non-gonorrheal inflammation with delicate occlusions of the fimbriae at the extremities, and in a few cases of pelvic peritonitis with adhesions that produced a hydrosalpinx or kinking of the tubes, a resection was sometimes admissible. Even in those cases, however, salpingoscopy did not remove all the difficulties, for the uterine portion of the tube was often occluded and did not open after incision and drainage from the other end, or more inflammation and more occlusion was caused by the procedure than already existed.

Conservative surgery on the ovary meant the preservation of the function of the ovary and the avoidance of the premature menopause with all its attendant evils, and this was an important consideration to the patient. In reaching a decision as to the extent of the proposed operation individual conditions and circumstances must be considered. In a young woman with no children or before the full development of the generative organs, Doctor

Cowden adopted a far more conservative procedure than in the case of an older woman. If the patient said above all things she wished to retain the menstrual function and the chance of conception everything should be done to preserve this function, in so far as it would not endanger her life. If investigation based upon careful personal observation showed that the morbidity after conservative pelvic surgery was so great as to require an unwarranted number of secondary operations, then radical work should be adopted and the conservative work rejected in a large number of our cases.

**Some Inconsistencies in Surgical Technic.**—Dr. J. SHELTON HORSLEY, of Richmond, Va., said the most frequently performed abdominal operation was appendicectomy, and any inconsistency in the technic should be of interest. The treatment of the stump of the appendix was a matter of some importance, although fortunately Nature had so abundantly provided for blood supply in the region of the cecum, that almost any kind of treatment would be successful in the majority of cases. A frequently employed method of treating the stump of the appendix was to ligate it and bury it with a purse-string suture. He formerly used this method, but he found it gave more pain, and he believed was more dangerous than the simple ligation and disinfection of the stump, so for some years he had used the latter method entirely.

The objections to burying the stump were as follows: 1. It is more complicated than the simple ligation of the appendix, an intestinal suture being used in addition to the ligation. 2. The pursestring suture cuts off some of the blood supply which would otherwise go up to the ligated stump and assist in healing. This also diminished the resistance of the tissues. 3. It places a piece of necrotic tissue, the stump, in a closed cavity, and shuts it off from the omentum which would not only help to absorb the stump, but would also be a safeguard against infection. 4. By burying the stump and cutting off some blood supply, a greater hyperemia is caused than when the stump is simply ligated; consequently, the adhesions that occur are more likely to be permanent, for when the stump adheres it is absorbed. 5. It offers an excellent place for abscess formation, having most of the requisites, i. e., a closed cavity, diminished blood supply, a piece of necrotic tissue, and being almost totally surrounded by fecal contents of the cecum. 6. It tends to leave a permanent lump in the bowel wall, which will be a constant source of irritation and a possible starting point for cancer.

**A Lump in the Breast.**—Dr. E. B. CLAYBROOK, of Cumberland, Md., stated that it was now twenty-two years since Halstead published his technic for the first really radical operation for cancer of the breast. During this time there had been many modifications and improvements in technic and so much had been added and so many refinements adopted, that we could hardly expect to lower the mortality rate by any further advances in surgical technic, and were therefore forced to look to the problem of earlier operation if we were to gain that end.

During the period from 1903 to 1914, it was found that the general death rate from all diseases



had decreased 15.3 per cent., while the general cancer rate had increased seventeen per cent.; the rate for cancer of the female genital organs had increased twenty-four per cent.; that for the stomach and liver, twenty-six per cent., and the increase for cancer of the breast was 46.4 per cent. During 1914, 8,139 women died from cancer in this country, while for the same year the general death rate from all causes, as compared with 1913, was lowered 3.3 per cent.; the rate for cancer of the breast was 12.5 per cent. higher than for the previous year. During 1914 the rate for all forms of cancer only increased 0.6 per cent., while the rate for cancer of the stomach and liver decreased 2.8 per cent., and the rate for cancer of the peritoneum, intestines, and rectum decreased 3.6 per cent. It was therefore seen that in spite of surgical advances and educational propaganda, we were steadily and progressively losing in the battle with this dread disease.

To his mind, the chief difficulty lay not with the woman and not with the family physician, but with surgical literature and with those responsible for it. If the general practitioner and through him the woman, was led to believe that there was a definite clinical picture and course by which cancer, as cancer, could be recognized, we could scarcely blame them if they believed the false teachings of those who were supposed to know what they were talking about.

If cancer was to be diagnosed early, it must first be realized that there was no early symptom of cancer except a lump—that was all, a lump in the breast. If it was fixed, if there was pain, if there was glandular involvement, if there was a retracted nipple or ulceration, the diagnosis was easy; but the doom of the patient was already sealed. We should say to all practitioners and to all women that any lump in the breast was potentially, if not actually, malignant. The breast should be sacrificed and the axilla cleaned out regardless of any considerations. If this is done, it would not be long before cancer statistics would be different, and the woman with a lump in her breast would not hide it from her friends and from her doctor, but would come and have it out, just as she had been educated to do in the case of her appendix.

**Neglected Appendicitis.**—Dr. JERE L. CROOK, of Jackson, Tenn., stated that the campaign of education as to the cause, nature, and treatment of appendicitis was practical, feasible, and desirable. It should begin with the medical profession and every medical meeting should make its publicity propaganda a leading feature, with papers on the subject read and discussed in joint sessions of physicians and surgeons. It should be enthusiastically supported and promoted by the press and philanthropic organizations everywhere. He was confident that the task of teaching the people that this disease was a surgical one and demanding prompt operation, would be far easier than convincing them that pure air and good food cured consumption.

By the time the people had learned their lesson we might expect to have the diagnosis and treatment so standardized in the minds of internists and operators, that the so called medical treatment of appendicitis would be but a doleful memory, and

neglected cases would be only in those patients who refused to heed the advice of their physicians and who had closed their eyes and their ears to facts set forth by the campaign to teach the people the nature and treatment of this worldwide disease.

**Suction Drainage in Empyema.**—Dr. ALEXIUS MCGLANNAN, of Baltimore, Md., stated that suction drainage in empyema began with the work of Potain in 1869 and that of Playfair in 1872. His paper was based on an experience with twenty-four cases of acute empyema treated by suction drainage. For comparison he had taken the same number of cases which were treated by ordinary drainage during the years immediately preceding 1914. Four patients died, a mortality of about seventeen per cent. In one of the fatal cases the empyema was part of a general pyemia following lateral sinus thrombosis, and in another death was caused by a complicating cerebral abscess. The mortality rate in the earlier series was twenty-five per cent., and here again one fatal result was due to cerebral abscess. Both cases of cerebral involvement were proved by operation, and in one case an autopsy showed a hemorrhage about a thrombus at a distance from the abscess.

There were no fistulæ or secondary operations in the suction cases. In the earlier series there were two cases requiring secondary operations. The average time required for complete healing with suction drainage was thirty-eight days. Omitting the two cases in which secondary operation was required, the average time of healing with ordinary drainage was eighty-four days. The advantages of suction drainage in acute empyema were: 1. The pus was carried directly from the chest cavity into a receptacle, thereby avoiding frequent change of dressings. 2. The expansion of the lung was accelerated as evidenced by the shorter period of convalescence, thirty-eight days as against eighty-four with ordinary drainage. 3. Chronic empyema was avoided.

**New Growths of Clitoris.**—Dr. W. W. BATTEY, Jr., of Augusta, Ga., said that the treatment of this condition was operation. In the benign growths the simple removal of the tumor would suffice; but in the malignant growths the removal of the growth and the superficial and deep lymphatics and glands was imperative. There might be no evidence of palpable glandular involvement at the time of operation, but this should not deter the surgeon from making a thorough dissection of lymphatics and glands. The clitoris might be the site of benign or malignant growths. During the past twelve years, twenty-three cases had been reported in this country and abroad. The history of some of these cases disclosed the fact that many sufferers from this trouble were indifferent about consulting a physician early and it was only when the annoying and constant symptoms of pruritis vulvæ became almost unbearable that they presented themselves for treatment.

**Excision of the Upper Jaw.**—Dr. JOHN W. PRICE, Jr., of Louisville, Ky., stated that this operation was originally described by Lizar in 1826, but was first performed independently of Lizar by Gensoul in 1827. Heyfelder in 1884 was the first to



perform excision of both superior maxillary bones at one sitting. Blandin in 1834 practically originated the operation done today. The mortality of the operation at Göttingen was estimated to be twenty-three to thirty-one per cent. in seventy-four cases; sixteen died from lung complications. Scudder stated that in the 230 cases collected by Byrant, the mortality was fourteen per cent. Kronlein had had a mortality of 2.8 per cent.

The conditions requiring this operation were usually malignant growths. Carcinoma developing in the antrum of Highmore was perhaps the most frequent. The surgeon should thoroughly familiarize himself with the procedures of this operation on the cadaver before undertaking the responsibility of the operation. It required on part of the surgeon, more than almost any other surgical procedure, a definite plan of action which might be carried out speedily but without haste. After describing the steps of the operation Doctor Price stated that the absence of any shock with this operation, contrary to what had been experienced by others, was very noticeable.

The diet was liquid during the first week after the operation, and the patient's mouth was thoroughly cleansed after each feeding. Patients were able to eat solid food at the end of the week. The advantages of this operation were that the blood supply was readily controlled throughout the operation, so that we had practically a dry operative field, and that tracheotomy and ligation of the carotids were unnecessary.

**Radium Therapy.**—Dr. E. C. SAMUEL, of New Orleans, La., said that one of his earlier patients—the youngest on his record, twenty-eight years old—with carcinoma of the uterus was referred from the service of Dr. William Kohlmann, who made a diagnosis of cancer of the uterus with infiltration in the broad ligament. The uterus was firmly bound down. The patient's hemoglobin was down forty per cent. There was a foul discharge and considerable hemorrhage. The thigh was flexed upon the abdomen and the patient presented all signs of a terminal sepsis. The patient was referred to him as practically a hopeless case. After the second radiation there was a marked improvement. He continued the treatment until the patient had received six exposures in all. Examination by Doctor Kohlmann at this time found her considerably improved. The infiltration had practically disappeared. The uterus was freely movable and the discharge and hemorrhage had stopped. About one week or ten days later the patient developed a septic diarrhea, gradually grew worse, and died. Autopsy was refused. Another patient referred for cancer of the cervix by Dr. Rudolph Matas received in all five treatments. On her last visit here Doctor Matas examined her and found the growth apparently clinically well.

In young women with a chronic metritis, and the severe bleeding that sometimes accompanied it, radium acted almost as a specific, checking the hemorrhage, and made the patient's life bearable. The uterus itself stood enormous doses when the radium was firmly held within the cervical canal. In fibroids of the uterus he had often applied seventy-five milligrams for twenty-four hours. These

patients generally did not require more than two or three exposures to check the hemorrhage and cause a reduction in the size of the growth. For keloid we had almost a specific in radium. The same technique that applied to other skin conditions were used here.

**Chylous Cysts of the Mesentery.**—Dr. H. R. SHANDS, of Jackson, Miss., stated that chylous cysts of the mesentery constituted a distinct clinical entity. The treatment was surgical and any one of three procedures might be advisable. In some cases the sac might be safely enucleated without interfering with the blood supply of the bowel and this was the ideal procedure. The bowel might have become strangulated through twisting or pressure and then resection of the affected bowel would be necessary. The mortality after this procedure had been higher than in cases treated by the other method. It was sometimes best to suture the cyst wall to the peritoneum and provides drainage. The resulting sinus would usually close permanently in seven to twelve weeks. Results from this form of treatment had been surprisingly good. In the case observed by himself the cyst was readily enucleated.

**Basal Celled Cancer of the Skin.**—Dr. H. H. HAZEN, of Washington D. C., stated that there were two distinct types of skin cancer, the basal celled and the prickle celled. These two types ran different clinical courses and must be treated along different lines. Basal celled tumors usually sprang from pathological conditions of the skin, of which the senile keratosis was the commonest. Removal of these precancerous lesions would prevent most cases of cancer. Basal celled cancers usually sprang from the basal layer of the rete and might be multicentric in origin. The disease was more common in men than in women; negroes were exceptionally affected. While the disease not infrequently started during the fourth decade of life, it was much commonest in the fifth and sixth decades.

Basal celled tumors were most commonly situated upon the skin of the face, where the majority of all cancers were of this character. They were extremely uncommon upon the limbs, and were rare upon the trunk. A very small percentage of them metastasize to the neighboring glands, hence local removal was usually sufficient to effect a cure. Entirely too many cases were insufficiently treated at the outset. In early growths competent surgery would cure well over ninety-five per cent. of all cases, while in late growths surgery would cure a fair number. It was impossible to say what were the permanent results from other methods of treatment.

**Gastric Cancer.**—Dr. W. A. BRYAN, of Nashville, Tenn., said that the facts we knew about the growth of cancer in general were: 1. In its incipency it was a very narrowly restricted growth, probably always microscopic. 2. It gradually grew into the surrounding tissues, displacing and destroying them until it became a definite tumor whose limits might or might not be easily defined either with the microscope or grossly. 3. Other organs became invaded and the lymph spaces, lymph channels, and lymph nodes of the region became involved by the direct growth of the tumor processes into

them or by the escape of cells which lodged and developed into secondary regional tumors. 4. The last stage in the spread of the growth was metastasis through the bloodstream, the time of the development of which, after the beginning of the tumor, depended on the nature of the growth, the disturbances to which it was subjected, and the pathological or traumatic accidents which befell it. 5. Invasion did not confine itself to the growth of the tumors within the tissue, but might arise from direct implantation to an organ in contact with the tumor bearing surface, or remote, by the liberation of cancer cells which were carried by gravity or otherwise to more distant points before they lodged and grew. 6. Cancer tissue was subject to various degenerative changes on account of poor distribution of its abundant blood supply, and that sundry accidents of ulceration, hemorrhage, and infection were encouraged thereby.

In the stomach, as elsewhere, cancer tissue was subject to degenerative changes and consequently ulceration, hemorrhage, and infection. But the point that needed most to be remembered was that we must no longer look upon the positive signs of any concealed cancer as diagnostic, as was formerly the case, but as prognostic, and very unfavorable at that.

The early diagnosis of cancer of the stomach was wellnigh impossible; but the patient's welfare demanded that we give him the best we could, because surgery for cancer of the stomach was undoubtedly offering a bigger percentage of cures than it was for cancer of the uterus. We might safely do here what we did in cancer of the breast, which had increased cures from forty to fifty per cent. to 100 per cent., namely, operate before we could be sure that there was a cancer of the stomach; in other words, operate on justifiable suspicion. In his own work it had been far from possible to locate the cause of trouble in the stomach. The symptoms, history, physical and fluoroscopic findings, and the examination of gastric contents might lead to uncertainty as to whether the lesion required surgical or medical treatment. This meant much, since medicine had recently made such great strides. Let the internist then take charge and by therapeutic measures work the case out and decide whether surgery should be resorted to or not.

**Bone Graft in Surgery.**—Dr. F. G. HODGSON, of Atlanta, Ga., said that the general indications for bone grafting as given by Murphy, Albee, McWilliams, and others were: 1. To produce union in ununited fractures. The inlay graft was usually the best method, much better than metal plates, for it stimulated osteogenesis. 2. To repair traumatic bone injuries or supplant fragments removed or dislodged by injuries, especially defects in the skull, face or long bones. 3. To supply bones congenitally absent, as in the absence of the tibia or in spina bifida, etc. 4. To replace bones destroyed by infections as osteomyelitis, tuberculosis, syphilis, etc., and to replace bones after removing large sequestra as in tibia, femur or humerus. 5. To replace bones removed for nonmalignant neoplasms as cysts or mildly malignant encapsulated neoplasms as

giant celled sarcoma or chondrosarcoma. 6. To immobilize and stimulate osteogenesis in tuberculous joints, as in Albee's spine graft, etc. 7. To fix or immobilize certain relaxed joints, as an infantile paralysis or congenital dislocations.

The following general principles should be observed: 1. The technic of Lane should be closely followed. The operation should be performed without the gloved hands coming in contact with the wound, graft, or that part of instrument or sponge which touched the wound. Sutures should be handled with instruments only and knots tied with instruments. The dressings which were to be applied to the wound should be handled with instruments only. All sinuses should have been healed for several months if any were present before operation. 2. The graft should preferably be a living autograft; if not it should be obtained from a near relative. 3. It should possess both periosteum and endosteum. Without periosteum the graft was more than apt to die. 4. Hemostasis should be as complete as possible, as hematoma formation interfered with proper nourishment of the graft. 5. The graft should come in intimate contact with living bone, preferably at both ends for a distance of one inch or more. Periosteum should be united to periosteum when possible. 6. Absorbable material only should be used to maintain graft in position. Kangaroo tendon or chromicized catgut were usually sufficient. All nails, screws, wires, plates, etc., should be avoided. 7. No drain should be used. 8. A motor saw was better for obtaining a graft than hammer and chisel. There was less shock and it was more accurate. 9. Medial surface of the tibia was better than the crest, because it was less compact. Also removal of the crest of tibia might so weaken this bone as to result in fracture. If a large graft was removed a plaster cast should be applied to the leg. 10. An inlay graft was better for ununited fractures than an intramedullary graft because periosteum contacted with periosteum and endosteum with endosteum. 11. Rigid immobilization should be carefully maintained for from three to nine months, depending upon the function it was to perform. Any motion of graft might interfere with the new bloodvessels growing into it. 12. A graft increased in size with function. It might develop a well defined periosteum, cortex, and medullary cavity. 13. Severe infection with extensive suppuration resulted in death of the graft, followed by its extrusion. A mild infection did not necessarily result in death of the graft, a part of it might be extruded, and yet new bone formation resulted. A transplant might remain viable and take part in the formation of the involucrum and the sequestrum. Lewis had transplanted grafts into an infected area and found that they grew and aided in osteogenesis in spite of a mild infection. It was usually better, however, to wait until all infection had cleared up before grafting. 14. If the head of a bone, such as the femur or humerus, was fractured or dislocated, it should be removed, but replaced and reattached to the lower fracture. 15. In comminuted fractures, if operation was performed, bone fragments should not be removed, but replaced, as they



would aid in osteogenesis. 16. The bed into which graft was to be transplanted should be prepared first and hemostasis obtained; then the graft was obtained and transplanted directly or without unnecessary delay or handling.

From a series of experiments he drew the following conclusions: 1. The epiphyseal line ceases to function after reimplantation or autotransplantation. Longitudinal growth of the bone ceases in every case. 2. The articular cartilage undergoes practically no changes after reimplantation. Degenerative and regenerative changes may occur in autotransplantation. 3. The marrow of the transplant appears to undergo an early complete necrosis. It gradually reforms.

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

**Leonardo da Vinci.** A Psychosexual Study of an Infantile Reminiscence. By PROFESSOR DR. SIGMUND FREUD, LL.D. (University of Vienna.) Translated by A. A. BRILL, Ph. B. M. D., Lecturer in Psychoanalysis and Abnormal Psychology. New York University, New York: Moffat, Yard and Co., 1916. Pp. 130.

Instead of giving a simple, chronological account of the life of Leonardo da Vinci, interspersed with eulogies of his genius, Doctor Freud has given us a new form of biography. With only a few hints at his command, Freud has drawn for us a picture of the unconscious psychic life of the great artist. The great qualities of his genius, as well as its limitations, are better understood after reading this book. An extremely clever interpretation of the Mona Lisa smile is also given. While some may quarrel with the disproportion between the known data and the deductive results, none can help but admire the ingenuity displayed in the reasoning involved. Truly, the passage of years cannot obscure one's character from the psychiatrist! If but one footprint on the sands of time is left he is able to divine the innermost thoughts. Thus has paleopsychology taken its place alongside of its sister sciences of past life, paleobotany and paleozoology.

**Hughes's Practice of Medicine.** Including a section on mental diseases and one on diseases of the skin. Eleventh Edition revised and enlarged. By R. J. E. SCOTT, M.A., B.C.L., M.D., New York, Fellow of the New York Academy of Medicine; Fellow of the American Medical Association; Formerly attending Physician to the Demilt Dispensary, etc., etc. With 63 illustrations. Philadelphia: P. Blakiston's Son and Co., 1917. Pp. xix+785. (Price, \$3.)

This compact and abridged manual on the practice of medicine has entered its eleventh edition which speaks well for its merit and general usefulness. As in previous editions emphasis has been placed upon the diagnosis and treatment of disease and new material has been added which is in keeping with the conservative tone of the book. For the most part the classification of diseases and the outlines of treatment adheres closely to accepted standards. This, of course, necessitates the omission of many modern and new and valuable means of treatment. In the treatment of syphilis of the nervous system, for example, no reference is made to the intraspinal use of medicinal serums, and no attention given to the early serobiological diagnosis of the disease. The classification of heart diseases follows old lines and could be advantageously brought more in accordance with modern conceptions with the omission of the diagnosis of fatty heart. The book is handsomely bound and the subject matter is presented in a clear and concise style. There are numerous illustrations in the text which enhance the value of the book as a useful reference for the general practitioner.

## After Office Hours

China seems finally to be awakened from her long night. One of the most hopeful signs is the replacement of superstition by science in dealing with disease. In the *Literary Digest* for March 17th Dr. W. W. Peter tells how the Chinese quacks are being driven from the sick beds.

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*Vanity Fair* prides itself on being up to date. Like many such publications, an occasional superficial mention of Freud has seemed to it to be an insignia of modernity. The April number, however, has a page devoted to a character study of the father of psychoanalysis, with a picture of the medallion recently struck in his honor. Those of us who have marveled at his professional profundity will appreciate this glimpse of the personal side of the man.

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The war will be fought in the farmlands and the workshops. Those of us who are wont to shake our heads and bewail the lack of chemists in America to make dyes and explosives will be reassured by an article by L. H. Baekeland in the April *Harper's*. We have chemists, he says, and good ones. And proves it.

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Have you ever let your breakfast get cold while you lingered over the new Yetz-Nearer catalogue? Or perhaps your hobby is books, or furniture, or antiques, or gardening. If you would understand the psychology of the catalogue lure, read "The Point of View" in the April *Scribner's*, in which the catalogue as a form of literature is given its just due.

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Whatever may be the fate of German philosophy after the war, there is no doubt that it has profoundly influenced the intellectual world of today, even affecting the utterances, so a French writer asserts, of so unlikely a personage as President Wilson. César Chabrun, in the *Revue des Deux Mondes*, compares passages in the famous "Peace without victory" note with some of Kant's doctrines, especially his *Permanent Peace*. It is through a knowledge of Kant, Chabrun says, that Wilson's note must be interpreted.

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For the physician who neither keeps his money in an old sock, nor invests it in wildcat schemes, the *Odd Lot Review*, published weekly, is invaluable. It gives excellent advice to investors, especially the small investor, to which class the average physician belongs in this year of 1917, H. C. L.

## Meetings of Local Medical Societies

MONDAY, April 23d.—Medical Society of the County of New York.

TUESDAY, April 24th.—New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; Onondaga Medical Society, New York; New York City Riverside Practitioners' Society; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York; Women's Hospital Society, New York; Therapeutic Club.

WEDNESDAY, April 25th.—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Surgical Society (annual); New York Society of Internal Medicine; Schenectady Academy of Medicine.

THURSDAY, April 26th.—Ex-Interne Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital Graduates' Club, New York; New York Physicians' Association.

FRIDAY, April 27th.—Society of New York German Physicians; New York Clinical Society; Manhattan Medical Society; Society of Alumni of Sloane Hospital for Women; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

SATURDAY, April 28th.—New York Medical and Surgical Society; West End Medical Society; Harvard Medical Society; Lenox Medical and Surgical Society.



## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending April 11, 1917:*

ANDERSON, T. B. H., Assistant Surgeon. Detailed for duty on the Coast Guard cutter *Mohawk*.

AUSTIN, H. W., Senior Surgeon. Granted four days' additional leave of absence from April 7, 1917.

CANMELIA, F. A., Assistant Surgeon. Directed to report to the chairman of a board at the immigration station, Ellis Island, N. Y., April 16, 1917, for examination to determine fitness for promotion.

ERNST, E. C., Assistant Surgeon. Detached from Coast Guard cutter *Bear*; directed to proceed to San Francisco quarantine station.

FOSTER, M. H., Surgeon. Relieved from duty at Hygienic Laboratory, Washington, D. C., and directed to report to Assistant Surgeon General W. C. Rucker for temporary duty.

GARDNER, J. S. S., Assistant Surgeon. Detailed for duty on the Coast Guard cutter *Gresham*.

HARRISON, W. T., Assistant Surgeon. Relieved from duty at San Francisco, Cal., quarantine station; detailed for duty on the Coast Guard cutter *McCullough*.

HERRING, R. A., Passed Assistant Surgeon. Detailed for duty on Coast Guard cutter *Manning*.

HETERICK, R. H., Passed Assistant Surgeon. Detailed for duty on Coast Guard cutter *Ossipee*.

HOOPER, L. E., Assistant Surgeon. Directed to report to the chairman of a board at Honolulu, Hawaii, April 16, 1917, for examination to determine fitness for promotion.

KEMPF, G. A., Passed Assistant Surgeon. Ordered to proceed to Spartanburg County, S. C., and vicinity for studies of schoolchildren in relation to pellagra incidence.

MURRAY, V. B., Assistant Surgeon. Detached from Coast Guard cutter *McCullough* and assigned to the Coast Guard cutter *Bear* for duty.

PAINE, LISTON, Assistant Surgeon. Directed to report to the chairman of a board at the immigration station, Ellis Island, N. Y., April 16, 1917, for examination to determine fitness for promotion.

PRATHER, D. J., Assistant Surgeon. Relieved from duty at Okmulgee, Okla.; detailed for duty on the Coast Guard cutter *Tallapoosa*.

SAFFORD, VICTOR M., Assistant Surgeon. Directed to report to the chairman of a board at the immigration station, Ellis Island, N. Y., April 16, 1917, for examination to determine fitness for promotion.

SAVERS, R. R., Assistant Surgeon. Relieved from duty at Okmulgee, Okla.; detailed for duty on the Coast Guard cutter *Comanche*.

SCHERSCHESKY, J. W., Surgeon. Directed to report at the Bureau, Washington, D. C., for conference on investigations of industrial sanitation.

SCOTT, E. W., Assistant Surgeon. Directed to report to the chairman of a board at the Marine Hospital, New Orleans, La., April 16, 1917, for examination to determine fitness for promotion.

SMITH, J. H. JR., Assistant Surgeon. Detailed as recorder of board of examiners at Marine Hospital, New Orleans, La., April 16, 1917, vice-Assistant Surgeon Williams relieved.

STONER, J. B., Surgeon. Leave of absence for one month and fifteen days on account of sickness from February 20, 1917, amended to read one month and twelve days.

TAPPAN, J. W., Assistant Surgeon. Leave revoked; ordered to return to duty at El Paso, Texas, April 14, 1917.

TREADWAY, W. L., Assistant Surgeon. Ordered to proceed to Spartanburg County, S. C., and vicinity for studies of schoolchildren in relation to pellagra incidence.

WARNER, H. J., Passed Assistant Surgeon. Relieved from duty at El Paso, Texas, ordered to rejoin station at Ellis Island.

WARREN, B. S., Surgeon. Directed to visit the cities of Cincinnati and Akron, Ohio, Boston, Mass., and New York, N. Y., to obtain information in connection with studies of sickness insurance.

WAUGH, R. L., Assistant Surgeon. Relieved from duty at Seattle, Wash.; detailed for duty on the Coast Guard cutter *Unalga*.

WELDON, L. O., Assistant Surgeon. Ordered to proceed to Spartanburg County, S. C., and vicinity for studies of schoolchildren in relation to pellagra incidence.

WILDMAN, H. V., JR., Assistant Surgeon. Ordered to proceed to Spartanburg County, S. C., and vicinity for studies of schoolchildren in relation to pellagra incidence.

WILLIAMS, L. L., JR., Assistant Surgeon. Relieved from duty on board convened April 16, 1917, at Marine Hospital, New Orleans, La.

WOODS, E. O., Assistant Surgeon. Detached from Coast Guard cutter *Unalga*; ordered to proceed to Seattle, Wash., for duty.

### Board Convened.

Board of which Assistant Surgeon General W. G. Stimpson is chairman reconvened for the preparation of questions for the mental examination of nine assistant surgeons, to determine their fitness for promotion.

## Births, Marriages, and Deaths

### Married.

DONIS-BILLENKAMP.—In Clayton, Mo., on Wednesday, April 4th, Mr. John Conrad Donis and Dr. Sophia Billenkamp, of St. Louis, Mo.

DERR-WOLF.—In Chambersburg, Pa., on Thursday, April 6th, Dr. Woods Frederick Derr, of Williamsport, Pa., and Miss Sara Wolf.

ROBINSON-HUGHES.—In New York, N. Y., on Thursday, April 6th, Dr. F. G. Robinson, of Dunmore, Pa., and Miss Emma L. Hughes, of Wilkes-Barre, Pa.

TILLMAN-HILLYER.—In Easton, Pa., on Friday, April 7th, Dr. W. Gilbert Tillman and Miss Sadie E. Hillyer.

### Died.

CASSIDY.—In South Bend, Ind., on Thursday, April 5th, Dr. John Cassidy, aged eighty years.

EVERETT.—In Highland, Mo., on Friday, March 30th, Dr. William W. Everett, aged sixty-one years.

FLINT.—In Erie, Pa., on Thursday, April 5th, Dr. John F. Flint, aged seventy-four years.

HARPEL.—In Danville, Pa., on April 5th, Dr. Frederick W. Harpel, aged seventy-three years.

HINES.—In Pilot, Va., on Friday, April 6th, Dr. B. W. Hines, aged eighty-four years.

HINKLE.—In Evanston, Ill., on Monday, April 2nd, Dr. Abbie Hinkle.

HOWE.—In Greenfield, Ia., on Monday, April 2nd, Dr. John Howe, aged seventy years.

KING.—In Auburn, R. I., on Sunday, April 8th, Dr. D. O. King, aged sixty-seven years.

LONG.—In Piedmont, W. Va., on Thursday, April 5th, Dr. Dayton J. Long, aged forty-seven years.

MITCHELL.—In Philadelphia, Pa., on Tuesday, April 10th, Dr. John K. Mitchell, aged fifty-eight years.

PALMER.—In Livingston Heights, Va., on Wednesday, April 4th, Dr. Robert Vernon Palmer, aged fifty-three years.

PYLE.—In Wilmington, Del., on Saturday, April 7th, Dr. Joseph P. Pyle, aged fifty-seven years.

REED.—In Crafton, Pa., on Wednesday, April 4th, Dr. John Orlando Reed, aged fifty-one years.

SCOULLER.—In Pontiac, Ill., on Monday, April 2nd, Dr. John D. Scouller, aged eighty-one years.

SHIVELY.—In Kansas City, Kan., on Monday, April 2nd, Dr. Delbert M. Shively, aged forty-three years.

TUCKER.—In New Bedford, Mass., on Tuesday, April 10th, Dr. Edward T. Tucker, aged sixty-seven years.

WHITE.—In Sacramento, Cal., on Saturday, March 31st, Dr. John L. White, aged forty-one years.

WILLIAMS.—In Framingdale, L. I., on Thursday, April 12th, Dr. Richard Paul Williams, aged thirty-two years.

WINSLOW.—In Roxbury, Mass., on Sunday, April 8th, Dr. William H. Winslow, aged seventy-seven years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 17.

NEW YORK, SATURDAY, APRIL 28, 1917.

WHOLE No. 2004.

## Original Communications

### PNEUMOCOCCIC PERITONITIS IN INFANCY AND CHILDHOOD.\*

By ISAAC A. ABT, M. D.,

Chicago,

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Between 1842 and 1857 Duparque reported several cases of essential peritonitis in little girls. In the same period other authors—Féréol, Martens, Vétu, Baizeau, Hardy, Béhier—described cases of purulent peritonitis. In 1875 Baizeau reported a case in a twelve year old boy of a right sided pneumonia complicated by purulent pleuritis, in which one month later an abdominal condition supervened terminating in a localized abscess, near the umbilicus, which discharged several litres of greenish pus. The same author reported the case of a little girl ten years old who was taken ill suddenly with abdominal pain, fever, vomiting, and diarrhea, the general symptom complex indicating peritonitis. An umbilical abscess formed with purulent discharge, and recovery took place. A year later Gauderon reported twenty-five cases of acute idiopathic peritonitis in children, the symptoms being those with which we are now familiar in pneumococcic peritonitis. Recovery ensued twenty to thirty days after spontaneous eruption through the umbilicus.

In 1885, Bozzolo published an article on a form of peritonitis caused by the pneumococcus. He described a case originally one of pneumonia which was followed by an exacerbation of a preexisting nephritis. Later on, pleurisy and peritonitis developed. This was a typical case of pneumococcic peritonitis.

Even before Fraenkel and Weichselbaum had discovered *Diplococcus pneumoniae*, the French literature contained accounts of acute idiopathic, essential, or spontaneous peritonitis which are assumed to have been due to pneumococcus infection. In 1886, Cornil performed a necropsy in a case of pneumococcic peritonitis which had followed upon an attack of pneumonia and was associated with double empyema and pyopericarditis.

In 1890 the first operation for relief was performed without success by Nélaton on a woman thirty-two years of age. The same year Galliard and Sevestre operated in several cases; Sevestre on a child with apparently primary involvement of the peritoneum. This patient recovered. Numerous

cases were then recorded, especially in France. In 1903, Brunn collected fifty-seven cases in children and fifteen in adults. In the same year Jensen published an able article on the subject, and until 1911, these studies by Brunn and Jensen were the most complete in the literature. New cases were recorded by Mathews and Bryant. Papers were written by Quervain and Ghon. In 1911 ninety-one cases were recorded in the literature, most of them occurring in children under fifteen years of age, and a few cases in adults.

In many cases the starting point of the disease is obscure and consequently the classification is difficult. The cases, however, may be divided as follows: 1, those that are secondary to a definite pneumococcus infection in some other part of the body; 2, those in which the peritoneum apparently is the first point of attack; 3, those in which, owing to the rapid spread of the infection, it is impossible to decide to which of the former two groups they belong.

*Etiology.*—The disease represents a specific infectious process, but the route is difficult to establish. Two groups are recognized: 1, the primary or idiopathic; 2, the secondary, in which the peritonitis is subsequent to some preexisting pneumococcic lesion elsewhere, pleuropneumonia being the most common, and otitis media the next in frequency. The recognition of a primary or idiopathic form as a distinctive type is justified, although the path of invasion is obscure. The pneumococci may be disseminated through the bloodstream and lymph stream and possibly by the direct penetration of certain tissues or organs. This latter may occur without perceptible lesions being found in the tissue or organ involved. The pneumococci may not only find their way from the pleural surface of the diaphragm into the peritoneal cavity, but it has been assumed that the organisms might even penetrate the intestinal coats. The argument postulating an infection from the gastrointestinal tract is, that the pneumococci repeatedly have been isolated from the intestinal tract and demonstrated passing through necrosed Peyer's patches. It is to be considered, however, that in patients dying of trauma and with no symptoms of pneumococcic disease, pneumococci have been isolated from nearly every organ of the body, and, therefore, that the mere presence of the organisms does not prove any pathogenetic relation. Those pneumococci that are found in the lymph probably come from the general circulation. The mucous membrane is almost im-

\*Read before the Buffalo Academy of Medicine, February 14, 1917.

penetrable for pneumococci, unless it is affected by disease. If the infection is carried by the general circulation, the organisms may have reached the bloodstream in several ways: through the lungs if pneumonia is present and is the primary process; through the bronchial or mediastinal lymph glands and lymphatic channels; by way of the mesenteric lymph glands or the intestinal mucosa; or possibly from some extraneous focus, such as infected tonsils.

It is conceivable that an infection may occur through the Fallopian tubes, having ascended from the vagina. Although infection in this way is, of course, impossible in male children, yet the clinical and postmortem features are the same in both sexes. In some of the reported cases, there has been a history of recent measles or whooping cough, or of a preceding pneumonia. The winter and spring months, when the above diseases are most prevalent, are the most common time of onset of pneumococcic peritonitis.

*Symptoms.*—The disease presents itself in two distinct varieties: as a localized, circumscribed abscess; and as an acute diffuse peritonitis. The circumscribed infection sets in acutely, but soon passes into a chronic process; the pus becomes encapsulated, and the symptoms are mild. In the diffuse variety, no localization occurs; the symptoms are violent and persistent.

Encysted or encapsulated pneumococcic peritonitis is characterized at the onset by the symptoms of acute peritonitis. This variety may begin with acute abdominal pain, vomiting, and fetid diarrhea. During this period the symptoms are not very marked. Vomiting ceases after a few days; the fever persists, but is not high; diarrhea continues. After ten to fourteen days, the abdominal signs again increase in severity. The pain now is localized in the hypogastric region. There is progressive fullness, dullness, fluctuation; occasionally edema of the abdominal wall, and fever. Unless the abscess formation is terminated by operation or by death, spontaneous rupture through the umbilicus may occur, or the pus may escape through the bladder or vagina. If untreated, the abscess often fills the abdominal cavity. Although in such a case the stomach resonance is not lost, the veins on the surface of the abdomen may become prominent, and the temperature slightly elevated. Diarrhea ceases, and constipation may be present. Vomiting is uncommon at this time. As a rule, the patient wastes and becomes cachectic. During the last stages of abscess formation before the perforation has occurred, the temperature is usually low. There is edema of the legs and signs of pressure on the pelvic viscera may be manifest.

In its clinical signs, the process may simulate tuberculous peritonitis. Acute cases may be mistaken for typhoid fever, although the leucocyte count usually is high. This type frequently ends in recovery.

The primary diffuse pneumococcic peritonitis is characterized by severe and rapid prostration. The patient shows the peritoneal facies; the tongue becomes dry; there is delirium; the extremities are cold, and cyanosis is present. The temperature is often as high as 104° F.; the pulse ranges from 140

to 160. Death occurs early. Sometimes, pericarditis coexists; at other times, pneumonia or empyema. In some of the severe septicemic types, the manifestations are so obscure as to make it impossible to recognize the actual nature of the disease, or the lesions may be multiple, although it was found in a study of the recorded cases that empyema was three times as frequent as any other local manifestation.

Death may occur in twenty-four hours, or a brief period of improvement may ensue at the end of forty-eight hours, after which the symptoms increase in severity. Distention, tenderness, movable dullness, diarrhea, slight rigidity, high leucocyte count, high fever, and profound toxemia continue throughout the course of the process. The pain is continuous and the tenderness acute. There is no local bulging. As a rule, the abdomen is resonant and rectal tenderness is complained of. After the lapse of several days, signs of fluid in the flanks occur, with abdominal distention. The abdomen is most frequently tumid, but the rigidity is less than one would expect. As the case progresses, the tenderness diminishes and the painful areas become less sensitive. Even in those cases where there is no evidence of lung involvement, the patient suffering with pneumococcic peritonitis may present many symptoms suggestive of pneumonia, grunting respiration, the *alae nasi* working rapidly, and at other times herpes labialis being present. Diarrhea sometimes is a prominent symptom.

I desire to present a few case histories which are typical of the attacks of pneumococcic peritonitis as we have encountered them during the past years:

CASE I.—A female child, four years old, was admitted to the Michael Reese (Sarah Morris) Hospital. About one week ago, the baby complained of colicky pains in the abdomen, localized in the region of the umbilicus. Shortly after admission, the child vomited persistently and had fever; the pain continued but seemed to diminish in severity. The abdomen was very tender; there was constipation. During the night, the baby showed a high temperature and perspired freely; she complained of thirst and desired great quantities of water, much of which was vomited. The child had never been ill. Both parents are healthy. Examination showed face pale, with pinched expression; the cheeks were sunken, breathing rapid, pupils dilated; heart and lungs negative; the abdomen rigid and tender. Doctor Eisendrath, of the surgical staff, operated, making an incision into the right rectus, liberating a quantity of foul smelling fluid. Drainage was established and the abdomen closed. The patient died the following day; autopsy was not permitted. Bacteriological examination of the pus showed pneumococci and colon bacilli.

CASE II.—Female child, aged three and one half years; complained of colic. Was put to bed and given an enema which failed to afford relief. The mother said that the child seemed to improve when given a mustard bath, but the colic returned on the evening of the same day; the temperature rose to 104° F., the baby was delirious and restless, sleeping but little. She vomited repeatedly during the day and night and was admitted to the hospital after having been ill for twenty-four hours. The history shows that the patient had bronchopneumonia when six weeks old, and also had suffered with measles, mumps, and bronchitis when slightly over two years of age. Family history is negative. Examination showed a well developed and well nourished baby. The face was flushed, breathing rapid; there were pain and tenderness over the abdomen; vomiting was frequent, also coughing. The lips were dry; the tongue coated; the tonsils enlarged; the respiration superficial, rapid, and expiration grunting.



On auscultating the lungs, one heard an occasional râle; heart sounds normal; the pulse good. The abdomen was rigid, there being marked tenderness, especially on the right side. Liver, spleen, and kidneys were not palpable. In view of the evident peritoneal involvement, an exploratory laparotomy was believed advisable and the operation was performed by Dr. Alfred Straus. The abdomen was found to contain a large quantity of free pus; the coils of the intestine were covered with exudate; the great omentum and the mesentery were actively inflamed; the retroperitoneal and mesenteric lymph nodes were markedly enlarged. The abdomen was drained and closed. Examination of the pus showed the presence of pneumococci. Child died within a few hours after the operation. No autopsy was permitted.

CASE III.—Female child, aged seventeen months. She was feeble at birth, weighing only four and one half pounds; she walked when thirteen months of age. Eight days ago, she began vomiting and had a temperature of 101° F. When admitted had vomited everything ingested for the previous five days, excepting small amounts of water. There was some cough; the cry was loud and clear. The baby suffered from diarrhea, the movements at first being yellow, but later green. The patient slept badly. The nutrition was fairly good; face flushed and covered with perspiration; respiration rapid. The temperature on admission was 103° F.; pulse, 104; respiration, 84. Physical examination revealed an involvement at the base of the left lung, bronchial vesicular breathing, and some dullness on percussion. Heart sounds were rapid but clear. The abdomen was tympanitic, protuberant, only slightly rigid; the patient seemed to be in great pain. There was dullness in the flanks and evidence of free fluid in the abdominal cavity. A mass was palpated one inch above the umbilicus in the median line. The genitalia were negative. The urine showed a trace of albumin and a few blood cells on microscopical examination. The blood count gave 13,000 leucocytes with fifty-seven per cent. polymorphonuclears. The patient lived two days after admission. The necropsy findings showed acute pneumococcic septicemia; acute mitral and tricuspid endocarditis; acute fibrinous pleuritis with serous effusion into both pleural cavities; left lobar pneumonia; acute purulent peritonitis; acute splenic tumor; parenchymatous degeneration of liver and kidneys. On opening the abdominal cavity, a great quantity of purulent foul smelling fluid escaped. The peritoneal surfaces of the intestine were rough and injected in places; there were some adhesions; no perforation in the gut; the appendix was normal; the liver slightly enlarged. The outer surface of the soft, large, grayish red spleen contained many fibrinous spots. Examination of the pus taken from the peritoneal cavity showed the presence of pneumococci.

CASE IV.—Female child, six months old, was admitted into my service on September 13, 1915. The child had become ill about one month previously, suffering from diarrhea, which lasted three weeks. Vomiting occurred about five days before admission and continued to the present time. The child cried very little, and was very sleepy. This baby had had a cold since a short time after birth. The family history was said to be negative. Physical examination showed an emaciated infant; thoracic findings negative. The abdomen distended, somewhat flattened; dullness in the flanks and evidences of free fluid in the abdominal cavity. Liver and spleen were enlarged; there was a slight umbilical hernia. The admission temperature was 103° F.; pulse 156; respiration, 48. Blood count gave 18,200 leucocytes. Vomiting was almost continuous. The day after admission the baby had a convulsive seizure and died at 11 a. m. Autopsy: Marked active hyperemia of the intestines; hypostatic congestion of the lungs; fatty infiltration of liver and kidneys; passive congestion of spleen; liver enlarged. On opening the abdomen, a large quantity of purulent fluid escaped; the peritoneum was slightly granular, thickened, opaque, covered with a fibrinous exudate. The peritoneal fluid which exuded was yellowish green and contained flakes of fibrin. The intestines were matted together by fibrinous exudate; intestinal walls injected; no evidence of perforation. The cul de sac contained a collection of fibrinopurulent material. The lungs were normal except that they showed considerable congestion in the posterior portion. The myocardium was pale and lustreless. The spleen was enlarged, extending below

the costal arch, markedly congested and imbedded in fibrinous exudate. The liver was enlarged and extended below the costal arch; cut section was yellowish, dull, and lustreless. The pancreas showed no pathological changes. Uterus, ovaries and tubes show vascular injection on the surface with multiple minute hemorrhages. The gastric mucosa injected. Direct smear made from the pus showed Gram positive diplococci. On culture, pneumococci were isolated.

*Discussion of the case reports.*—All four cases which I have recorded refer to female children. I possess the records of a little boy with a clinical history similar to that which we have described already who undoubtedly suffered from an acute peritonitis. No operation was permitted and no necropsy was performed. Consequently, I am unable to include this case in my series as one of pneumococcic peritonitis. In searching through the literature, one is impressed with the fact that the majority of the cases of pneumococcic peritonitis occur in young female children.

In all of my cases, the disease commenced with vomiting and high temperature, sometimes followed by diarrhea alternating with constipation. As nearly as could be determined from the reports of the parents, all of the infants had severe abdominal pain. In one of the cases, the baby suffered from a general pneumococcic septicemia with definite involvement of lungs, heart, peritoneum, pleurae, and kidneys. In the three others, there was diffuse peritonitis without involvement of other organs. There was no case of localized peritonitis to include in the report.

*Clinical course.*—Pneumococcic peritonitis usually is described as being localized or diffuse; yet this classification represents mainly a difference in degree. Every case of diffuse peritonitis probably commences as a circumscribed process. As a matter of fact, however, we are convinced from the clinical reports and the necropsy findings that the lesion may either remain circumscribed, producing a local abscess, or become diffuse. In our patients and in those whom we have seen in the practice of other physicians, the circumscribed variety seems to be rare as compared with the diffuse.

With respect to the clinical course of the circumscribed cases, we learn from case reports that the onset occurs suddenly, perhaps during the night while the patient is asleep, or possibly in the daytime while at play. Pain usually is severe and localized, occurring more often on the right side than on the left. Very frequently it is felt over the entire abdomen. At times it is described as sticking and again as colicky. The pain of circumscribed peritonitis, which may either be intermittent or constant, is always present and constitutes the leading symptom. The suddenness of the onset and the severe pain are characteristic of pneumococcic peritonitis. After a while, perhaps hours or days after the initial pain, vomiting begins. The vomited material consists at first of the gastric contents; later, it contains biliary matter; eventually vomiting increases in frequency and severity, threatening to exhaust the little patient.

Diarrhea may make its appearance early, following upon an initial constipation, or it may even be entirely absent. The temperature may not reach a

very high point, but, as a rule, it rises rapidly and resembles the high temperature which is noted in lobar pneumonia. Herpes labialis has been reported frequently. Chills have been noted occasionally and, in younger infants, convulsions are not a rare occurrence. Cerebral symptoms simulating meningitis may occur in this as well as in the diffuse form of peritonitis.

Regarding the course of the disease as a whole, it may be stated that, without any marked prodromes, the child falls ill with high fever, abdominal pain, vomiting, and sometimes diarrhea. The little patient looks bad; the pulse is rapid, so that sometimes it is difficult to palpate. When examined early, the abdomen is usually not found to be distended; although it is not easily compressed, the muscular rigidity, so common a symptom in other intraabdominal processes, is not present.

The further course of the disease is as follows: After several days of severe illness, a cessation of symptoms seems to occur similar to that which is observed during the course of appendicitis. Perhaps on the second or third day the patient becomes more quiet; pain decreases; the abdomen less distended, possibly soft. This period has been called the "deceptive calm," and it may be assumed that the disease process is continuing in some other organ. The localized collections of pus at this time tend to point outwardly, particularly in the region of the umbilicus. Frequently they may be palpated, giving the impression of tumorlike masses. They are often tender to the touch.

Diffuse pneumococcic peritonitis is not an infrequent manifestation of the disease. The cases occur most frequently when catarrhal respiratory infections and pneumonia are prevalent. They tend to run a severe and, in most instances, a fatal course. The disease commences acutely, associated with violent abdominal pain, high fever, severe diarrhea, and vomiting. Diarrhea is usually present, although constipation is recorded occasionally. As in the circumscribed form, so in the diffuse variety, headache, sleeplessness, chills, delirium, sopor, or excitement may be present. Urinary symptoms are not infrequent. The leucocyte count is high, particularly for the polymorphonuclears. The condition of the patient is at once serious. The cheeks and ears are red and then become cyanotic; the face is sunken, the nose pointed, and the *alae nasi* actively dilated; the eyes are sunken, the lips dry and fissured, sometimes covered with exudate; the tongue is heavily coated; the facial expression is anxious; respiration is superficial and frequent, sometimes irregular. The pulse is usually small, irregular, and at times so rapid that it cannot be counted. The temperature may reach 104 or 105° F., though, in some cases, it may fall below normal. As the disease progresses, the abdomen becomes more and more distended and is tense and painful. There may be dullness in the flanks. If the patient lives long enough, the tense meteoristic abdomen frequently becomes soft, similar to the condition described in the circumscribed variety. In some cases, the abdomen is tense or meteoristic without actual muscular rigidity being present. This point has been emphasized by several writers on the subject.

*Diagnosis and differential diagnosis.*—The diagnosis may present difficulties, especially during the early period of the disease. On account of the gastrointestinal symptoms, some intestinal disorder is apt to be suspected in very young infants before the actual nature of the malady is recognized. Since a large number of these cases are primary, without the association of a definite pulmonary involvement, a diagnosis is possible only when the abdominal disease is well developed. This is true particularly of the diffuse form, though in nearly every instance vomiting, high fever, severe abdominal pain, frequently diarrhea, and meteorism indicate a peritoneal affection.

The difficulties in making a diagnosis are illustrated in a case that recently came under our observation.

CASE V.—A little boy, nine months of age, entered the hospital on January 5th, with a temperature of 105° F.; pulse, 156; respiration, 50. He had suffered from bronchitis almost since birth. The baby became acutely ill on Tuesday, January 2d, was feverish, restless, and cried; the following day, January 3d, he vomited three times and was obstinately constipated. On January 4th the patient became decidedly more feverish and drowsy; respiration was difficult and somewhat noisy. Before entering the hospital the baby had a severe coughing attack and vomited some dark bloody fluid. During his stay in the hospital the fever continued high, the pulse was rapid, respirations were recorded as high as 64, 80, and 100; there was twitching of eyelids and facial muscles. The bowels moved; vomiting continued; the temperature rose to 106° F.; respirations continued exceedingly rapid; pulse irregular. The abdomen, which was distended during the first day or two the hospital, became flat. The child died after having been in the hospital seven days.

Autopsy was made shortly after death by Dr. Oscar Schultz, pathologist in chief, and Doctor Perlstein. On opening the peritoneal cavity, a yellowish creamy pus escaped. The intestines were covered with stringy fibrin. The region of the appendix contained much pus and a large accumulation of fibrinous exudate. On closer examination, it was found that the appendix had perforated, and a large fecal concretion was discovered in its lumen. A direct smear from the pus showed the presence of colon bacilli.

In this young infant, the diagnosis of abdominal disease was difficult, the possibility of a perforative appendicitis in a nine months old child seeming remote. The diagnosis of pneumococcic peritonitis is rendered easier if, in addition to the abdominal symptoms, some evidence of pneumococcic infection is present in other parts of the body; but, as has been said already, pneumococcic peritonitis sometimes is primary and includes those cases of idiopathic peritonitis in which no lesion can be found outside of the abdominal cavity. It must not be forgotten that many cases of pneumonia in children present abdominal symptoms without any involvement of the peritoneum. In such cases, rigidity, tenderness, and pain are complained of, but chiefly in the upper part of the abdomen. These symptoms usually are of short duration. Frequently they occur early in the disease and tend to disappear during the first days of its course. Vomiting, which is present at the onset of the disease, ceases very soon, and diarrhea usually is absent.

*Prognosis.*—In the circumscribed form, the prognosis is not altogether bad. Indeed, it may be relatively good, although, in this variety, it depends upon the development or presence of pneumococcic infec-



tion in other organs. Pneumococcic peritonitis associated with pleurisy, pneumonia, pericarditis, endocarditis, and meningitis, offers an unfavorable outlook. The prognosis of the diffuse pneumococcic peritonitis in young infants and children is unfavorable. There are several statistical reports concerning the recoveries from pneumococcic peritonitis under various methods of treatment, from which one must conclude that the prognosis is not unfavorable in all cases of this disease. In the young infants and children that came under our observation, the toxemia and prostration were of the most severe degree, and death took place in all cases.

**Treatment.**—The subject of treatment cannot be dismissed in a dogmatic manner. If the process can be diagnosed definitely as an encysted or circumscribed peritonitis, the indication for incision and drainage is clear, even though immediate laparotomy has been advised against by Nobécourt, who thinks that the infection becomes localized more completely if a few days are allowed to elapse before laparotomy is performed.

Some authors believe that operation should not be undertaken at once during the acute stage, but that efforts should be directed toward the support of the patient, by means of protocolysis and hypodermoclysis. If possible, the patient should be placed in Fowler's position and, whenever necessary, should be given stimulation by injections of camphor. Fluids and solids by mouth are to be withheld. After the process has become definitely localized incision and drainage should be resorted to.

As far as the operative treatment of diffuse peritonitis is concerned, there is, of course, considerable difference of opinion, but all surgeons agree that attempts to drain successfully the whole peritoneal cavity are futile. Nevertheless, the abdominal incision is indicated in nearly all of these cases; one must not, however, overlook the possibility of confusing a perforative peritonitis or a case of acute appendicitis with pneumococcic peritonitis.

Without desiring to enter into a discussion of the surgical features of this subject, I may quote from an abstract in the *Practical Medicine Series* for 1912 (1), in which reference is made to opinions voiced by Hartmann and Témoïn. The latter in particular stated that at the present time the following conclusions seemed justified: "In acute peritonitis, i. e., free infection of the peritoneum, whether this be diffuse or on the point of becoming so, the peritoneum has considerable powers of defense, though these are insufficient without the aid of surgery. Today there is no medical treatment for peritonitis. Hence there is nothing to do but operate, and for operation to be useful it must be early and very rapid. Early, it will prevent general spread; rapid, it will limit the intraperitoneal maneuvers to the minimum, thus leaving the peritoneum its phagocytic power. . . . It is necessary to place the patient in the Fowler position." Témoïn says further: "Drainage may be dispensed with, but, as a rule, it is necessary." Gastrointestinal infection and peritoneal absorption are combated by gastric lavage and continuous irrigation of the bowels, as in the Murphy method.

Zesas believes that infection comes either from a

small focus of central pneumonia which is very frequently overlooked in the child, or from a latent pulmonary pneumococcus focus. Extension of a pleuropulmonary inflammation to the peritoneum is not rare. It occurs by the infectious material passing continually from the pleura into the subserosa, then into the subperitoneal cellular tissue, either through the muscular interstices or the lymphatics. The lymphatic communications between the pleura and the peritoneum are so free that it is surprising how relatively rare these cases of peritonitis are. When the infection invades the peritoneum by way of the digestive tract, the wall of the bowel is altered, permitting the bacteria to escape into the peritoneum. Another point of entrance for the infection is found in the female genitalia; pyosalpingitis due to pneumococcus in pure culture is a possible contingency.

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## SOME PROBLEMS OF DIFFERENTIAL DIAGNOSIS IN CHRONIC PULMONARY DISEASE.

BY JAMES ALEXANDER MILLER, A. M., M. D.,

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In these days of awakened medical and lay suspicion the ubiquitous possibility of the presence of tuberculosis in individuals presenting very slight or even vague symptoms, important and difficult problems in diagnosis confront the physician much more frequently than in the past. Moreover, the extending practice of routine periodical physical examination of the apparently well has subjected the chest as well as the other organs to a closer scrutiny for slight deviations from the normal than has hitherto been customary.

Coupled with these facts is the natural reaction of the medical profession to the sting of criticism for failure to make the early diagnosis of tuberculosis now generally appreciated as the essential for successful treatment. This reaction is recorded by a growing tendency to err on the safe side in cases of uncertainty, and as a result, not only are many more correct diagnoses of early disease made, which is highly gratifying, but also many other cases are classified and treated for tuberculosis in which the accuracy of the diagnosis can not only not be proved but is by no means always justified.

Speaking generally, such disposition of dubious or uncertain cases has probably been to the advantage of the greater number of patients, and certainly much less harm is done even in cases of mistake than when cases of actual tuberculosis are overlooked. One cannot, however, escape dissatisfaction with such inexact medical diagnosis, to say nothing of the hardship and injustice which is inflicted upon the unfortunate individuals branded needlessly with the stamp of a dreaded disease. Much has been written of the early diagnosis of pulmonary tuberculosis, but with almost unanimous emphasis upon the refined



procedures and careful scrutiny necessary to discover what we are looking for. Without decrying in the least the value and importance of this point of view, I wish to approach the problem from the other side and to indicate how this very excess of care may lead to error.

From the numerous symptom complexes comprised in this large field of uncertainty we may extract a few fairly large groups in which other explanations of the signs or symptoms are forthcoming and the impending diagnosis of tuberculous disease may be consequently avoided.

*Tuberculous infection versus tuberculous disease.*

—The distinction between these terms I need scarcely consider. By the time adult life has been reached the greater number of people have become infected with tuberculosis, which may even reach the lung and yet outwardly and practically they are none the worse for it. A routine medical inspection is made or an intercurrent indisposition occurs with a searching physical examination of the lungs, a few crackling râles are heard above the clavicle, suspicion is aroused, the half knowledge of a scientific truth may suggest the cutaneous tuberculin test for confirmation, a positive reaction occurs, and a practically healthy man gives up his work and goes to the mountains for an indefinite stay. This is a somewhat crude example of what is happening almost every day. The point to be emphasized is that infection with tuberculosis may produce slight lesions which are permanently recognizable by careful clinical methods. Such lesions may or may not have produced clinical symptoms, but if they have they may have long since disappeared or even never have been noted, but the slight fibrosis or calcified tubercle with the overlying puckered and adherent pleura always remains, the physical signs of which are quite evident to the careful examiner.

The problem is to interpret properly the significance of such signs. This can only be done in the light of corroborative evidence from the subjective and constitutional symptoms. Given signs such as slight impairment of resonance, slight alteration in breath sounds, or fine crackling râles without stickiness or moisture at a pulmonary apex, the presumption of an inactive fibroid lesion is justified unless constitutional evidence of active disease is present. The determination requires time, care, and repeated observations of the usual clinical phenomena such as temperature, pulse rate, fatigue, digestion, nutrition, etc.; but the diagnosis of clinical tuberculosis requiring prolonged treatment with its attendant sacrifices is not justified upon such physical signs alone. Persons with such symptoms may need periodical supervision or correction of untoward habits of life, but these procedures should be considered in the nature of preventives against the possible recurrence of activity rather than methods of treatment for actual disease and interruption of occupation is in such cases not necessary or desirable.

The x ray gives valuable aid in these cases, showing either quite definite homogeneous densities with or without calcified tubercles quite characteristic of fibrosis on the one hand, or the mottled peribronchial fluffy shadows indicative of more recent or active tuberculous lesions. One learns, however, to beware of the undue thickening of hilus shadows so often

reported by radiographers, as they more frequently than not prove to be snares for the unwary.

*Disturbances of internal secretions with neuroses.*

—The second class of cases present problems of a different sort. These patients complain of definite symptoms similar to those of tuberculosis which constitute the problem of differential diagnosis. Signs in the chest are absent in these cases. They involve disturbance of internal secretion, for the most part hyperthyroidism. These patients complain of malaise, loss of weight, general nervousness, digestive disturbances, and sometimes chronic cough when the thyroid is actually enlarged. On examination they are found to be poorly nourished, have a rapid pulse, are easily fatigued, and, possibly the most frequent source of error, usually have a slight rise of temperature in the afternoon which is accentuated by exertion or excitement. If perchance the slight physical signs of the foregoing group coexist also, a diagnosis of pulmonary tuberculosis is difficult to escape. I have been led into such an error a number of times only to watch my case of supposed tuberculosis develop into a full fledged Graves' disease and to see my patient cured or markedly improved by appropriate surgical or other treatment of the thyroid gland.

Misguided reliance upon the tuberculin test or upon the thickened root shadows or other doubtful evidence of the radiograph may here also furnish false props to a mistaken diagnosis. The general examination of the patient so often slighted by specialists in pulmonary diseases, discovers the fine tremor of the hands, the tachycardia, the slight enlargement of the thyroid, the exaggerated tendon reflexes, and possibly the beginning exophthalmos upon which the correct diagnosis rests.

Closely allied to these cases and possibly belonging in the same group are those victims of the strain of our modern economic or social life, so called neuroasthenics. They, too, are in poor general health, lose weight and strength, have all sorts of digestive disturbances, show an unstable regulation of body temperature so that the thermometer frequently records slight rises, and not seldom have indefinite pains which are usually referred to some region of the chest. Careful analysis of possible causes of nervous exhaustion from untoward circumstances in the patient's life, of possible sources of mild toxic absorption as from intestinal stasis or from focal areas of infection, such as the teeth or tonsils, is needed here and frequently is brilliantly rewarded.

I suspect that not a few of the patients now carried as positive cases of tuberculosis in our clinics and in private practice, really belong in one of the two general groups which I have thus briefly outlined, or in a combination of the two. A more extended study and observation of these patients might save many months of apprehension and of sacrifice, and possibly in so doing the percentage of apparent cures for tuberculosis might also be lowered.

In emphasizing what I consider to be important facts, I do not wish to be misunderstood. I am well aware that many cases of tuberculosis do present symptoms such as I have described, and that the poison of this infection may be and often is the cause of them. I would not for one moment attempt to place a stumbling block in the path of our steady

progress toward the earlier diagnosis of tuberculosis. I am, however, deeply impressed with the need of a more careful consideration of the clinical facts which can only be brought out by a discriminating analysis of the case history and a most thorough physical examination of other parts of the body than the chest. Also I appreciate the need of a livelier imagination in diagnosis which can conceive of other adequate explanations of certain common groups of symptoms than the one which our efficient antituberculosis propaganda would make to appear most obvious. Nowhere are these needs greater than in our special tuberculosis clinics where each patient is liable to be approached with a bias in favor of a diagnosis of tuberculosis not only in the mind of the examining physician but also in that of the patient himself.

*Bronchiectasis.*—This condition is less common than those thus far discussed, but from this very fact is even more liable to be confused with pulmonary tuberculosis. The history of bronchiectasis is one of chronic cough often paroxysmal in character, usually dating from an attack of pneumonia or so called grippé. This cough is punctuated by the periodic expectoration of purulent, often foul sputum in large quantities. Such gushes of expectoration are frequently precipitated by certain positions of the body, sudden exertion, laughing, eating, or often without apparent cause, and render the patient a most unpleasant companion and disgusting even to himself. His general condition is poor, he loses weight, tires easily, is short of breath, he becomes cyanotic with clubbed fingers and before long is unable to work and, sensitively avoiding the society of others, he is altogether a very miserable object. Periodically, especially in winter, he is ill in bed with fever and aggravation of his other symptoms, and occasionally there is spitting of blood. This condition goes on for many years, is slowly but persistently progressive, and finally the patient succumbs to inanition, pneumonia, large hemorrhage, or some associated complication.

The signs in the chest are variable and often very indefinite, depending largely upon the type of disease of which there are mainly three: the infiltrative, the fusiform or cylindrical, and the sacculated bronchiectasis. The lesions may be single but are very frequently multiple and bilateral. They are almost always situated in the lower lobes, but may be found in the upper. In this situation they may be associated with or dependent upon a tuberculous lesion. If the bronchiectasis is single the localization of physical signs over the lower lobe behind, presenting evidence of pleuritic adhesions, consolidation, localized bronchial catarrh, or more rarely, a definite cavity, makes with the history and the persistent absence of tubercle bacilli in the sputum a fairly definite clinical picture, which is usually satisfactorily completed by the x ray. With multiple and bilateral lesions, especially in the earlier stages represented by the infiltrative type, the difficulties are much greater and the physical signs are usually those of a chronic bronchitis with or without pulmonary emphysema. During the exacerbations with fever, which are often really attacks of bronchopneumonia, there may be a polymorphonuclear leucocytosis, and again in these

types the history, the negative sputum, and the x ray must determine the diagnosis, the efforts to alleviate physical signs being singularly futile.

In all types the x ray furnishes by far the most definite aid in establishing not only the presence of the bronchiectasis, but the location and number of the lesions. Even with the x ray, however, the findings are not always conclusive or susceptible of unquestioned interpretation. When the ectasis is advanced and the cavities are of large size, it is comparatively easy, for even though the cavities may not show as such in the plates, the character and location of the dense shadows caused by the surrounding thickening of lung and pleura are quite characteristic. Moreover, cavities may often be brought out by postural emptying of their contents before exposure to the radiograph.

In the infiltrative types, especially when bilateral, the x ray findings often simulate those of a chronic bronchitis, as at this stage there is little bronchial dilatation and no extensive thickening of surrounding tissues. The diagnosis may be suspected if a stringy increase in density along the bronchi occurs in a localized area especially in the lower lobe and extends well to the periphery of the chest. If the lesion is single in a lower lobe it is particularly important that it should be recognized at an early stage, for this is the type to which surgical treatment is applicable. Chronic lower lobe lesions should therefore be studied with especial care with all of the aids of diagnosis closely borne in mind.

Skilled radiographers frequently differ, however, in the interpretation of the earlier types, and even when suspected the positive diagnosis may not be made until the lesions have progressed to a more advanced stage.

That these cases of bronchiectasis of various types are frequently mistaken for tuberculosis is unquestionable, and Garvin, of the Ray Brook Sanatorium, particularly, has done much to call attention to this fact and also to devise very ingenious postural aids to both the diagnosis and treatment of this condition.

In the lower lobe localized bronchiectasis various surgical procedures have been more or less successful. Artificial pneumothorax and other more radical measures to produce lung collapse have been tried, the former with little or no success, the latter with a certain degree, as reported especially by Sauerbruch (1) and Tuffier on the other side, and by Lilienthal (2) and Willy Meyer (3) in this city. Very lately Robinson (4), in the Mayo Clinic, reports greater success with complete lower lobe resection conducted in two or three stages, and considers this operation by far the best; in fact he apparently considers it quite readily applicable to this type of the disease. With this progress of lung surgery to encourage us, the correct and early diagnosis of bronchiectasis becomes a matter of even greater concern to us than before when mistakes might have involved only an unjust incarceration in a tuberculosis sanatorium or hospital.

*Subacute and chronic nontuberculous pulmonary infection.*—The last group of cases is one which has interested me for a number of years during which I have been accumulating data which are to be reported soon in some detail. They may be designated as



cases of subacute and chronic nontuberculous pulmonary infection. Although I am convinced that these cases are quite common and also that they constitute a distinct clinical entity, they have not been recognized as such in our textbooks and treatises on pulmonary diseases. Lord (5) in 1905 described influenza lesions of the lung, some of which probably belong in this present group. Larrabee (6) in 1915 evidently recognized them, and recently Hamman and Wolman (7) have described similar cases with, however, certain differences and variations from my own observations. I do not doubt that a wider recognition of this clinical type will help to clear up many cases which have perhaps puzzled us heretofore.

The clinical story is somewhat as follows: The patient is taken mildly ill with slight fever and cough. The temperature may last three or four days, is practically never over 102 to 103° F., but is frequently so light and transient that he may not even give up work. The diagnosis of gripe and bronchitis is usually made. The fever and constitutional symptoms subside, but the cough and expectoration persist and there may be hemoptysis. There is no pain in the chest and no pleurisy.

Physical examination shows a very definite localized lesion always in a lower lobe of the lung, of which it usually involves a considerable portion. The signs are those usually associated with tuberculous infiltration, i. e., dullness, somewhat increased fremitus, normal or diminished vesicular breathing—never bronchial—and numerous moist râles. In the earlier course of the disease there may be signs of bronchitis in other parts of the chest, sibilant and sonorous râles; these clear up in a few days, leaving the localized signs which may persist for weeks or months, accompanied by moderate cough and expectoration but with little or no constitutional impairment. It is this persistence of cough and signs which frequently leads to a diagnosis of tuberculous.

The examination of the sputum is negative for tubercle bacilli, but usually shows pneumococci, influenza bacilli, or streptococci, sometimes in large numbers and in almost pure culture. The x ray shows either nothing abnormal, or simply an intensification of the bronchial shadows which is a radically different picture from that presented by a tuberculous lesion of equal extent. In the earlier stages there may be a moderate leucocytosis. Not only may these signs persist for many months, but they may recur with a new infection, usually beginning as a catarrhal cold and the signs return in the same area of the lung, remaining again for a varying period of a few weeks or it may be a few months.

In the cases described by Hamman and Wolman the condition is a permanent or slowly progressive one, apparently with considerable fibrosis and resembles in many respects those of localized bronchiectasis. This may be the course of some of these cases and bronchiectasis may probably develop under such circumstances, but in my experience in the great majority of instances the symptoms entirely clear up, leaving few or no physical signs and presenting little evidence of gross pathological change. In the cases due to influenza, there are usually the acute

catarrhal symptoms of the upper air passages in the first week, and it is also when this infection is present that the signs of a more general bronchitis occur. The leucocytosis may occur early in the first week or late in the cases in which fibrosis and permanent lung damage have resulted.

The differential diagnosis from tuberculosis rests upon the constant localization in a lower lobe, the absence of constitutional symptoms in the presence of extensive physical signs, the absence of tubercle bacilli and the presence of the organisms of acute respiratory infection, the character of the x ray picture, and the disappearance of signs and symptoms in the majority of instances far more quickly than would be possible in tuberculous lesions of similar extent.

#### COMPLEMENT FIXATION TEST FOR TUBERCULOSIS.

There remains for consideration one diagnostic resource which applies equally to all the classes of cases considered which I have reserved for the separate consideration it deserves. I refer to the complement fixation for tuberculosis. Ever since the Wassermann test for syphilis was perfected, experimenters have sought an application of its principles to tuberculosis also, but with indifferent success until quite recently, due largely to difficulties in the choice of a suitable antigen. Although this test is still in the experimental stage of development, I have been convinced by observation of the results obtained by Petroff, at Saranac Lake, and by Miller, in Zinsser's laboratory, that even in its present form it holds possibilities of distinct service in differential diagnosis. Moreover, it apparently presents prognostic possibilities of unusual promise in the differentiation between active and inactive tuberculous disease. One cannot be dogmatic about this test and even those best versed in its use do not show extravagant confidence in it, but in doubtful cases and in association with other evidence it would seem to offer corroborative evidence of considerable importance.

#### CONCLUSIONS.

In conclusion may I emphasize the fact that methods of more or less scientific precision, such as tuberculin tests, sputum examinations, the x ray, and complement fixation reactions, frequently fail or even confuse the diagnostician, and that in the last analysis the diagnosis of pulmonary tuberculosis, as indeed most other internal diseases, depends mainly upon the development of that clinical sense on the part of the physician, the pursuit of which constitutes much of the fascination of the practice of medicine; and further, that justice to patients and the profession demands that those who see a good deal of pulmonary disease should constantly keep in mind the not unlikely possibility that a thorough general examination may explain quite otherwise the suspicious symptoms which are apt to be ascribed solely to the lungs; and that certain definite physical signs in the chest may be susceptible of quite other interpretation than the temptingly obvious one of tuberculosis.

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379 PARK AVENUE.

## CHANNELS OF INFECTION AND METHODS OF TRANSMISSION OF TUBERCULOSIS.\*

BY WILLIAM H. PARK, M. D.,  
New York.

Two types of tubercle bacilli cause disease in man: the human type and the bovine type. The percentage of people infected by either one or the other depends on the use of raw milk in childhood and the amount of human tuberculosis that the people come in contact with. In New York City, almost all adult tuberculosis and all localized pulmonary tuberculosis was shown some six years ago to be due to the human type; in infancy about ten per cent. of infections were due to the bovine type, and in children some sixty per cent. of glandular infections were due to the same.

It is of interest to report the identification of the tubercle bacilli in a number of cases during the present year, because since the last test pasteurization of milk has become almost universal, only sixty thousand out of two million quarts being consumed raw in New York City. We have now only completed the test in a small number of cases of tuberculous glands, the actual test being carried out by Dr. Marie Grund. Doctor Krumwiede and I found in the 1911-1912 tests that of nineteen cases in children under five years, six were of the human type and thirteen were of the bovine type; while of twenty-seven cases of tuberculous glands in children from five to fifteen years, nineteen were of the human type and eight of the bovine type. This year, we find under five years, of eight cases, six of the human type and two of the bovine type; between five and fifteen years, of fourteen cases, twelve of the human type and two of the bovine type. These figures show a very marked reduction in the percentage of bovine infection among those having tuberculous glands of the neck, the type of infection which is most apt to be of the bovine type. All four of the children having bovine infection consumed raw milk.

In regard to human tuberculosis and the sources of infection, droplet, dust, and water have all been taken into consideration. Pflügge and his pupils advanced proof that droplet infection should be considered of even more importance than dried sputum. Teague's experiments are very illuminating. He had his larynx and fauces sprayed with *Bacillus prodigiosus* and then talked toward and coughed toward plates. Two of his colleagues tried the same experiment. When the larynx only was swabbed, coughing produced many more colonies than speaking. The same was true after swabbing the tonsils and

uvula. When, however, the lips, the tongue, and the mucosa of the cheeks were infected, one hundred spoken words equalled two coughs.

### AVERAGE NUMBER OF BACTERIA.

	100 Spoken Words.	1 Cough.
Larynx	3	5
Tonsils	1	20
Uvula	1	20
Tongue,		
Lips, and	12	6
Mucosa of cheeks		

Teague tested forty-three cases of diphtheria and found, from talking, ten infected plates three inches from the mouth, and sixty-five per cent. infected when both coughing and talking were tested. The bacilli obtained in most were very few. The considerable force of the amount of air passing the lips made by speaking such words as *if* and *to* is rather surprising if one has not tested it. In talking, the two points at which the force of air currents is great are the larynx and lips, while in coughing and sneezing the pharynx is blown out. The colder the atmosphere, the longer the bacteria in the droplets live. At a temperature of 50° F. they live much longer than at 70°. Increase of moisture also preserves the life of the bacteria. Last year, we carried out some experiments in the subway and found that as the number of passengers increased the bacteria in the air increased. When crowded, numerous streptococci and other bacteria developed. Teague suggests that the opinion that exposure to cold lowers resistance and so makes infection possible is partly founded on the fact that in cold weather the pathogenic bacteria in the air are more abundant.

**Dust infection.**—Cornet demonstrated that guineapigs made to inhale the air of a closed room in which rugs infected with sputum were beaten, inhaled tubercle bacilli and later manifested pulmonary lesions. He and many others have demonstrated that the dust of rooms inhabited by persons with open tuberculosis, which was in places where only air transportation was possible, was slightly or moderately infected with tubercle bacilli. These observations, together with the knowledge of the enormous number of living bacilli in sputum—the average consumptive probably expectorating one billion living bacilli each day—have emphasized the importance of dried sputum as a means of conveying bacilli. Other observations, however, have tended to lessen considerably this impression.

Sputum when moistened, whether on the handkerchief, carpet, floor, or pavement, cannot be wafted into the air. When dried, it has to be broken up as by beating, sweeping, or trampling feet before the bacilli can be caught up by a current of air. While it is true that a very small proportion of bacilli protected by a mucus covering and not exposed to sunlight, may survive for a year, yet the great majority die within a few weeks and many within a few hours. The danger of dried sputum is undoubtedly great, but it is probably less than droplet infection.

**Direct transmission.**—Whenever sputum clings, whether on the lips, face, clothing, or fingers of the consumptive, on the objects to which expectoration carries it, there is danger of tubercle bacilli being conveyed to another person. Where contact is closest,

\*Read before the New York Academy of Medicine, February 15, 1917.

as in the infant nursed by a tuberculous mother, this is extreme; where less close, as in a child cared for by a tuberculous nurse, it is still great; where it is limited, as in shaking hands, handling furniture and clothing, etc., it is probably slight. As in the case of sputum infection, the fact that a surface is infected does not necessarily mean that many bacilli are loosened and transferred to the object brought in contact. Baldwin showed that the hands of most consumptives who were cleanly in their habits carried a considerable number of tubercle bacilli; but he did not prove that these were frequently transferred to another by shaking hands, or to objects by handling them.

*Water transmission.*—Living tubercle bacilli are found more or less abundantly in the feces of all patients with human and bovine open tuberculosis. It is evident that abundant bacilli reach many water supplies. Brown found viable tubercle bacilli in Saranac River three and a half miles below the sewer entrance, but not twelve miles below. Two hours' time and sedimentation practically freed the river of appreciable living bacilli. Sedgwick and MacNutt noted a fall in the tuberculosis mortality of Lowell and Lawrence after the insertion of a good water supply beyond that taking place during the same time in other cities where there had been no change. Further investigations are necessary before deciding the importance of water infection. I believe that its possibility must be considered, but that it is not the cause of as large a mortality as is indicated by Sedgwick's figures.

The statements concerning the sources of infection suggest the channels of infection. Tubercle bacilli consumed in the milk, inhaled as droplets or as dust, or transmitted by direct contact may all lodge in the tonsils and the surrounding tissues. The channels then separate. Tubercle bacilli swallowed pass the stomach and may be absorbed by the mucous membranes of the intestines. Lesions may develop at the point of entrance or only in the first lymph glands. Bacilli inhaled as droplets or dust may lodge in the pharynx and be swallowed or inhaled. Weber showed that fifteen minutes after inhaling dust tubercle bacilli can be found on the mucous membrane of the lower part of the trachea in the descending bronchi and in the lung adjacent to them. These bacilli may cause a local infection of the lung or be transmitted to the bronchial lymph nodes. At any time, the primary intestinal, pulmonary, or lymph tissue infection may be spread by the blood and cause secondary foci. It is believed by most that later pulmonary disease is due to dissemination from the primary focus.

It is very difficult to state by which path most infection takes place. The gradual elimination of bovine infection lessens that of the intestinal channels. The fact that in more and more people up to adult life a large or small focus of infection is developed and that this focus gives considerable immunity so that a secondary infection is difficult, has led many to suggest that, as in the case of measles, it is only wise to protect very young children; but that if other children become infected, as is probable, they obtain by that infection more or less protection in after years.

It seems to me that the fact that even at the age of ten, only one half to two thirds have become infected, and that we are not at all sure that in a considerable percentage of people foci are not being eliminated and new infections developing, leads us to continue, for the sake not only of infants and young children but also of adults, our efforts to eliminate as far as possible the communication of tubercle bacilli. It is undoubtedly true that the fact that so many adults have a focus, gives them a certain assurance of safety when in contact with others, and also suggests that all adults try to keep up their general health because such a large proportion of them have in themselves the possibility of a pulmonary tuberculosis if they allow their resistance to decline. The fact that general observation indicates that more adults who are in direct contact with abundant infection acquire tuberculosis than others who are not, leads us to advocate that even adults should not put themselves unnecessarily in conditions where massive infection is apt to occur.

315 WEST SEVENTY-SIXTH STREET.

## NONSURGICAL CURES OF EXOPHTHALMIC GOITRE.

By ISRAEL BRAM, M. D.,  
Philadelphia.

That exophthalmic goitre is gradually becoming recognized as a disease strictly medicinal in nature, requiring medicinal, not surgical remedial measures, is now being conceded everywhere. This condition is no more a subject in the realm of surgery than is pneumonia or typhoid or scarlet fever. In pneumonia the surgeon's services may be required to correct a complicating empyema; in typhoid a peritonitis resulting from intestinal perforation; in scarlet fever a dangerous mastoiditis consequent upon a suppurative otitis media. Exophthalmic goitre, though not an acute infectious disease, is nevertheless one strictly outside the domain of surgery, unless dangerous pressure symptoms arise, or malignant changes set in, or in those rare cases in which proper medicinal measures instituted for at least one year have failed to bring relief.

Pressure symptoms rarely become serious enough to necessitate surgical intervention. Where the goitre is of the exophthalmic type, the timely application of proper medicinal measures yields relief of even uncomfortable pressure symptoms in the course of a few weeks in the vast majority of such instances.

As for malignant changes within the thyroid gland, it is readily conceded that this is essentially a nonmedicinal status, goitre or no goitre. Cancer anywhere in the body is a strictly surgical condition, but it may be said in passing, that carcinoma of the thyroid gland is comparatively rare. In my experiences with numerous cases of exophthalmic goitre, I have seen but one case of supervening carcinomatous changes, and this occurred in a woman of seventy-two who was permitted to drift on for years without attention of any kind.

The question of an unsuccessful outcome of non-surgical attempts to cure exophthalmic goitre need

not detain us. Almost all patients in whom the treatment is begun early are cured in from six to eighteen months. Patients who have gone on without proper attention for from one to three years are of course more refractory to treatment, but even of these I have found approximately seventy-five per cent. to recover completely in course of time. To repeat, an early diagnosis is essential to prompt relief and cure, and the older the patient the longer the duration of treatment. The case of six or nine months' duration is practically certain of complete medicinal cure within from six months to a year; one of a year's or eighteen months' duration requires more time for recovery. To generalize, it may be said that treatment to a successful outcome must continue about the same length of time as the previous duration of the disease. Many exceptions, however, occur and occasionally after a year's treatment of a case of exophthalmic goitre it is necessary to continue a close observation of the patient for another six to twelve months before his or her discharge.

The arguments advanced by medicine and surgery advocating their respective modes of procedure have continued for many years, and it is still a somewhat unsettled situation, as far as the surgeons are concerned. The contention of surgical successes means surgical recoveries rather than cures of hyperthyroidism. Only too frequently do we see a case of successful surgical result suffer a complete relapse of all former symptoms; nor is it impossible to subject a patient to postoperative myxedema through a too thorough thyroid removal, and tetany through the accidental removal of the parathyroid glands. On the other hand, not only do some cases of Graves's disease recover spontaneously, but as I have previously pointed out (1), at least seventy-five per cent. of cases are completely curable by non-surgical measures.

My experience now covers thirty cured cases of this disease. Three of these patients were previously operated upon with excellent surgical results but with failure of cure, the symptoms having recurred with a vehemence that necessitated the closest observation and care for several weeks.

In a disease essentially due to a disturbance of the ductless glands, which are so vital to the harmonious interaction of bodily functions, in a disease which is characterized not especially by goitre, the least consideration, but by a frenzy, so to speak, of thyroid overaction—a functional delirium resulting in the surcharging of the blood with thyroid secretion—where can surgery find a cure? There is not always a goitre, and where it does exist its complete removal will result disastrously; its partial removal is not an assurance of cure, and last but not least, the resulting deformity, the mortality rate, and even the operative devitalization of the patient cannot be ignored. It must also be remembered that this disease probably does not originate in the thyroid gland itself, but according to those men who persistently delve into the mysteries of ductless gland function, Graves's disease is due in the main to a disturbance of all the ductless glands, including the thymus, adrenals, parathyroid, pituitary, and sex-

ual glands. Hyperthyroidism is therefore not a distinct entity, but an expression of a generally disturbed metabolism, a loss of glandular equilibrium, about the precise nature of which we are still unformed.

Regarding what nonsurgical measures are most advantageous in the treatment of exophthalmic goitre, the following specimen case histories taken from my files may be of service.

CASE I.—E. G., male, of Philadelphia, aged thirty-nine years; nativity, Austria; occupation, has been conducting a small dry goods store for past several years. The patient came to me on January 16, 1911, in an extremely depressed state of mind, and was under the impression that he was dying. He had been ill for one year, during which time he was under the care of several well known specialists, at home and in three hospitals. He was pale, emaciated, very weak, and the picture of dejection. Chief complaints were precordial distress and palpitation; weakness; anorexia; choking sensation in the neck. Family history: Mother died of carcinoma; father living and well; one brother suffers with "stomach trouble." Remainder of family history unimportant. No history of goitre in near or distant relatives. Social history: Came to this country eight years ago, and was at first employed as a grocer's hand. A few years later he went into the dry goods business. He used no tobacco nor alcoholic beverages. Used tea and coffee in moderation. No history of venereal disease. Married twenty years ago; wife and six children living and well, excepting that one child occasionally complains of precordial distress. Previous medical history: Patient was never ill prior to present condition. Present illness: Dates back to one year ago, when he received a fright because of a practical joke played on him by a friend. Immediately after this event he began to suffer with loss of appetite, and within a few days he suddenly discovered that the collar he was wearing was too small. On closer investigation he discovered two round tumors, each corresponding to a lateral lobe of the thyroid gland. His anorexia gradually became pronounced, resulting in the present emaciation, anemia, and weakness. The goitre gradually became larger, despite the efforts of his physicians at home and later in three hospitals. Within a few weeks exophthalmos became so marked that his wife and friends thought that his eyes would "pop out." Soon cardiac distress, great weakness, extreme nervousness, troublesome sweating, and edema of the legs to above the knees supervened. Insomnia was pronounced, chiefly due to the fact that he was compelled to arise about ten times every night to micturate, being unable to retain urine for any length of time. During the last few months he suffered with choking sensations in the throat, though there was no dysphagia. His weight was 135 pounds, having lost about twenty pounds during the course of the disease. Operation was now advised, but the patient refused. Physical examination: The patient was a middle aged white man, rational and intelligent, anemic, emaciated, and rather restless. The expression was anxious. The skin was paler and more delicate to the touch than normal, smooth, and excessively moist. Vasomotor instability suggested itself by the presence of an occasional blotchy erythematous area on the chest and neck. The lips were slightly cyanotic. The tongue was large and flabby, slightly tremulous on protrusion. His teeth were in good functional condition. The mucous membranes of the mouth, pharynx, larynx, and nose presented evidences of chronic catarrh, probably due to passive congestion. The vocal cords were thickened and covered with mucus (pressure of goitre on throat). Eyes showed marked exophthalmos; conjunctivae congested; von Graefe's and Stellwag's signs present. Pupils reacted well to light and accommodation. Extraocular movements were good, excepting some slight difficulty in convergence. Eye grounds were practically negative. The lymphatic glands presented no palpable enlargements. Thyroid gland was universally enlarged, including the isthmus. Each lateral lobe presented a large, roundish, pyriform mass, with the larger pole below, the right larger than the left, connected



by the greatly thickened isthmus. The tumor moved synchronously with the respiratory excursions, and large veins were seen coursing in all directions beneath the skin. The mass was smooth to the touch, painless, and conveyed a well marked systolic thrill and bruit about the carotid on each side. The patient was wearing the largest size collar procurable, but could not close it with a collar button, and was therefore obliged to wear it open. The chest was emaciated, and flattened from before backward, the respirations were shallow, expansion was two inches. Aside from the presence of slightly impaired resonance and a few moist râles at both bases posteriorly, the lungs were negative. The apex beat of the heart could not be seen, but there was a diffuse waving of the entire precordial area with each cycle of the rapidly acting heart, causing a vibration of the patient's head. No real thrill was detected. Percussion revealed considerable enlargement downward and to the left as far as the anterior axillary line. Heart sounds were brief and hurried. First mitral sound was replaced by a soft blowing murmur transmitted into the left axilla. The second aortic was scarcely audible, while during systole a soft murmur was heard which became louder and harsher as the drum of the stethoscope was traced upward along the carotid artery toward the goitre. Second pulmonic sound was slightly accentuated, pulse was 160 a minute, of low tension, and slightly irregular in volume and frequency. Aside from an epigastric pulsation, the abdomen, including the liver, spleen, and kidneys was negative as far as could be determined. The upper limbs were emaciated; finger tips lightly cyanotic. A fine tremor was present in the outstretched hands. Lower limbs were edematous from below upward to above the knees. Reflexes were practically negative.

**Treatment:** The patient possessing meagre financial resources, change of scene, etc., could not be considered. 1. Hygienic.—He was instructed to take at least one hour's rest after each mealtime, including a two hours' nap after luncheon. Worry, anxiety, anger, and other emotions were strictly warned against, and the reading of light literature of a cheerful vein for an hour or two daily was advised. He was instructed to take a cold sponge bath daily in a warm room, followed by an alcohol rub. Living apartments were well ventilated, and he was encouraged to acquire the habit of deep breathing. All physical exercise, excepting the aforementioned deep breathing and an occasional slow walk in the park, was interdicted, particularly climbing stairs and lifting goods in his store. 2. Dietetic.—The chief articles of food were milk, buttermilk, cream, eggs, and plenty of bread and butter. Moderate quantities of fish were permitted; meat was reduced to a small piece once daily; and tea, coffee, sweetbreads, buns, and fried foods were prohibited. A half of a raw onion twice daily was permitted and also a moderate allowance of vegetables and fruit. He was warned against overloading his stomach, rather eating six partial than three full meals daily. But a fair degree of forced feeding with milk, eggs, buttermilk, and cream was maintained, and this was not difficult, for his digestive organs seemed to adjust themselves to all demands for increased function. 3. Medicinal. Local medication:

R Ungh. hydrarg. iodidi rubri.  
Ungh. belladonnae, .....ãã 3iii;  
Lanolini, ..... q. s. ad. 3ii.

Sig. A small quantity the size of a hazelnut to be rubbed gently into the goitre morning and night.

This was done for a week at a time, alternating with the following:

Camphor-menthol, .....gtt. xx;  
Tr. iodine, .....q. s. ad. 3i.

Sig. Paint over goitre once daily.

**Internal medication:** Ten grains of sodium iodide three times a day after meals, increasing one grain every day until the limit of tolerance was reached, or until he was taking one dram at a dose. When the dram mark was reached, he manifested no ill symptoms other than hoarseness due to an increasing catarrhal condition of his vocal cords. Four grains of extract of suprarenal gland three times a day about two hours after each meal and before bedtime were also given during the iodine administration. Prompt improvement was noted, and within two months he

weighed 152 pounds, a gain of seventeen pounds. Sleep was almost normal; micturition occurred only once during the night; pulse was reduced to 120, cardiac area was much smaller and apical murmur scarcely audible; edema disappeared, exophthalmos and tremor of hands diminished, and goitre diminished in size at least by one third. Patient was bright, cheerful, and confident of complete recovery. Because of the hoarseness, the sodium iodide was discontinued for two weeks, and again begun with ten grain doses, increasing as before. Patient reported to me once a week, and within the next three months he tipped the scale at 160 pounds, appeared plethoric, and felt that he was well. The goitre over the isthmus and left lobe of the thyroid had entirely disappeared; over the right lobe there remained a slight fibroid fullness, as the vestige of the former goitre, and which was only perceptible by close inspection and careful palpation. He was now wearing his normal size collar without any difficulty. He still possessed a rapid pulse, 100 a minute, slight exophthalmos, slight tremor, and complained bitterly of excessive sweating. All cardiac symptoms, including the murmur, had disappeared. No change was made in the diet, but one ounce of olive oil three times a day two hours after meals was added, and all previous medication stopped. The following capsule was now given:

R Ext. digitalis.  
Ext. belladonnae, .....ãã gr. ¼;  
Ferri arsenatis, .....gr. ½;  
Quinina hydrobrom., .....gr. v;  
Ft. cap. No. i.

Sig. One capsule t. i. d. after meals.

This was given for one month, the seventh month of treatment, after which time the pulse was reduced to below eighty, sweating was no longer excessive, exophthalmos gone, and tremor scarcely noticeable. The above capsule was now continued without the extract of belladonna. In all, the patient was under treatment for twelve months, and at the end of this period, aside from an invisible fibrous nodule over the right lobe of the thyroid gland, there were no remaining evidences of a most severe case of exophthalmic goitre with secondary hypertrophic dilatation of the heart, and asthenia. At the present writing—December, 1916—this patient looks well and feels perfectly normal.

In spite of the usual contraindication of the iodides, strange to say, some patients are decidedly benefited by them. That iodine is capable of aggravating the symptoms of the disease cannot be denied; on the other hand, the case above cited and a few other exceptions to the rule afford food for thought. When the iodides are given great caution must be observed, and if there are any evidences of aggravation of symptoms this remedy must be immediately withdrawn.

**CASE II.**—Mrs. M. H., aged thirty-seven years, was sent to me July 21, 1914, from Phenixville, Pa., with a history of having suffered with typical hyperthyroidism for two years. She had been under hospital attention for eight weeks prior to my seeing her and the outcome being unsuccessful, operation was advised. She was very poorly nourished, weighed ninety-seven pounds; exophthalmos so marked that for many months she was compelled when retiring to cover her eyes with a handkerchief to prevent exposure of the corneal surfaces to the air. The middle lobe of the thyroid was moderately enlarged; on auscultation over the thyroid a distinct bruit was heard. The heart presented a soft mitral systolic murmur which was transmitted to the left axillary space. The pulse rate was 120, poor volume, low tension, and compressible. There was the typical tremor of the outstretched hands. The patient explained that her condition developed shortly after a fright and that she lost twenty pounds during the course of her affection. She appeared extremely restless and fidgety and declared that she would rather die than submit to operation.

After a course of four months' treatment—no iodides were tried here—the patient's symptoms were markedly

ameliorated. The tremor lessened, the goitre decreased in size, the pulse was reduced to eighty, there was an increase of ten pounds in weight, and the patient appeared happy. But the exophthalmos was still unimproved. At the completion of the twelfth month of treatment the thyroid gland had resumed its natural size. The patient weighed 130 pounds, the tremor, the tachycardia, and the exophthalmos had disappeared, and the patient was discharged cured on the condition that she report to me once a month for observation. At the present writing she is enjoying the best of health.

The nonsurgical procedures advocated have already been briefly implied in the first case cited. We must remark, however, that all cases do not respond to the same treatment, though some measures are applicable to all cases. For example, the iodides must not be used excepting in unusual instances, particularly where there are reasons to believe that the goitre is either of syphilitic origin or is undergoing degenerative changes. The same may be said of iodine locally applied. Quinine hydrobromide is usually the mainstay in the selection of drugs to be employed; it may well be combined with the extract of suprarenal gland and arsenic. I have found that a combination of the quinine salt with ichthyolincapsule is of great service in combating the anorexia and malnutrition which are so troublesome in these patients.

As for nerve sedatives, the bromides are the most important of this class of remedies, the favorites being the sodium and strontium salts. The tremor, tachycardia, and insomnia are benefited, and the patient soon evinces a feeling of wellbeing under careful bromide therapy. Veronal has its advantages, in that the bromide rash is avoided, and is in most respects equal to the latter drug in therapeutical effects. Two or three grains of veronal thrice daily is the dose equivalent to approximately fifteen grains of sodium bromide three times a day. Sulphonal and trional have their advocates. Hyoscine hydrobromide in 1/250 grain doses twice daily, has been used successfully in efforts to control the nervous symptoms of exophthalmic goitre. Where insomnia and nocturnal polyuria are troublesome, this drug is quite valuable.

In few cases in which the symptoms were especially refractory to treatment, I obtained happy results by the combination of the quinine hydrobromide with lecithin and erythrol tetranitrite. This is a rather expensive combination, but it certainly yielded prompt results in my hands; after relief was attained the patients were given the usual medication.

During the past two years I have been using the high frequency current as a supplement to hygienic, dietetic, and medicinal measures and find that results surely warrant the continuance of this procedure. The use of the D'Arsonval current three or four times a week, and the application of the violet rays through glass vacuum electrodes over the thyroid region and the eyes serve on the one hand to reduce the nervous irritability, and on the other hand to hasten the restoration to normal of the condition of the eyes and the thyroid gland.

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## THE VALUE OF EARLY VACCINE TREATMENT OF PNEUMONIA.

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It is needless to point out that pneumonia is not being successfully treated by conventional methods; the prevailing death rate illustrates that. Pneumonia still holds the record as being responsible for more deaths than any other disease. That the disease is principally due to the pneumococcus is now generally recognized. During the past few years, however, much work has been done in classifying the various types of this organism. Dochez and Gillespie (1) and later Dochez and Avery (2) demonstrated three different types of pneumococci distinguishable from one another that were only found in virulent cases of pneumonia, or in the mouth of persons exposed to cases of lobar pneumonia. A fourth type of pneumococci consists of the organism commonly found in the mouth of healthy persons. That these various types of pneumococci are closely allied if not identical in their biochemical construction is shown by the specific influence of ethylhydrocuprein hydrochlorate on them. Moore (3) after extensive experimental research finds that this chemical kills pneumococci in very high dilution while it has but slight, if any, destructive influence on other bacteria except the streptococcus on which it has a markedly less destructive influence, indicating that the streptococcus is closely allied to the pneumococcus. This close relationship of the streptococcus is also shown by cultural characteristics and the fact that by proper cultural methods the streptococcus can be converted into a pneumococcus and vice versa.

In clinical pneumonia we sometimes find along with the pneumococcus, streptococci, Friedländer bacilli, influenza bacilli, or some other organism as the principal infective agent. The streptococcus is a common invader of the respiratory tract, so there is good reason to believe that this organism is frequently an important factor toward causing a fatal termination.

Since we know that pneumonia is due to a germ invasion, the most natural thought that suggests itself is to devise some means for killing the invading organism without inflicting injury to the patient. Behring succeeded in making an antitoxin that would eliminate a diphtheria infection and it was naturally supposed that an equally potent serum could be developed for the treatment of pneumonia. But in this we have failed. The discovery of salvarsan led to an anticipation that some specific might be found that would destroy other pathological organisms, the pneumococcus for instance, in a similar way, but nothing of practical value has as yet been developed along this line. Moore has suggested the use of ethylhydrocuprein hydrochlorate for this purpose, but in the experimental work with this drug too many mice have been killed with it to place it among the safe remedies. Furthermore even salvarsan is proving disappointing in that it does not kill all the organisms responsible for the disease, and since the mere killing of the organisms responsible for an infection does not raise the re-



stance of the patient or bring about an immunity, the remaining organisms may continue to grow and reestablish themselves as pathogenic factors. So, after all, the most important element in overcoming an infection consists in raising the resistance of the patient to the responsible organism, or in establishing an active immunity so the organism can no longer maintain itself in the tissues or fluids of the body.

That vaccination with attenuated or killed organisms applied prophylactically or therapeutically is the best means at our command to produce active immunization, is now well established, but the advantages of this means of controlling infections are not being sufficiently appreciated because the workings of the immunizing mechanism under the rapid antigenic influence of injections of killed organisms is not taken into account as compared with the tardy or inhibitive antigenic action of the live virulent organisms responsible for the infection. Therapeutic immunization is being neglected, not for the want of clinical evidence from the use of bacterial vaccines, but because prevailing theoretical conceptions do not recognize the difference between the antigenic properties of killed, as compared with live virulent organisms, when in contact with live tissue cells. The prevailing notion is, that if live virulent organisms with all their toxic properties in an active infection will not arouse sufficient protest in tissue cell activities to stimulate antibody production, there is no logical ground for believing that injections of killed organisms will do better. This position looks very reasonable, but a closer examination of the proposition will prove it fallacious and not in accord with ascertainable demonstrations.

Germ, as well as other forms of life, must digest and assimilate food to live and multiply. Digestion necessitates the presence of some ferment, consequently, the germs for the purpose of appropriating food, secrete intracellular or extracellular ferments which dissolve or prepare the food with which they come in contact, so that the food can be absorbed into the germ cell and assimilated, and it is in the capacity of performing this function that the activities of the live organisms in an active infection differ from those of killed germs when injected into living tissues. Rate of multiplication is no doubt the most important factor concerning the virulence of an organism, and rate of multiplication necessarily depends on the effectiveness of the extracellular or intracellular ferments which the germ secretes for the purpose of preparing the food on which it lives. A germ that possesses active digestive capacities is naturally a dangerous organism to the tissue cells with which it comes in contact. When leucocytes come in close proximity with such organisms instead of ingesting them they retreat because the digestive capacity of the germs is associated with some destructive, irritating property which the leucocyte can not tolerate or cope with, and it consequently retreats; or there occurs what is known as a negative chemotaxis. In the case of fixed tissue cells this digestive capacity of the germs is often so destructive that tissue necrosis sets in, resulting in pus formation or gangrene.

When tissue cells are confronted with microor-

ganisms that possess such destructive properties, instead of becoming stimulated for antibody production they are overwhelmed and fatigued; the defensive mechanism becomes handicapped and immunization retarded or inhibited while, meantime, the infection continues to progress until the immunizing mechanism gains the ascendancy; and if adequate immunization does not develop in due time a fatal termination will follow. The favorable turning point of an infection is coincident with tissue sensitization and a resulting sensitization of the infecting organism. Besredka, in some experimental work for the purpose of determining the influence of immune serums on pathogenic bacteria found that the immune substance contained in the serum will combine with the microorganism after being suspended in the serum for a few hours with a bond sufficiently permanent to withstand repeated washings in normal salt solution, and that after an organism has become thus sensitized it no longer possesses its former pathogenic properties, the organism having become very susceptible to phagocytosis. In other words, the immune substance contained in the serum combined with the digestive ferments of the microorganisms and in a sense inactivated or crippled their digestive apparatus and by this means rendered them harmless to the leucocytes, resulting in a positive chemotaxis.

All our prophylactic immunization with either attenuated or killed organisms is based on the knowledge that adequate antibody production will follow these inoculations without manifesting the toxic symptoms which prevail in virulent infections, and clinical experience has abundantly demonstrated that this antigenic property of injections of killed organisms is just as pronounced when employed in the presence of an infection as when employed prophylactically, providing the killed organisms are injected before the tissue cells have become fatigued from the toxic influences of the infection.

Experimentally it has been found that when live pathogenic organisms are injected intravenously the number of organisms in the blood will have materially diminished within four or five hours and in the course of time will disappear entirely. If, however, a very virulent organism is injected a very small dose will make the animal ill. Vaughan, for example, worked with a pneumococcus so virulent that .000001 c. c. of a twenty-four hour bouillon growth, when injected intraperitoneally, would invariably kill a half grown guineapig. The fact that under ordinary conditions the blood will take care of and destroy a fair amount of pathogenic organisms would indicate that when infections develop spontaneously, entirely different conditions prevail than when animals are injected experimentally. This is well illustrated in a case of lobar pneumonia. Here we have, in the early stages of the disease, pneumococci abundantly present in the blood associated with evidences of localization of the infection developing in the lung. From the great number of pneumococci present in the blood it is evident that they have maintained themselves at least for several days in the bloodstream. Usually these pneumonias are preceded by a pneumococcal coryza, or some other localized pneumo-



coccal infection from which the pneumococci gain entrance to the blood in comparatively small numbers. If the leucocytes were actively engaged in phagocytosis, these pneumococci would be destroyed before they could multiply sufficiently to be of any consequence; but from the fact that these comparatively few pneumococci increase so rapidly in number, it is evident that the resistance of such a person is nil to that particular organism with a probable condition in which very few if any pneumococci are being destroyed by the phagocytes; the pneumococci not being sensitized and being virulent to that particular individual, the phagocytes do not dare to attack them. Pneumococci are found most abundantly in the blood about the time of the initial chill, when localization of the infection begins to develop in the lung. From this time on, the number of pneumococci in the blood decreases rapidly, if the patient progresses favorably, while at the same time they are multiplying rapidly in the lung tissue. This would indicate that active immunization for the destruction of germs present in the blood does not develop until tissue involvement takes place. We find practically the same condition prevailing in blood infections by other organisms. The *Streptococcus viridans* for instance will maintain itself in the blood for months and will only disappear after a localized infection like arthritis develops. *Staphylococci* in cases of pyemia will not leave the blood until localized abscesses develop. Cases of puerperal sepsis are particularly dangerous if no localized infection takes place. In typhoid fever the typhoid bacillus is most abundantly found in the blood during the early stages of the disease, and will disappear after Peyer's patches become involved and a positive Widal develops. From this it is fair to conclude that in case of blood infections, localization of the infection with tissue involvement is essential to free the blood from the infecting organism. That is, while germs are circulating in the blood as the result of a natural source of infection, no material influence is brought to bear on tissue cells for antibody production until the tissue cells themselves become involved in the infective process, and the progress of the case will be in direct proportion to the amount of antibody that will develop as a result of such tissue involvement. If cell sensitization, for a specific ferment or antibody production develops rapidly these antibodies will combine with the germs circulating in the blood, sensitize them, put their digestive mechanisms out of commission, and make them susceptible to phagocytosis. During this process of ingesting and digesting microorganisms by the phagocytes, they also secrete ferments which have a destructive influence on other germs, and in turn render them susceptible to phagocytic action. By this means this germ destroying process becomes cumulative and what appears to be a desperate condition may clear up within one or two days. If tissue cells would always become adequately sensitized for antibody production from localized infections, spontaneous recovery would be the rule, but unfortunately live virulent organisms do not always possess sufficient antigenic properties to stimulate adequate antibody formation; on the contrary, through their destructive influence tissues are often crippled or hindered

in producing antibodies. In a case of pneumonia, for example, live virulent pneumococci are attacking lung tissue. The irritating properties of the pneumococcus are such that the involved portion of the lung becomes swollen to a solid mass. If the case progresses favorably, however, the number of germs in the blood will decrease rapidly while they are continuing to multiply in the involved lung tissue. This rapid decrease in the number of germs in the blood shows that antibodies are being formed and since this germ destroying process does not become active until lung invasion sets in, while at the same time pneumococci are multiplying rapidly in the involved portion of the lung, it is quite evident that antibodies are not extensively formed in the extremely involved portions of the localized infection, but at the periphery of the infected area at a position where tissue cells are materially influenced by the infecting organisms, but not too severely taxed, and where the blood supply is still sufficient to sustain them actively. The antibodies thus formed are responsible for eliminating the germs from the blood, but in the intensely swollen portions of the lung where there is no free blood circulation, even if the blood does contain antibodies, the germs in this situation can not be properly reached and consequently they continue to multiply until the immunizing process has gained the upper hand. On the other hand, virulent pneumococci frequently exert such destructive influences on the tissues they involve that antibody formation is inhibited. A low opsonic index in lobar pneumonia foretells a probable fatal termination and a low leucocyte count in extensive acute infections is always regarded as foretelling an unfavorable prognosis. This would indicate that the infecting organisms under such conditions are sufficiently toxic to cripple tissue cells in their defensive mechanism for antibody production and to cause the leucocytes to retreat instead of making an attack. In other words live virulent organisms can not be depended upon as possessing sufficient antigenic properties to produce enough antibody to arrest such an infection.

From this it is clear that the first and foremost requirement in the treatment of a lobar pneumonia, consists in inducing at least some tissue to become actively engaged in specific ferment or antibody production to sensitize the pneumococci, cripple their digestive function, and thus prepare them for destruction. In other words, tissue cells must be trained in their defensive capacity; their power of resistance must be cultivated. This is most effectively accomplished by having tissue cells operate on attenuated or devitalized organisms; organisms that will stimulate their defensive faculty, but not overwhelm or destroy it. So, if we inject into healthy tissues a suspension of killed organisms of the same kind that prevail in a pneumonic infection, tissue cells are brought in contact with these organisms. Being intruders, the tissue cells become actively engaged in eliminating them by a process of digestion through the action of cell secreted specific ferments. Being killed, the germs can not secrete ferments that have a destructive influence on the tissue cells, consequently the entire cell energy may be devoted to specific ferment or antibody produc-

tion. After tissue cells have once become trained, stimulated, and sensitized into antibody production, they, as a means of guarding against a similar germ invasion, continue to produce this specific ferment for some considerable time after the intruding organisms are disposed of. These specific ferments by means of the circulating mediums are conveyed to at least some of the infecting organisms, combine with them, sensitize them, rob them of their virulence by interfering with their digestive function, and thus make them susceptible to phagocytic action. Phagocytosis, while ingesting and digesting these sensitized pneumococci will in turn become sensitized and continue to produce specific ferments which will unite with other pneumococci and render them susceptible to destruction and as this process continues this sensitizing actively becomes cumulative.

From this viewpoint the advantages of early vaccine treatment in cases of lobar pneumonia can readily be appreciated. At the time of the initial chill lung involvement has only extended to a stage of congestion. If by giving vaccines early an endless chain of immunizing activities for immunoproduction is started by the tissue cells at the point of inoculation and continued by an increasing number of leucocytes also becoming active antibody producers as a result of ingesting and digesting sensitized pneumococci, enough immunization can be developed to prevent lung consolidation, certainly an enormous advantage to be attained. From experience we find that if the vaccine is given within a few hours after the initial chill such a result may be expected in a majority of cases. If any one doubts the possibility of attaining such results nothing will convince him more quickly than a trial of this treatment. As a rule after this early administration, the temperature will come to nearly normal within twenty-four hours, and by repeating the inoculation at one or two day intervals for three or four treatments, a large majority of cases will be well on the way to complete recovery within four or five days from the onset of symptoms. If the vaccines are given later, after lung consolidation is well under way instead of recovering by almost immediate crisis, as a rule recovery will be by a slow but favorable lysis. In some cases, however, a crisis will be precipitated soon after giving the vaccine. In advanced toxic cases with but few exceptions no results will follow unless the patient is sustained with oxygen and even then they frequently fail. The question is often asked whether vaccines are of material value after lung consolidation is well established. In connection herewith it is important to realize that inflammatory extensions are always apt to develop before the crisis sets in and every physician with experience views such extensions with apprehension. By giving vaccines such extensions can be avoided. Since indifferent therapeutical results are obtained when vaccines are given after the system has become extensively invaded with toxic materials for a number of days it would be fair to assume that tissue cells lose their power to respond to a stimulus under such conditions. On the other hand just after the onset of symptoms as shown by fever, inflammation, and pain the immunizing re-

sponse to vaccine inoculations is most pronounced. This in all probability is due to some preparation going on in the tissue cells which will make them act quickly when properly stimulated.

To give cases of pneumonia the advantages of such early vaccine treatment, stock vaccines must be employed, and the vaccine must be given on a clinical diagnosis for at least one or two treatments. In the preparation of a vaccine for the treatment of these cases it is important that the vaccine should be polyvalent and contain the virulent types of the pneumococcus. The streptococcus being a common invader of the respiratory tract and often an important complicating factor in pneumonia should be added to the vaccine, and it is also of advantage to add the staphylococcus, because this organism may cause trouble as a secondary invader.

The question of dose in the treatment of pneumonia with bacterial vaccines is very important. Theoretically it would appear that in such an extensive acute infection treatment should be started with a small dose, but from experience we find the reverse to be true. No reactions worth considering follow the hypodermic use of vaccines in such extensive acute infections when given in doses three to four times the usual initial dose employed in chronic infections. Stock vaccines are usually prepared in suspension so that 0.3 c. c. would represent the usual initial dose in minor acute or chronic infections, but in extensive acute conditions like pneumonia, treatment is started with one c. c. and the dose repeated at daily intervals for the first few days until the extremely acute symptoms have subsided; whereas, in chronic infections vaccines are given from four to seven days apart. In extremely severe cases it is even advisable to give the vaccine twice daily for three or four inoculations. After the temperature has come to normal with the heart conditions and other clinical symptoms favorable, if the temperature should then rise again this would indicate that the immunizing resistance is falling back and would indicate that another dose of the vaccine should be given at once. After the temperature has settled down to normal the vaccine should be given at two to four day intervals until the lungs have entirely cleared up.

From experience we have learned that when a person has once had lobar pneumonia, instead of becoming immune to subsequent attacks, he becomes more susceptible. Instead of building up a resistance, infections by the pneumococcus seem to break down the ability to permanently withstand invasions by this organism. From my observations I am convinced that cases of pneumonia, in which vaccines were employed, are more thoroughly immunized than where spontaneous recoveries take place, and that the person treated by immunization is less liable to subsequent attacks than where vaccines were not employed.

Another advantage of the vaccine treatment of pneumonia is that it does not interfere with any other treatment that it may be advisable to employ. Such generally recognized measures as taking care of elimination, rest in bed, fresh air, avoiding overfeeding, sustaining the heart action, etc., should not be neglected. The question of keeping the patient



in bed under the vaccine treatment is very important, because the patient frequently feels so well that remaining in bed seems like a hardship. There is nothing that will break down immunizing resistance in the presence of an infection like fatigue. If a patient is doing well it is not wise to allow over-exertions to break down the resistance which has been developed.

Since prevention is better than cure, and since pneumonia has its origin in a pneumococcus coryza or some other localized pneumococcus infection commonly called a cold, many physicians are making it a practice to treat these colds by immunization with bacterial vaccines, and it is found that if the patient is immunized during the minor infection the more serious infections like pneumonia, mastoiditis, etc., are avoided. I have never seen nor heard of a case of pneumonia developing where the preliminary cold was treated with bacterial vaccines. It is true that most people do not consult a doctor when they have a "cold," but this is more the doctors' fault than the patients'. If doctors would employ bacterial vaccines regularly in the treatment of these so called colds, and thereby show them that something really worth while can be accomplished, the public would soon become aware of this and would regularly consult a physician for these minor ailments, instead of allowing them to run along until a serious condition develops.

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575 ASHLAND AVENUE.

## CIRCUMCISION OF THE TONSIL.

BY FRANK G. MURPHY, M.D.,  
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In our efforts to solve the tonsil problem let us keep in mind that the anatomical facts, the pathological findings, and the clinical evidence are to the effect that infections of tonsillar origin are peritonsillar and not intratonsillar. Whether all infections of the faucial region are of peritonsillar origin is not known though it is almost certain that most of them are.

That there are openings from the crypts to the peritonsillar tissues, as has been stated by some writers, has no basis in fact. The tonsil possesses a system of closed lymphatics and has no large afferent or efferent lymphatic sinuses as has a lymph node. It possesses the same lymphatics as any other organ.

The channels which lend themselves most readily as carriers of infection are the mucous glands and mucous ducts. Lymphoid infiltration about the mucous glands and ducts would indicate that the most probable source of systemic infection is through these ducts and glands. The secreting epithelial cells of the mucous glands being practically bathed in lymph and surrounded by blood capillaries, pathogenic bacteria have little difficulty in entering the lymphatics and the bloodstream.

Earlier writers believed that these mucous ducts opened into the tonsillar crypts and these statements are reiterated in our textbooks on histology today, although MacLachlan (1), von Levinstein, Fränkel, and others have shown that the mucous ducts in the capsular and pericapsular tissues open in the periphery of the tonsil. The tonsil that most laryngologists would pronounce normal is one in which the peritonsillar fossæ have perfect drainage and the plicæ are little in evidence. (Fig. 1.) While the normal tonsil may be inflamed in common with other membranes of the pharynx and buccal cavity, it is known that peritonsillitis and systemic infections rarely occur in this kind of tonsil.

Years ago Jacobi stated that in cases of membranous throat disease, whenever the membrane is limited to the tonsil, there is little or no glandular swelling in the neighborhood. On the other hand, if the membrane extends from the tonsil to its neighborhood, or starts at a distance from the tonsil, the neighboring lymph nodes swell at once. These clinical observations, he states, have stood the test of time and must be reckoned with.

In the light of these observations an effort to establish perfect drainage in the peritonsillar spaces is imperative, when tonsillar infection is suspected. The abscesses found by Rosenow in the tonsils of patients suffering from poliomyelitis were not in the parenchyma of the tonsil, but were outside of the capsule, so the conclusion is obvious that the infection in this disease, when of tonsillar origin, takes place through the mucous ducts at the periphery of the tonsil. That the peritonsillar theory of infection is proved clinically the writer attests in a series of over five hundred cases operated at the Park Hospital during the last two years.

While it is impossible to estimate fully our successes and failures, circumcision of the tonsil has become the routine operation in the hospital, tonsillectomy only occasionally being performed. Probably the time will never come when the operation for complete removal of the tonsil will not occasionally be performed; however, I am convinced that more than ninety per cent. of the tonsillectomies performed today will be abandoned for a more scientific, practical, and safe method. Surely no operation that does not meet with these requirements will long endure.

Tonsillectomy is a major operation and is being performed today because of the lack of knowledge of a better method of disposing of a focus of infection. Fetterolf (2) says: "The various methods of operating advocated today represent practice only, not principle. Their evolution has been purely clinical."

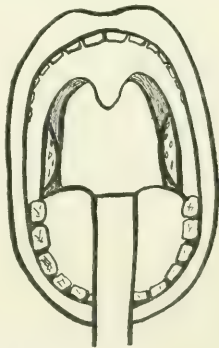


FIG. 1.—Normal tonsil, plicæ triangulares having apparently disappeared before birth.



cal, and no really minute application of the present day methods of anatomical research has been made to the tonsil and its surgery."

When circumcision of the tonsil is properly performed, three important results are usually accomplished, viz., drainage of the peritonsillar fossæ; normal milking of the tonsillar crypts during deglutition; and subsequent atrophy of the tonsil.

Of the three results accomplished, the drainage of the peritonsillar fossæ is, in the writer's opinion, the greatest in importance; for it is in these sinuses that the mucous ducts are constantly exposed to the bacteria in the accumulated masses of exfoliated epithelial cells.

In the normal tonsil there is perfect drainage in the peritonsillar spaces and hence there is no opportunity for detritus to collect and serve as a culture medium for pathogenic organisms. In accomplishing the perfect drainage of the peritonsillar fossæ, the palatal muscles also begin to function normally, the palatoglossal muscle sliding to the outer surface

of the tonsil in the act of deglutition, instead of being pulled over its inner surface and preventing the drainage of the crypts, as I have shown in a former communication (3).

Several writers have referred to the drainage of the crypts by the construction of the superior constrictor and the palatal muscles, of which the following by Hett (4) is an example: "During the act of deglutition the palate is raised and pressure is brought to bear on the tonsil from outside and

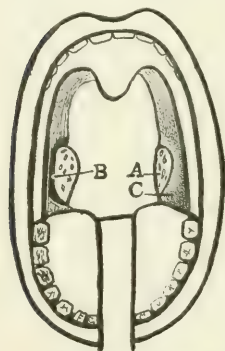


FIG. 2.—A, buried tonsil. B, tonsil after circumcision operation. C, Plica triangularis.

this acts especially on the movable portion of the tonsil in the peritonsillar space. The lower portion of the tonsil is fixed by the attachment to it of the lower muscles, and the margins of the opening of the sinus tonsillaris are kept apart by the palatoglossal and the palatopharyngeal muscles. The upper part of the tonsil surrounded by the peritonsillar space alone is movable and this is pressed downward and inward between the pillars by the action of the extrinsic muscles. The openings of the supratonsillar fossa and the crypts as a consequence tend to be inserted and the secretion discharged."

This is a description of the action of the muscles in the normal tonsil. Now let us observe the conditions in which most laryngologists would say the tonsil was abnormal or diseased.

There is the small atrophied tonsil often seen in the aged where there is a foul smelling, cheesy substance behind the anterior pillar and enclosed by the plica triangularis. With the tonsillar punch a U shaped piece is taken out of the plica and the sinus permitted to drain normally. In this kind of tonsil this procedure is as effective in ridding the patient

of local and systemic infection as though the sinus were permitted to drain by removing the atrophied and inoffensive tonsil.

In a large proportion of tonsils the plica triangularis attached to the free border of the anterior pillar, extends diagonally downward and backward across the tonsil and, as His (5) states, the base is inserted broadly into the lateral aspect of the tongue. (C in Fig. 2.)

In this kind of tonsil neither the palatal muscles nor the tonsil function normally (A in Fig. 2), because the plica is attached to the side of the tongue, and as the tongue is moved backward in deglutition, the plica pulls the anterior pillar to the inner side of the tonsil and as the anterior pillar slides around the outside of the tonsil normally, we find in this condition a perverted function resulting in the well known tonsillar pathology.

In the tonsil we call normal, the plica triangularis has practically disappeared before birth, and we are justified in concluding that the failure of the plica triangularis to disappear in utero, is the etiological factor in most tonsillar infections.

Theoretically, then, the proper procedure would be to remove this foreskin from the inner side of the abnormal tonsil by separating the plica from the anterior pillar, thus permitting that muscle and the tonsil to function normally. However, it is the tonsil that we call buried that most concerns us. To my mind a buried tonsil is one in which the plica triangularis remains in its embryonic condition. The plica may be attached or unattached. At any rate when we separate the anterior pillar, occasionally the posterior pillar, and the attachments in the supratonsillar fossa, we do not then have a buried tonsil. The tonsillar fossæ then no longer act as retention cysts, the mucous glands do not carry pathogenic bacteria to the lymph and blood streams, the tonsillar crypts are milked from the capsule inward, expelling the long retained epithelial plugs.

It may occasionally be necessary to break down the inner surface of the tonsil slightly to assist in the expulsion of keratinized concretions. In many respects this operation has a great advantage over tonsillectomy. Tonsillectomy is a major operation and while all of my operations are performed in the hospital, circumcision of the tonsil can be performed in an office, which is a source of much comfort to the patient, and a convenience to many laryngologists.

The operation, being devoid of severe traumatism and shock, the beneficial results are much more immediate than in tonsillectomy. It should be the operation of choice in singers and public speakers, when a laryngeal irritation is thought to be of tonsillar origin, and which may be performed without subjecting the patient to the hazard of voice impairment, which sometimes follows tonsillectomy.

At the hospital where my work is done, the system of group diagnosis is carried on and through this method of disposing of the tonsil as a focus of infection, much criticism of the internist and laryngologist on the part of the patient is avoided. The internist sometimes wishes the tonsils of his patient operated and, no matter how much infected they may appear to be, they may not be the etiological

factor. On the other hand, we have all seen very innocent looking tonsils that turned out to be the source of severe infection and many of them harbor a peritonsillar abscess. This operation enables us to afford relief to a larger proportion of patients than we otherwise should, because of the little inconvenience and risk attached to its performance; for if the tonsil is the source of the infection the relief is more easily obtained and should it prove not to be, the patient has been little inconvenienced and has taken practically no risk.

While the technic (6) of the operation would not be acquired, in my opinion, to any extent by the general surgeon, I commend the operation to laryngologists as a means at least of arriving at a correct diagnosis. My experience, however, has been that when the operation had been carefully performed, the peritonsillar spaces thoroughly drained, and proper attention given the patient for a few weeks, if there is a marked improvement in the patient's condition, no further operative procedure on the tonsil is justified, and should there be no improvement in the symptoms for which the operation has been advised, the laryngologist should advise against

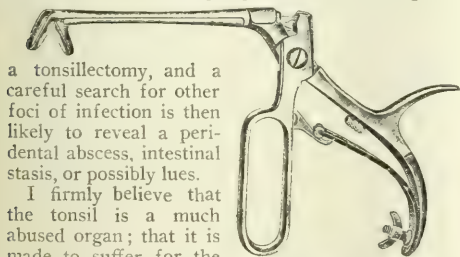


Fig. 3. Punch for making U shaped incision in plica.

a tonsillectomy, and a careful search for other foci of infection is then likely to reveal a peridental abscess, intestinal stasis, or possibly lues.

I firmly believe that the tonsil is a much abused organ; that it is made to suffer for the sins of its neighbors; and that when the palatal muscles conduct themselves normally the tonsil is perfectly capable of disposing of most of the pathological conditions that have been forced upon it.

I subscribe to the idea that the laws governing surgical procedures in other organs of the body should be applied to the tonsil. The tonsil is not a tuberculous gland, nor a carcinoma. Neither is it hidden under the skin nor in the abdomen. The buried tonsil is really a congenital malformation resulting in a number of retention cysts.

The surgical operation that corrects this deformity and furnishes drainage for the retained secretions is, in the opinion of the writer, a more scientific procedure than is that of total extirpation of the organ. No operation is a hundred per cent. efficient and the writer makes no such claims for this one. That there are tonsils that should be enucleated is not open to discussion, though the percentage should be proportionately smaller as the skill of the operator increases in ability to establish perfect drainage in and around the organ.

The technic used by the writer in the so called buried tonsil is as follows: Topical applications of three per cent. cocaine and one to 1,000 adrenalin solution are made on the end of a cotton tipped probe bent at a right angle. The applications are made on the inner and outer sides of the plica and

in the supratonsillar fossa. The number of applications made depends to some extent upon the susceptibility of the patient, although an application every five minutes for a half hour is usually sufficient. Usually there are no attachments to the posterior pillar that deserve attention. It is important that any attachment in the supratonsillar fossa be severed, which is best done with the shears before mentioned.

The plica triangularis is separated from the anterior pillar with the elongated U shaped punch (Fig. 3). The punch must cut to the bottom of the anterior fossa, and if the plica is unusually thick the incision should be made even lower. It is not always easy to get into the anterior fossa, and when the incision has been made a blunt probed hook should be used to be sure a crypt has not been opened instead of the anterior fossa.

The plica should then be removed with the Hartman tonsil punch for about a quarter of an inch below the bottom of the anterior fossa and along the posterior edge of the incision made by the U punch.

When the operation is complete the blunt probe should pass freely over the tonsil and anteriorly well down to the bottom of the tonsil. At the end of a week or ten days the incision should be inspected for adhesions that might have taken place. Should there be any they are easily broken up with the blunt probe. However, in a small proportion of cases it may be necessary to use the punch a second time. This is usually necessary only when for some reason the operation was not thoroughly done in the first place, for instance, in hypersensitive individuals and in small children.

After operation the writer makes application to the operated surface of a two per cent. solution of iodine and glycerine. In the large pedunculated tonsil my method has been to cut around the base of the tonsil sufficiently to shut off the peripheral circulation. This is done with the shears I have devised for that purpose. Many tonsils thus treated will atrophy rapidly while others will atrophy much more slowly. This applies also to the buried tonsil after operation.

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#### Calcium Salts in Acidity and Allied Disorders.

—John Aulde (*Medical Record*, March 10, 1917) summarizes the action of calcium as follows: It is antacid, catalytic, and reconstructive, its salts aid digestion by stimulating the glands producing the digestive ferments; it is an important stabilizer of the nervous system, and in derangement of function in childhood and adolescence with acidity it is of great value. Calcium chloride is soluble in water and may be given in solution, but the other salts should be given in trituration with equal parts of sugar of milk, of which a child five years old should be given five grains three times a day and an adult ten to twenty grains before or after meals.

## OBSTETRICAL PARALYSIS; A REVIEW OF ITS MECHANISM AND THE OUT-LOOK FOR ITS RELIEF.

BY HAROLD W. WRIGHT, M. D.,  
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In this condition there are two more or less distinct types: the upper arm type and the lower arm type. The former is by far the more common and consists in partial or complete paralysis of the rhomboidei, supraspinatus, infraspinatus, teres minor, deltoid, biceps, and supinator longus. In the lower arm type the flexors and extensors of the wrist and fingers, the triceps and some of the intrinsic muscles of the hand may be involved, also the supinators of the forearm. The upper arm type is due to a lesion of nerve fibres coming from the fifth cervical root and part of those from the sixth root; the other type involves some of the fibres connected with the sixth, seventh, and eighth cervical roots and sometimes of the first dorsal. The lesion or lesions may be high up in the roots themselves or lower in the cords containing the fibres of these roots. The nature of the lesion is a hemorrhagic infiltration and an extravasation beneath the perineural sheaths followed by organization of clot and infiltrating cicatrix, some of the fibres of the roots or cords being severed, or in rarer cases the roots avulsed from the spinal cords.

The anatomy of the plexus as worked out by Kocher particularly, explains the characteristic distribution of the paralyses. The fifth root gives rise to the nerve to the rhomboidei, also to the suprascapular nerve to the supraspinatus, the musculocutaneous nerve to the biceps and brachialis anticus, the circumflex nerve to the deltoid and teres minor and those fibres of the musculospiral which supply the supinators of the forearm. The nerve to the rhomboidei may escape if the lesion is low enough, as may also the suprascapular nerve. The most frequent site of the lesion is about at the junction of the fifth and sixth roots, at which point the suprascapular nerve comes off. The fibres of the sixth root must frequently escape because this root contains the fibres making up the nerves to the serratus magnus, the pectorales, the subscapularis, the pronator radii, latissimus dorsi, and triceps. The characteristic attitude of the patient is that of adduction, with inward rotation of the humerus and pronation of the forearm; if the rhomboidei are affected the scapula will be pulled forward and slightly away from the thorax by the unaffected serratus magnus and later when contractures have occurred the scapula may be elevated by the overactivity of the levator anguli scapulae and the trapezius. On account of the weakness of the biceps the head of the humerus may be subluxated and on account of the nonresistance to the action of gravity the weight of the humerus in these young children may pull the acromion process downward, causing it to acquire quite a marked lip on its anterior border, and this lipping may interfere with the reduction of the luxated humeral head, either actively or passively. The above description is of the upper arm type. In the lower arm paralysis the attitude would consist mainly of drop wrist, flexed or flaccid fingers and thumb, with good power in the muscles,

moving the elbow and shoulder joints; also there may be a dilatation of the pupil on the affected side with retraction of the eyeball because of the interference with the fibres of the sympathetic which are connected with the first dorsal root.

*Differential diagnosis.*—From poliomyelitis the diagnosis of obstetrical paralysis is made by the history of birth trauma and early observance of paralysis, but this alone is not sufficient to distinguish it; a careful examination will show a different and more widespread and irregular distribution of the paralysis in poliomyelitis with more extreme atrophy even a month after birth, the distribution of the paralysis being in muscles supplied by more roots than could be involved in either type of obstetrical palsy or else in those supplied by only one nerve, e. g., an isolated deltoid or biceps palsy. We have also to distinguish obstetrical paralysis from spastic cerebral paralysis affecting the arm and in very young infants this is not always easy because of the fact that the voluntary resistance of the baby to examination may simulate spasticity or, on the other hand, the spasticity may not yet have set in if the child is seen a few days after birth. In a spastic case the attitude of the arm is the same as in the upper arm type of obstetrical palsy because the adductors and inward rotators of the humerus and the pronators of the forearm are naturally the stronger. The diagnosis will be settled if a spasticity and lack of voluntary use of the lower extremity is present on the same side as the arm palsy, unless the cerebral palsy has involved the arm only, which is extremely infrequent. The Babinski sign is of no value in young infants because up to about the tenth month it is normally present.

*Etiological review.*—The first adequate description of this condition was given by Duchenne in 1872. He attributed the paralysis to pressure of the forceps on the neck or of the finger in the axilla. Two years later Erb called attention to a similar distribution of paralysis in many cases of adult plexus injuries and to the fact that the muscles involved could be stimulated from one point in the neck by electricity, now called "Erb's point"; he therefore believed the cause to be pressure at this point of the fingers of the accoucheur while delivering the head in breech cases. Thorburn in 1886 suggested pressure on the plexus by the clavicle as the cause in some cases. Arens in 1889 ascribed the injury to hemorrhage in the nerves after tearing them; and Carter in 1892 was the first clearly to attribute the injury to stretching and tearing of the nerves. Following him others agreed and enlarged upon the idea, pointing out the effect of strong lateral bending of the head with delayed delivery of the shoulders in head presentations and of the turning of the head in breech delivery, as favoring tearing of the plexus.

Fioux in 1896 was the first to publish experimental work and he rejected the theories of direct pressure by forceps or fingers or clavicle on the plexus, coming to the conclusion that tearing of the plexus by traction was the cause, the fifth and sixth roots being torn most easily because they are on the longest side of a triangle and thus tearing was facilitated by strong lateral bending of the head; he



produced paralysis in rabbits by pulling the head strongly to one side. Shoemaker experimented on the cadaver and with the plexus exposed was able to tear the fifth and sixth cervical roots, but never the seventh or eighth. As to anatomical findings, Danyon found hemorrhage around the plexus near the spine, as did Fritsch and Seeligmüller. Eversmann found a tear of the plexus at Erb's point. Philippe found a rupture of the roots from the cord. Oppenheim found degeneration of the fifth and sixth roots. Danchez at autopsy found only injection of some of the branches of the plexus. Küstner in 1888 called attention to injuries of the bones and found fracture of the clavicle to be the most frequent bone lesion, but dislocation of the humerus rare because of the lack of firm union between the diaphysis and epiphysis in infants, so he thought separation of the latter a frequent cause of the disability. Clark, Taylor, and Prout reported the results of experimental and clinical work and because of the conditions found at operation, viz., thickening of the part of the plexus where the fifth and sixth cervical roots unite and rupture of the fibres, they were firmly convinced of the accuracy of the theory of localized trauma by stretching and tearing. Many others shortly afterward agreed with them; Bullard, Osterhaus, Bailey, Frazier, and Skillern all accept the idea of tearing of the plexus by stretching it when delivering the head while the shoulder is fixed or delivering the shoulder while the head is firmly fixed.

Lange in 1912 advanced the idea that tearing of the capsule of the shoulder joint, which at first limits motion because of pain and later from habitual posture, was the chief cause. This theory he held on the ground of the similar posture maintained in adults when the capsule of the shoulder is injured, but he reported no cases of this lesion in infants. T. Turner Thomas, of this country, advocated Lange's theory, basing it upon nine cases, all of the patients being too old to permit of an estimate of the character of the initial lesion. He amplified Lange's theory by postulating that after the tearing of the capsule a perineuritis is set up, but that the later limitation of motion is due to the contraction of the capsule.

J. J. Thomas and J. W. Sever, of Boston, point out that while dislocations of the shoulder do occur in obstetrical traumata it is unlikely that they would be always overlooked by those who have reported many instances of other findings causing direct pressure upon the nerve roots and trunks of the plexus as evidenced by anatomical findings and by definite paralyses and atrophies of muscle groups and by pupillary changes from involvement of the first dorsal root, all of which are found in early life. They also point out that the distribution of the paralysis in most cases necessitates a lesion high up in the plexus rather than in its axillary portion, e. g., the supraspinatus is supplied by the suprascapular nerve which arises from the plexus at the junction of the fifth and sixth roots, nearly two inches above the level of the shoulder joint in infants. Sever and Thomas have analyzed 471 cases as well as performed many experiments upon the cadaver. The experimental work of these men

has shown that considerable force exerted upon the plexus by holding the shoulder and flexing the head to one side will produce a marked tension of the fifth and sixth roots followed by snapping of the suprascapular nerve, and as the force increases fraying out of the fibres of these roots within their sheath after the sheaths themselves had first been slightly torn; in some cases avulsion of the roots was produced. They also found that forcible abduction and elevation of the arm as in breech delivery produced marked stretching of the eighth cervical and first dorsal roots, but did not tear them. In no case were they able to tear the capsule of the shoulder, dislocate the humerus, or separate the epiphysis. Out of their 471 clinical cases only thirty-two were normal births, labor being difficult in 418, forceps being used in 317, head presenting in 219 and breech in only sixty-six. The arm was broken in only three cases, the clavicle in fourteen, and there was no case of dislocation of the humerus.

*Remote complications.*—The most important complications occurring in the untreated or inadequately treated case are contractures of the subscapularis and the pectoralis, together or singly, causing internal rotation and adduction of the arm with constant stretching of the weakened deltoid and supraspinatus muscles in the upper arm type; also pronation of the forearm due to comparative overactivity and thence contracture of the pronator radii, the supinators being usually affected. There may also occur an elevation of the scapula because of the comparative overactivity of the trapezius and levator anguli scapulae, which try to compensate for the weakness of the supraspinatus and deltoid. Later, because of the affection of the musculocutaneous nerve, in some cases there may occur a subluxation of the humerus because of the weight of the arm being unsupported by proper tone in the biceps and brachialis anticus; this happens because of neglect to support the arm in a proper sling during the first year of life; such a measure would restore the power of the biceps group to a great extent in many instances because there is seldom complete paralysis of these muscles.

*Treatment.*—We may divide the treatment of these conditions into that of the subacute stage, comprising the first six months of life, and the stage after that period, when it is too late to expect much if anything from surgery upon the nerves, but not too late to improve greatly the function by correcting the mechanical interferences to proper function. It is reasonable to believe that early suture of the torn nerves and early removal of the hemorrhage about them offers a better chance, and other things being equal a good chance of restoration to normal. The difficulties in the way of this more radical procedure are the difficulties of obtaining consent to operation at this age and the technic of nerve suture in this region. Sharpe, of New York, (1) has operated early and is enthusiastic over the prognosis; reports of the final result of primary suture or early suture have not yet appeared. Theoretically this is the ideal treatment. On the other hand, spontaneous improvement almost to the degree of practical recovery occurs in a considerable number of cases of obstetrical palsy. According to Sever (2) eigh-

teen months is not too long a time in which to expect spontaneous improvement to occur providing proper orthopedic treatment such as will be mentioned is given. To have a fair chance for spontaneous improvement the plexus and the muscles affected should never be allowed to be stretched either by the force of gravity or the action of their opponents, but should be supported by keeping the arm in a position of extreme abduction and elevation and reasonable external rotation during the first year at least, during the same time giving massage and electricity carefully supervised, together with careful muscle training of the weakened muscles. Only thus can the deforming contractures of the subscapularis and pectoralis be avoided and future orthopedic operations prevented.

The most unfortunate aspect of these cases is that they are brought to the surgeon after it is too late to perform nerve suture and after contractures and overstretchings have long existed. To overcome this state of affairs there is required more education of the attending obstetrician and family physician in matters pertaining to preventive orthopedics and the principles of nerve surgery.

When a case presents contractures and thus inability to even passively abduct the arm or outwardly rotate it the Sever operation of tenotomy of the subscapularis and pectoralis tendons, with incision if necessary of the capsule of the shoulder joint will at once overcome the mechanical interference to proper function. Then a shoulder brace to maintain the corrected position with daily passive motion, massage, and muscle training may serve to bring about a great deal of improvement in voluntary action of the affected groups, providing the nerve roots have not been avulsed. But even when the latter is the case such an operation will allow the trapezius and levator anguli scapuli to compensate better for the paralysis of the other groups. The aftercare and following up of the patient after operation is of extreme importance; in fact, it is the key to success; the case should be held for at least a year and seen frequently, the muscle training, massage, and electricity being carefully supervised, and the brace kept efficient during this time. These little patients will continue to be mainly orthopedic problems because they are seldom referred to the specialist in early months, when nerve suture or preventive orthopedic work is available.

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PHYSICIANS' BUILDING.

**Removal of the Gallbladder.**—E. Starr Judd (*Illinois Medical Journal*, March, 1917) from experiments on animals and from the report of cases at the Mayo Clinic concludes that after cholecystectomy certain compensatory changes occur, as the dilatation of the common duct with reduction of pressure in it so that there is probably no back pressure in the pancreatic duct. The patency of the Oddi sphincter is almost entirely overcome. It is demonstrated that as a rule a person can live as comfortably without a gallbladder as with one.

## A MUNICIPAL BIRTH CONTROL CLINIC.

By MORRIS H. KAHN, M.D.,  
New York.

The following studies were undertaken with a view to determining whether there was an actual need and demand for birth control education and whether such a demand, if it existed, could be supplied with any effect by a scientifically conducted clinic in the dispensaries of the Department of Health of the City of New York; we felt that it might be of scientific and sociological interest to publish a report and an analysis of the observations made, probably the first of their kind in this country. Section 1142 of our Penal Code was ignored in conducting this birth control study.

The social and economic status of the patients was fairly uniform, about the same as that of patients attending the other dispensary institutions in this city. A tabulation of the results was made under the following headings: Name and nationality; age; number of years married; number of living children and their ages; number of deceased children; number of miscarriages or abortions; contraceptive methods known or practised. More or less complete data were secured in 464 cases.

The average number of procreative years of married life was 16.1, the age of fifty years being considered in this study as the end of the procreative period for the seventy-two women who were older than that. The average number of living children was 3.27 and of deceased children 1.2, making a total average of 4.47 children born to each family. Of the 464 women, 176, or three eighths, had had abortions or miscarriages, the total number of such interruptions of pregnancy being 324, or an average of 1.8 each for the women involved.

Of the 464 women, 192 knew of no contraceptive methods and therefore had used none. The remaining 272 women knew of one or more methods, more or less effectual, for the prevention of conception. Of the 192 women who were ignorant of the use of contraceptives, practically one half, or 104, had a history of abortions, with a total of 202 abortions, or an average of two apiece. In contrast with this, of the 272 women who knew of one or more contraceptives, only one fourth, or seventy-two, had undergone abortions, with a total of 122 abortions, or an average of only 1.6 apiece.

A further analysis of our tables shows an interesting and striking relationship between ignorance of methods for the prevention of conception and the number of children. Sixty-eight women had had three children each. Of these, twenty-six, or thirty-eight per cent., were ignorant of contraceptives. Twenty-eight women had had four children each. Of these fourteen, or fifty per cent., were ignorant of contraceptives. Fifty-five women had had five children each. Of these thirty were ignorant of contraceptives, or fifty-four per cent. Thirty-two women had had six children each. Of these twenty were ignorant of contraceptives, or sixty-two per cent. Forty women had had seven children each. Of these thirty-eight were ignorant of contraceptives, or ninety-five per cent. Twenty-one women had had eight children each. Of these twenty were ignorant of contraceptives, or ninety-five per cent.

Forty-four women had had nine or more children each, and of these all were ignorant of contraceptive measures. Arranged in tabular form, these data would appear as follows:

Number of women.	Number of children.	Number ignorant of contraceptives.	Percentage.
68	3	26	38
28	4	14	50
55	5	30	54
32	6	20	62
40	7	38	95
21	8	20	95
44	9 to 17	all	100

It is sometimes stated by opponents of birth control that contraceptive methods are known by every married person and that the fault and immorality of having a large family of unprovided for dependents lies not in ignorance of contraceptives but rather in a lack of determination on the part of one or both parents to use preventive measures; in other words, that the failure to use contraceptives results from the inconvenience attending some methods and also from the influence of religious sentiment.

The above data, however, tend to show that ignorance of contraceptives not only is a great factor in the production of large families, but is also a great factor in increasing the number of abortions. From the fact that two thirds of these women knew absolutely no contraceptive method, while the methods used by many of the others were ineffectual or positively harmful, it is apparent that there is a definite opportunity for educating these women in methods of regulating conception. That there is need and demand for such education is voiced in unmistakable language by the multitude of poor who seek advice from all practising physicians.

165 WEST SEVENTY-FIRST STREET.

## Abstracts and Reviews

### THE NATURE OF RESISTANCE TO TUBERCULOSIS.\*

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Doctor KRAUSE said that as the students of research penetrated deeper and deeper into recesses that were once dark, they consciously or unconsciously demanded more precise description of terms to denote phenomena that obtruded upon their senses but defied their understanding. Upon first appreciating a thing, be it light, sound, an abnormal sensation, or an unusual conformation of the body, they gave it a name. But they were mentally so endowed that they were not long contented with a mere name. They must know where and how it began and ended and through what media it worked; they must discover its attributes and, these determined, they must enlarge and refine their definition and description. Following this came the conception that nothing that they sensed was isolated or autogenic; it was born of something and brought

forth something, and once their minds began to deal with its causes and effects, then they could say that the thing had entered into their understanding. Then only could they affirm that the name was to them perhaps something more than a mouthful of words.

Every domain of knowledge, every phase of science passed through three stages, terminology, description, and a knowledge of cause and effect, on the road from sensation to reason; and medicine, the all embracing, the focus of all sciences, the handmaid of mathematics, physics, chemistry, botany, climatology, and psychology, was perhaps today in all three stages. A genius, a Helmholtz, arose and laid bare the mechanics of the eye. A Richard Bright, a Louis or a Gerhardt sifted and described and clarified a confused mélange. A man with power to observe, perhaps a dermatologist, classified those phenomena that were raised, that were red, those that itched or those that appeared on certain parts of the body, and he thereby brought this science under control and took a step far beyond the time when everything was called a "humor" or a "tumor." But terms persisted and were too often accepted as explanations.

The term "resistance" seemed to the speaker to be a mere symbol. He had attended clinics of some of the best men and had heard the affirmation that a liberal diet of milk and eggs would increase the tuberculous patient's resistance; he had seen the specialist impressively produce his syringe and just as impressively assure the patient that a prolonged course of tuberculin therapy would further the latter's resistance; time and again he had read that a man overcame his tuberculosis because his resistance improved, or declined because he had no resistance. And hearing these statements he had often wondered what the word actually meant to the physician. If there was such a thing as resistance to tuberculosis, then he must mean that the human body could protect itself in such a way that the tubercle bacillus, a parasitic invader, could gain no foothold or make but limited headway; he must further assume that under the influence of a specific irritant, the bacillus, the body reacted in a peculiar manner. So long as it reacted sufficiently to prevent invasion or spread of the tubercle bacillus, just so long it could be said the resistance was satisfactory; if, however, it failed to do so, then resistance was lowered or absent. The entire relation of the tubercle bacillus with the animal organism was one of reaction. Every reaction to a potentially harmful stimulus or irritation was an effort at protection and adaptation. The body reacted to the rays of the sun in a certain definite manner and thus protected itself against them. It reacted to the introduction of pork or morphine in wholly different ways and thus adapted itself to them. It reacted to the implantation of the tubercle bacillus in a particular manner and met the germ with the formation of a special type of cellular accumulation which was called the tubercle. These were trite though fundamental conceptions of biology. To live was to react and if the stimulus or irritant was one that was dangerous to tissue, then to live was to resist.

Therefore, in addition to the three necessary at-

\*Abstract of a paper read before the New York Academy of Medicine, February 15, 1917.



tributes of assimilation, motion, and reproduction of the protoplasm, a fourth could be added, that of resistance. What happened when tubercle bacilli were taken into the body for the first time? Assume that they got no further than penetrating the mucous membrane of the tonsil or passed into the submaxillary glands or even further down into the larynx and reached the deep cervical glands. They were now no longer on an epithelial surface where they could not produce an effect; they were in the tissue. What happened then? The tissue reacted, and in a short time a tubercle came to view. The bacilli were held within a globular, bloodless wall. As long as the wall was competent, as long as circulation between the interior and exterior of the tubercle was at a minimum, as long as the fibrous wall of the tubercle held against invasion by bacilli from within or a flooding of body fluids and a consequent softening from without, just so long would the body have the germs in this initial tubercle under control. Fortunately for most people, this was the extent of their more intimate and involuntary acquaintance with the tubercle bacillus. They were infected, but without clinical disease. They had a tubercle, but not tuberculosis. And once having a tubercle, it might be with never a symptom of specific illness, they would go through a long life without ever thoroughly eradicating the tubercle bacilli from their bodies. All knowledge on the subject indicated that once having gained entrance to an animal body and once having developed sufficiently to arouse a tubercle, the bacilli were never completely wiped out. Why then were so many infected and so few ill? Where did resistance begin, what did it consist in, and how far did it go? There must be some resistance or conditions would be other than they were. Because of the results of experimentation it must be assumed that man and animals had no native resistance to infection by tubercle bacilli in the sense that born in them was some substance that specifically destroyed or neutralized tubercle bacilli that sought an entrance. But there was a difference of reaction under different conditions and circumstances both as to time and character. The tubercle developed differently and this difference of development in large part determined the issue.

It was surprising that pathologists had not paid more attention to the architecture of the tubercle as a formation designed by its very structure to resist further invasion by the tubercle bacillus. This resistance to further spread of bacilli and freedom from symptoms was to be understood as being simply the result of a mechanical barrier which the body interposed between itself and the parasite. Resistance certainly meant that foci of infection and disease were isolated and shut in by barriers of tissue; if this barrier of tissue was broken down or destroyed, resistance vanished. In active tuberculosis, the patient had anatomical changes and symptoms because he was absorbing something from his foci of disease and because there was a sufficient circulatory give and take between his foci and the surrounding tissues; the walls, the envelopes, the investments of these foci were not competent to block off the interior of the tubercles. The pres-

ence or absence of symptoms was to a certain extent contingent on focal mechanics. The patient's resistance can be raised, but in a mechanical way by striving to avoid any manœuvre that will enhance the circulation of the lung and of the tissue around the tubercle.

For twenty years and more the details associated with this phenomenon of acquired increased resistance had been studied and the results of these studies might be summarized as follows: 1. The development of the anatomical tubercle endowed the body with the power to resist greatly increased numbers of tubercle bacilli. 2. This increased resistance to infection manifested itself with the establishment of the first foci. 3. Up to a certain point resistance was directly proportionate to the extent and severity of the initial disease. 4. With the healing of the tuberculous disease the intensity of the reaction tends to become less and less. 5. Inasmuch as a tubercle is perhaps never entirely eradicated from the body, the power to react is probably never completely lost. These facts were as certain and as easily demonstrable as any known concerning tuberculosis. In short, taking into consideration the effects of the tubercle bacillus and any of its products, only the tuberculous animal had a relative immunity to tuberculosis. Increased resistance to infection was bound up in and dependent on overaction or hypersensitiveness of the tissue.

More careful anatomical and physiological studies of the relation of the tubercle to its environment were needed; tubercle of all kinds, tubercle in all stages of development, tubercle as a first infection, and tubercle as reinfection, human tubercle in the chicken and avian tubercle in the guinea pig. What was still unknown about tuberculosis almost staggered the imagination considering the time that had been spent on its study and the little really and actually known about what happened after the bacillus had passed the lips and anterior nares. Therefore there was need for workers in the field. No one man, no one school could discover it all, but if all worked together then each might gain a little portion of knowledge of their chosen study before they died.

**Remissions in Leucemia Produced by Radium in Cases Completely Resistant to X Ray and Benzol Treatment.**—Thomas Ordway (*Boston Medical and Surgical Journal*, April 5, 1917) gives a very full account of a case of this nature and presents the following conclusions: 1. Surface applications of radium in leucemia produce striking improvement in the blood picture, which becomes almost normal; in the size of the spleen and glands, which are reduced almost to normal; and in the general condition of the patient, who from an emaciated and weak condition may become plump and strong. 2. The duration of the remission is variable, it may last from months to years. 3. The results of radium treatment are not regarded as curative. It is believed to be the safest, as well as the most prompt palliative measure in cases of chronic leucemia whether refractory or not to benzol or x ray treatment.

# Dietetics, Alimentation, and Metabolism

## Food and Food Preparation, in Health and Disease

### DIETETIC FADS AND FANCIES.

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Ever since the dawn of language glittering generalities have lured countless thousands of amateur philosophers to their destruction. The fascination of coining a trenchant phrase which seems to set forth a vast principle of human wisdom in a small compass is a mighty one, and in none of the affairs of life has it been more often exerted than in the business of eating and drinking. What matters it that the aphorism of today contradicts the one of yesterday or that the pocket edition sage of the nineteenth century is utterly at variance with the oracle of the eighteenth? The human race will go steadily ahead, ascribing to each generation of moralists the wisdom of the ancients, newly clothed in modern verbiage. Realizing dimly that many of the ills which flesh is heir to are due to overindulgence in food, rules governing the consumption of food have been formulated by the million, when to eat, what to eat, together with all the negatives, what not to eat, where not to eat, etc.

It is not surprising that many of these maxims are directed against the physician, who seems in all ages to have been a legitimate object for wit. One of the most frequently quoted sayings is the one to the effect that one third of what a man eats keeps him alive, the other two thirds keeps the doctor alive. Almost every variety of food has its disciples who look upon it as a panacea, the most popular in this respect probably being the apple. "An apple a day keeps the doctor away" is frequently heard, with its modern, comic variation, "An onion a day keeps everybody away." The simplest formula of all is the one which decrees that the adult should decrease his diet as he approaches the senium until at last he descends out of life even as he entered it, subsisting on pap. These rules, valuable enough in their way, are too all embracing, like Doctor Abernethy's simple rules of health, promulgated over a century ago, "Keep the feet warm, the head cool, and the bowels open." Excellent advice, but hardly covering all the emergencies of life.

There are those who profess that character may be read by the diet, the school which epitomizes its teachings in, "Tell me what you eat, and I will tell you what you are." We do not know whether or not such claims have ever been severely tested, but certainly there is a general impression among the laity that peoples subsisting on animal diet are more savage and warlike than those who live on vegetables, grain, and fruit. This is not strictly borne out by the fact that many barbarous races that have been renowned for their military qualities have confined themselves to a vegetable diet, except on rare occasions when meat was eaten as a sort of feast. In connection herewith, James Jacques Rousseau

said that "great eaters of meat are in general more cruel and more ferocious than other men." Lord Byron was of the opinion that when he included meat in his diet he felt an access of savagery.

The popular conception of cannibal tribes is that they are extremely savage and bloodthirsty, but this is not necessarily so. Reade says: "A cannibal is not necessarily ferocious. He eats his fellow creatures not because he hates them, but because he likes them." Famine is an ever present possibility in the localities where anthropophagy flourishes and the natives lose no opportunity to add to their meagre dietary. Cattle are rarely killed except by accident, as they are the measure of a man's wealth, and the population exists on a vegetable and fruit diet, plus the returns of the chase, an uncertain asset at the best. When a great battle occurs the slain bodies of the enemy are looked upon as so much fresh meat, and, as there are no ethical restrictions upon it, they are prepared and eaten. A great deal of nonsense has been written about cannibalism, but the above is the opinion of explorers and travelers who have really gotten to know the savage. With civilization the arts of husbandry are learned and tribal food supply does not depend so much on the caprices of climate; battles may be fought just as fiercely, but the dead are not looked upon as articles of food, and so the custom falls first into disuse, then into disgrace.

Before going any further with this dietetic discussion, however, let us not neglect any longer the time honored custom of consulting the father of our profession. As might have been expected, Hippocrates (1) had many views on the interrelations of food and medicine, some of which, were their language modernized, would either startle the average healthologist or naturopath with their similarity to his aureate utterances or rouse him to indignation at the supposed plagiarism. He says, for example, that paleness is the effect of acidity; the diet for those of "phlegmatic" constitutions should be fish and flesh, well seasoned, the flesh of fowls, not many vegetables, and black, austere wines; "dry" temperaments should browse upon lenitive fruits, figs, raisins, and soft wines. Persons who have bad digestions and moist bellies, which is the case in "acid" constitutions, should eat the flesh of fowls, which is easily assimilable and alkaliescent; those who have dry bellies should dine upon potherbs. For fevers give ptisans and cream of barley, decoctions of some vegetables, hydromel—honey and water—oxymel—honey and vinegar—and thin wines without flavor. When a man is sick his meats should be contrary to his disease. For ulcers of the lungs fats and salts are given. For "afterpains" he recommends ptisan and leeks and fat.

Among Hippocrates's aphorisms are many bearing on diet. We quote a few: The sick frequently err in the adoption of a spare diet. In diseases which reach a crisis soon, the diet should be thin; where

this crisis is late in the illness, it should be sufficient at first and decreased as the crisis approaches. In summer and autumn, digestion is difficult; in winter vigorous; in spring, indifferent. Neither hunger, nor satiety, nor any excess which overtakes the bounds of Nature can be beneficial. Liquids replete more easily than solids. During hunger, labor is injurious. Excess of food produces disease.

When we consider that these rules were laid down in the fifth century before Christ, we must regard them with admiration. Galen, in his commentaries on Hippocrates, endorsed them highly, and added some of his own. He believed that diet should depend on age, temperature, distemperature, and complexion. He says that "bitter substances engender choler and burn the blood, giving no general nourishment to the whole; however, they may be acceptable to some part, that is, that they are a sort of subsidiary gall. And, again, sharp spices are most unfit for the tender bodies whose substance is easily melted and inflamed. However, strong men may eat them with gross meats. Spices, by their melting quality, are proper for fat people. Meats oversalted are dangerous; inflammation, leprosy, sharpness of urine, and great obstructions happening to such as use them much; agreeing with none but strong bodies, as sailors, soldiers, and husbandmen, accustomed to hard labor and much toiling. Fat meats are not good for dry stomachs; for in sanguine and choleric stomachs, they are corrupted; in phlegmatic stomachs, they procure looseness, and hinder retention."

These views are very approximately those held through the Middle Ages, although the evidence bearing on it is not very large. With the invention of printing came the craving for fame of the "doctors of physick" of that period, and from then on we have books on diet. It is rather surprising, however, that the literature of this subject is proportionately very small. In discussing their theories of disease and its management physicians from the earliest times to the present seem to take it for granted that the proper feeding of the sick—and the well—would be carried out automatically. There have been, of course, notable exceptions to this.

Thus Andrewe Boorde (2) wrote his famous *Dietary of Health* in 1542, in which he lays down the law about every conceivable food and drink. The following may be mentioned as examples of Boorde's wisdom: "Unleavened bread is better than leavened. Hot bread is unwholesome. Eggs should be roasted or poached; fried eggs are bad. Milk is bad for grumblings in the belly, but good for old men and children. Don't eat fish and flesh together. Young beef is good for Englishmen, or, as he says, "Beefe is a good meate for an Englysshe man." Veal is soon digested. Adder's flesh makes a man young. The deer is full of fear and its flesh breeds choleric humors.

Next Thomas Muffett (3), writing in 1655, describes three diets: full, moderate, and thin. Full diet is for young, strong persons; moderate for persons of middle health, and thin diet is only given in what he calls violent diseases. Meats, he says, are of four degrees of hotness—and with meats he classifies many articles of food which are not flesh—in the first degree he gives lamb, pork, pig, and many

others; in the second degree, hare, roebuck, turkey, etc.; in the third degree, scallops, mints, onions, etc., and in the fourth degree scallions, garlic, and ramssies. He speaks of the other qualities of meats, as of their being temperate, e. g., a young pullet, a crowing cockerel, or a grown capon; they may be moist, as wild boar or lamprey; they may be dry, as peacock or fresh fish. He gives many more meticulous distinctions, speaking of sweet, sour, sharp, salt, and bitter meats. It is not quite clear to us of the present day just what these various distinctions mean, but they undoubtedly correspond to certain qualities, real or imaginary, in the articles of food to which he alludes. He is also of the opinion that man learned many secrets of diet from the animals and might learn many more by close observance of their habits.

Muffett's final chapter on the time, order, and manner of eating has advice not inconsistent with the modern schools. Thus, "Meat well chewed is half digested"; "It is ill to talk much at meat"; "We should eat most at supper, walk or talk for an hour or more, and then retire. This settles the meat to the bottom of the stomach, where it is less vaporous to the head and is nearer the liver." "Children may feed much and often, old men little and often. Laboring men may eat a great deal." At a meal Muffett says sweet and moist fruits should be eaten first and all light, liquid things, unless "we be subject to great fluxes of the belly" when we do the contrary, "for if slippery and light meats went foremost into hot stomachs, they would be either burnt before the goosies were concocted, or at the least, cause all to slip downwards oversoon, by making the lower mouth of the stomach too too (!) slippery."

A century later we have the classical work of John Arbuthnot (4), the second edition of which was published in London in 1732. Some of his chapter headings will give an idea of its scope: *The Necessity of Chewing. How Spirituous Liquors Hurt the Stomach. Faulty Lungs Hinder Nutrition. Proofs from the Anatomy that Human Creatures are Carnivorous. The Effects and Cure of Too Great Repletion of the Stomach.* Arbuthnot reflects the knowledge of his time with all its virtues and faults. He recognizes the importance of chewing: "Mastication is a very necessary preparation of solid aliment, without which there can be no good digestion." He came to the conclusion that "this liquor of the stomach in a sound state is not acid" from the fact that certain substances known to be susceptible to the action of acids passed through it unharmed in a series of experiments. He also says, "In general, a high colour'd urine indicates an acid cooling diet."

Since Arbuthnot's time many books on diet have appeared. With those which express the conventional ideas on the subject and which are part of medical knowledge it is not our purpose to deal here. In the last century there have been many dietetic cults and one great reform. The cults have tended to fall into three main divisions: vegetarianism, excessive mastication, and fasting. The reform is of course the disfavor into which alcoholism has fallen. The decline of the empire of King Barleycorn does not properly come within the scope of this paper and can only be alluded to in passing. The rich



production of novels in the Victorian era have made us so familiar with the manners of that time that we are aware that it was, above all, a drinking time. Let Dickens speak: "Those were drinking days, and most men drank hard. So very great is the improvement Time has brought about in such habits, that a moderate statement of the quantity of wine and punch which one man would swallow in the course of a night, without any detriment to his reputation as a perfect gentleman, would seem, in these days, a ridiculous exaggeration." Strictly speaking, the novelist was writing of a time just before the Victorian, but the modern reader of his novels and those of his contemporaries is very apt to comment on the quantity of liquor that trickles through their pages.

Before discussing particularly the modern dietetic cults let us review briefly the history of human food, smiling indulgently at the strange tastes of the ancients as we can well afford to do, knowing that the customs of the year of Our Lord 1917 will stand irrevocably as the *dernier cri* of good taste. In such a review the human race may be considered in large groups and more by the stage of civilization to which they have attained rather than by geographical or ethnological distinctions. In some localities, however, geographical position has determined the diet to such an extent that, for all practical purposes, it is the same today as it was a thousand years ago and as it will be in 2917. We refer to such races as the Esquimaux and Laplanders.

The original diet of primitive man seems to have been such roots and berries as he determined by experience were nutritious. Sooner or later, however, goaded either by a failure of this diet or by the depredations of wild animals, he began to kill the latter for food. At once a twofold purpose was accomplished. Man became safe from attack and found a new and agreeable addition to his food. Flesh indeed became so much to his taste that he preferred it to his previous food, and when it grew scarce for any reason he was discontented. To obviate such possibilities, indeed, he began to domesticate animals, finding that cattle, swine, sheep, and poultry might be kept on hand as a constant source of the prized flesh diet. This also had some tendency to restrain his nomadic habits, so that tribes settled for long periods of time in one place, acquired herds, and cultivated the ground. Thus man passed into the pastoral and the agricultural stage of his development. It may be mentioned in passing that certain races never reached this stage in their pure state, as, e. g., the North American Indians. A false impression exists about these people, due to a number of associations, one of which is the belief that they cultivated Indian corn or maize largely. As a matter of fact they were really a hunting and fishing people, and it is only comparatively recently, through the example of halfbreeds and whites, that they have cultivated the ground to any extent.

The question of the exact time when man began to eat meat is an interesting one, but has been given an entirely disproportionate value by the activities of the vegetarian school, which attempts to prove by it that man is essentially graminivorous. Their opponents lay the cornerstone of their argument in

Genesis 9:3. "Every moving thing that liveth shall be meat for you; even as the green herb have I given you all things." The vegetarians retort that the corruptness of the people which called forth the Flood in Divine retaliation was due to the fact that they had become meat eaters. They also assert that flesh and fish eating nations have never been as highly civilized as vegetable eaters, contrasting in this regard the Esquimaux and Laplanders on the one hand and the Hindoos and Chinese on the other.

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(To be concluded.)

## DIET IN OLD AGE.\*

By I. L. NASCHER, M. D.,  
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The conservation of the aged, Doctor Nascher said, had been almost entirely neglected by the medical profession, and no factor in their welfare had received less attention than the factor of diet. The textbooks on nutrition and diet neglected or ignored this feature, and reports from institutions for the aged showed an absolute ignorance of the modifications in diet required by advancing age. Where beneficial modifications and restrictions obtain, it was purely on grounds of expedience or economy, never on physiological grounds.

In order to understand how and why the diet for the aged should be modified, one must understand the anatomical and functional changes that demanded such modifications. With advancing age the strength diminished, fatigue set in more rapidly, and a longer period of time was required for recuperation. There was therefore less physical activity, less waste, and less expenditure of energy, and for these reasons a smaller amount of food was required, less protein to repair the waste, and less carbohydrates to restore and maintain the necessary energy. The loss of teeth was also an indication for modifying the food that required mastication. After the teeth fell out meat, if given at all, should be finely minced and thoroughly cooked. It was not advisable suddenly to discontinue the use of meat, but there should be a gradual reduction in the amount consumed and preference should be given to fowl meat and the light meat of young animals.

The salivary glands atrophied and the salivary secretions diminished, and there was atony and atrophy of the muscles of deglutition, indicating the need for preparing the food so that little salivary secretion might be required and that it might be swallowed easily. The particularly objectionable dry foods were smoked and salted fish and meat, crackers, and nuts.

There was generally in old age atrophy of the muscular fibres of the stomach with consequent atony and dilatation. There was also atrophy of the gastric glands; therefore digestion was slower, and

\*Abstract of a paper read at a meeting of the Medical Association of the Greater City of New York, February 19, 1917.

the food might remain five or six hours in the stomach. For this reason the old rule of feeding the aged little and often was illogical. Food in old age should not be given in shorter intervals than four or five hours.

An important factor in the selection of vegetable food for the aged was their mineral content. It had been shown that in old age calcium salts were not completely eliminated, the normal elimination being reduced to about half in cases of arteriosclerosis. The lime output was also diminished, and lime was retained in the blood, increasing its density and viscosity, thereby adding another factor in the causation of increased blood pressure and causing deposits and calcification in abnormal situations. Potash salts have a deleterious effect in old age. Beans and peas were comparatively rich in potash salts, while rice contained only one per cent. in its ash.

Owing to the diversity in extent and character of the senile changes in advanced life in different individuals and the great difference in the activity and habits of aged persons, it was not possible to arrange a general dietary based upon calories and nitrogen equilibrium. Experimental dietetics could be made applicable to ordinary living except by a profound modification of the mode of living, and it was impossible to arrange a fixed dietary or devise rules that would be applicable to all. The best that could be done was to make broad generalities, leaving the details to be worked out in each individual case.

The total amount of food must be diminished. With the falling out of the teeth, the amount of meat must be diminished, and it must be thoroughly cooked and finely chopped. Vegetables containing much cellulose should be used freely. Foods should be prepared in a liquid, semiliquid, or mush form, and dry foods, especially smoked foods and nuts, should be avoided. Food should not be given at shorter intervals than four or five hours. Mild alcoholics with meals and at bedtime were not objectionable. Old people were apt to overeat when they got some exceptional delicacy, and care must be exercised in this respect. While today little consideration was given to the diet and other features of the welfare of the aged, two centuries ago much attention was paid to these details in health and disease, as disease was then known, and many of the ideas of that time were now heralded as new discoveries. Much could be learned from the early and accurate observers, who knew nothing about calories or nitrogen equilibrium, but who knew how different kinds of food acted upon the different constitutions of aged persons.

**Treatment of Senile Diabetes.**—M. W. Thewlis (*Medical Review of Reviews*, March, 1917) maintains that diabetes in the aged differs from that in younger persons. Acidosis rarely develops in them, the term diabetes is apt to cause them much anxiety as indicating certain death, and what will cure a diabetes in the young will sometimes produce bad results in the aged. Treatment in most cases must be gradual, not vigorous, and many patients live longer and more comfortably if left untreated. In the matter of diet much depends on the individual case. In

many instances of senile diabetes the Allen or the Joslin treatment will produce excellent results, perhaps add much to their comfort and a few years to their lives, but in some cases it is bad judgment to change the mode of living. Many times a radical change in the diet has caused bad results in the aged patient. It is not advisable to stop any confirmed habit, no matter how bad it is. When an old man's appetite fails it causes him much anxiety, and usually any strict diet in the aged will produce anorexia and constipation. At other times it is advisable to place them on a diet. Thewlis has found the following diet list very convenient to use in private practice, where it is difficult to have the cooperation of the patient by weighing food, etc., and it is impossible to follow out hospital rules.

*Allowed:* Soups and broths made of meat of any kind without vegetables; oxtail, turtle, gumbo, curry. Eggs in any form. Fresh fish of all kinds, fish roe, and anchovies. Salt fish, cod, mackerel, and herring, may be taken unless they increase thirst. Olive oil and all animal oils and fats, such as butter, cream, codliver oil, and bone marrow. Fresh meat, fowl, and game of all kinds. Ham, bacon, smoked beef, tongue, sweetbreads, kidney. Vegetables: spinach, cress, chicory, pickles, dandelions, beet tops, celery, artichokes, lettuce, cucumbers, cranberries, green part of asparagus, cauliflower, French beans, all in moderation. One potato, the size of an egg, daily. Cream cheese, milk curds. Jellies made of gelatin, calf's foot with wine, but unsweetened except with saccharin, coffee jelly, lemon jelly. Fruits if acid, not sweet. Sour oranges and lemons, grape fruit, olives, sour apples, peaches, raspberries, currants, in very small quantity and occasionally. All kinds of nuts except chestnuts. Whipped cream, custards, kumys, milk, not over one pint a day unless directed, tea, coffee, cocoa. Whiskey, brandy, gin, rum, sour Rhine or Moselle wine, claret, Burgundy, Apollinaris, Contrexéville.

*Strict diet:* Meat, poultry, game, fish, soups, gelatin, eggs, butter, olive oil, coffee, tea; for variety tongue, sweetbreads, tripe, kidneys, pig's feet, anchovies, lobster, crabs, sardines, shrimp, bologna sausage, smoked and pickled meat. Oatmeal, cream, cheese.

*Substitute for bread:* Gluten flour may be used for thickening broths, egg puddings, etc. Recipe for gluten biscuits: Gluten flour, one cup; best bran, previously scalded, one cup; baking powder, one teaspoonful; salt to taste; two eggs; milk or water, one cup. Mix thoroughly.

*Substitute for sugar:* Saccharin tablets, one half grain, each of which is equal to one lump of sugar. Do not exceed four to five grains daily. Very acid fruits may be sweetened with saccharin or cooked with a little cooking soda to neutralize the acidity. In cooking foods avoid flour. Melted butter may be used as a substitute. Roast beef should not be basted with flour; meat soups must not be thickened.

*Forbidden:* Sugar in any form—syrup, molasses, candy, jams, honey. Rice, bread, sago, tapioca, arrowroot, cornmeal, hominy, barley, macaroni, spaghetti. Pastry, cake, puddings, and everything made of flour. Potatoes, peas, parsnips, beets, carrots. Champagne, cider, ale, beer, and port.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal

and The Medical News

*A Weekly Review of Medicine*

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A. R. ELLIOTT PUBLISHING COMPANY,

Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single copies, fifteen cents.

Remittances should be made by New York Exchange, post office or express money order, payable to the A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, APRIL 28, 1917.

### MEDICAL SUPPLIES FOR THE ARMY.

We congratulate the Surgeon General of the Army on having realized the necessity for the elimination of unnecessary red tape in arranging for the purchase of war supplies, and we also congratulate the hundreds of manufacturers who, in response to the invitation issued by the Council of National Defense, gathered in Washington and perfected organizations in their respective lines, which will place at the disposal of the Government without restriction the full capacity of their respective plants.

As the first result of this conference the circular advertisement, dated April 11th, for sealed proposals for supplies has been withdrawn, and instead proposals have been drawn up covering the needs of the medical department for an army of a million men for three months. The details of these proposals have been carefully studied by the subcommittees of manufacturers in the different lines affected, and, wherever possible, they have been modified so as to facilitate the work of obtaining supplies and effecting economies. For instance, it has been the custom for years for the Government to order pills and tablets in bottles of eighty, 125, 250, and 400. The subcommittee of manufacturers having in charge the procuring of materials of Class

I, which includes pharmaceuticals, chemicals, and disinfectants, has suggested that the usual trade packages of 100, 500, and 1,000 be substituted. The committee also suggested that certain drugs not now obtainable be eliminated from the list and that for other drugs, either not obtainable or obtainable under difficulty, equivalents be accepted. These recommendations have met with the approval of the medical department and will no doubt be adopted in ordering supplies.

The Secretary of War has formally notified the Surgeon General of the existence of an emergency which will give legal authority for the purchase of supplies needed by the department without the necessity for open bidding. This will enable the department to accelerate its work greatly and to enlist the active cooperation of the various subcommittees of manufacturers. While the details of the method of procedure have not yet been formally announced, it seems probable that the executive committees of manufacturers of the different commodities will receive requisitions from the medical department for such goods as are needed in its work. These will be assigned by the executive committees to the individual manufacturers who can best supply the particular goods desired, and the allotments will be so made as to avoid favoritism and at the same time ensure the most prompt and effective service. While the methods of fixing prices have not been made public, they will in any case be subject to revision by the War Munitions Commission, which will have authority to scale down prices which are exorbitant.

The War Munitions Commission will also have authority to take over for the Government any supplies needed which are being hoarded by speculators. The question of remuneration will be determined by the experts of the commission, and the dealer will receive a fair margin, while the Government will be assured that it is not being mulcted for excessive profits.

The broad spirit of cooperation shown by the manufacturers in every line is no more than was to have been expected when once they were given an opportunity to do so. The men at the head of our great industries are great men, otherwise they would not have grown as they have, and it is most fortunate for the Government, for the soldiers who will use these supplies, and for the people of the country who will pay for them that the National Council of Defense has given these manufacturers an opportunity to refute the slander that Americans are money mad and that patriotism is dead in the land of dollars.



## REPORTS UPON "WAR NEPHRITIS."

The frequency of nephritis has been the subject of observation and investigation in the military hospitals at the front. The disease has prevailed as an epidemic among French and British troops and among those of the Central Powers as well. It was also known in the prevalent form among the soldiers in our own Civil War, as we are reminded by Rudolf, writing on War Nephritis in the *Canadian Medical Association Journal*, April, 1917.

Dufour also presents a report made by Giroux and Quirin (*Bulletins et mémoires de la Société médicale des hôpitaux*, Paris, 1916) which substantially agrees with the findings reported by Rudolf from the Canadian Hospital Service in France.

The most marked characteristic of this form of disease is perhaps its relative mildness, and for the most part its favorable prognosis. The latter authors distinguish two clinical forms, one of which is accompanied by edema and develops mildly toward chronicity; the other a nitrogenous nephritis with more violent symptoms and a more speedy termination. This form often manifests itself as a hepatic nephritis.

Most of the cases, however, are of the former type, and the description of the course and symptoms agree in the main with those of the former author. He considers the disease epidemic in form and probably due to some infection, perhaps ultra-microscopical, at any rate still undiscovered. Like most of us looking only for somatic mechanistic factors, the psychogenical causes are merely passed over by such phrases as "war conditions" and the like. The cases rarely prove fatal, and most of the patients make at least an apparent recovery, while some pass on to the chronic form. The patients who recovered were not kept under observation long enough to ascertain the permanency of these recoveries.

The edema is the most constant symptom, but soon yields to rest in bed and a milk diet. There is often vomiting, sometimes diarrhea; headache is very common and severe, and lumbar pains are also present. There is some disturbance of special sensation, chief of which is a roaring in the ears. The most severe discomfort is caused by difficulties in respiration, producing particularly distressing nocturnal dyspnea. A rise in temperature is not always present, but probably belongs to the initial stages which are usually passed before the patient comes into the hospital.

Blood pressure is increased and seems to be associated with the presence of albuminuria. There is marked diuresis, preceded by suppression of urine in some cases, perhaps in all in the early stage before

admission. With increase in flow of urine the edema is diminished. Urinalysis reveals the presence of renal casts and of both red blood cells and leucocytes. In some instances blood is present in the urine in sufficient quantities to discolor it. Albumin is also found, but its detection is interfered with by the presence of blood.

If this form of nephritis is due to a specific infection its prevalence is doubtless influenced, as the latter authors show, by "factors of military life." Cold may have an influence upon the kidney, although it is by no means generally followed by this result. Limited diet, particularly a too exclusive consumption of meat, is probably a determining factor. All of these tend to injure the kidney and render it susceptible to infection and disease.

## STREPTOCOCCI OR GLOBOID BODIES IN POLIOMYELITIS.

The disputed question of the direct toxic agent responsible for epidemic poliomyelitis is one of the subjects of intensive study in the recently published report of the work of Doctor Flexner and his collaborators (*Journal of Experimental Medicine*, April, 1917, xxv, No. 4). Bull contributes a most interesting study of the possible responsibility of streptococci in producing the pathological symptoms. The presence of a filterable virus has been indisputably established. Are the streptococci discoverable in the blood, nerve tissues, cerebrospinal fluid, intervertebral ganglia, in the throat, and other localities and tissues the active agents in this virus and thus the etiological cause of the disease?

This question the experiments undertake to answer. The result of extended investigation was the production merely of various conditions and lesions distinct from those produced by poliomyelitis. They consisted of meningitis, meningoencephalitis, abscess of the brain, arthritis, tenosynovitis, myositis, abscess of the kidney, endocarditis, pericarditis, and neuritis. Moreover, these lesions were produced indifferently from streptococci taken from poliomyelitic subjects or from other sources. For it may be remarked that the interest in streptococcus infection in poliomyelitis has led to the discovery that streptococci can be cultivated from the brain and spinal cord of both human and monkey victims of the disease.

It is significant further that these cultures of streptococci produce chiefly in rabbits lesions and conditions which are not found in man and monkeys, which are the subjects of poliomyelitis. The virulent action of the streptococci manifests itself in the meninges and from there to the cerebrum, while it

also acts upon the joints, voluntary muscles, and other tissues. A flaccid paralysis also appeared in four rabbits dependent upon the degree of virulence. All attempts to produce a paralysis in monkeys failed, although the monkey is the one experimental animal which decisively is susceptible to the infection of poliomyelitis and to the paralysis resulting therefrom.

Furthermore, it is proved that recovery from the streptococcus infection provides no immunity to the monkey against infection with the filtered virus of poliomyelitis, nor does its blood neutralize the virus *in vitro*. The streptococci found to be present in poliomyelitis are considered to be secondary bacterial invaders, but not the specific etiological agents.

In contrast to these are the facts arrived at concerning the work upon the globoid bodies, formerly described by Flexner and Noguchi and discussed by Amoss in his report here of work upon their artificial cultivation and immunological reactions. They "have been found repeatedly in the lesion of poliomyelitis of man and monkey; they have not been detected in lesions or conditions other than poliomyelitis; they have sufficed to produce in several instances the experimental disease in monkeys; and they have been recovered in cultures from lesions thus produced."

Amoss undertook his work with the realization that this study was still in its beginning, but his results, though obtained in the face of difficulty in cultivating the globoid bodies, serve to confirm former conclusions. For their action in regard to complement fixation is analogous to that of the serum of recovered monkeys and human beings, and moreover, after the cultivation of these globoid bodies through several generations of immune serum, they had no pathogenic properties for monkeys. Their immunological characteristics seem to be the same as those of the virus causing the disease.

#### THE HEIGHT OF ALTRUISM.

It is a well known fact that for anatomical and physiological reasons—and possibly for other reasons of which we are not yet aware—the ordinary methods of combating syphilis have little or no effect in involvement of the central nervous system. This has led in the past to many schemes for bringing the spirocheticide in direct contact with the organism. Most successful of these have been the Swift-Ellis method and the intrathecal injection of mercurialized serum. While these have shown temporary improvement in selected cases, they have not entirely filled the bill by any means. General paresis still flourishes unchecked by any remedy designed by the ingenuity of man.

Now comes an English writer who has solved the problem of the therapy of syphilis of the central nervous system. Writing to the *British Medical Journal* for November 25th, a correspondent suggests that the lymph of arsenic eating people be injected into the subarachnoid space of paretics, tabetics, etc. This lymph, he says, should be deprived of its protein before being used; it evidently did not occur to this English Ehrlich that such arsenic as is absorbed from the alimentary tract is changed into an organic compound and deproteinizing the blood would also dearsenize it in all probability. Furthermore, it has never been shown that the blood of arsenic eaters is rich in arsenic, the tolerance acquired being due rather to the faculty of nonabsorption from the stomach.

But the crowning feature of the idea is seen when we remember that the Styrians, whom the originator of the scheme himself mentions, and the Austrian Tyrolese are Austrian subjects. Of course, hearing that English soldiers were suffering from syphilis of the central nervous system, these good people would come to the front and offer to be bled as an experiment, hoping that thereby some of their foes might be preserved for a little more "strafing."

No, there is nothing on the present page of the history of the world to encourage us to believe that the millennium is close at hand. Undoubtedly, if we could find enough pacifists among the Styrians we might get volunteers for such an experiment, but as they seem rather to lean to the other extreme we are afraid it must be postponed, at least until the end of the war.

#### A BROADER CONCEPTION OF FEEBLE-MINDEDNESS.

The methods of mental measurements, as exemplified by the Binet-Simon scales, have hardly accomplished more than to supply ready rules for the determination, or rather for the classification, of the defective element of any certain class. They can hardly be credited with furnishing means for the absolute diagnosis of the defective. At most they have only demonstrated methods of establishing a degree of defect according to an artificial standard, created for a certain element and applying to that element only, as for example, to certain schoolchildren, inmates of prisons, etc.—which are used mostly for statistical purposes. Were this the first actual discovery of the feeble-minded schoolchild or child patient it would be greatly to the discredit of the powers of observation of the teacher, physician, or custodial officer. The mental measuring scales are, nevertheless, the entering wedges in the development of a methodology in mental conditions. But

they must not be taken too literally. Indeed, these methods have come somewhat into disrepute because too much value is placed on the measuring scale and upon the various puzzle tests and too little on the value of personal contact for a greater or lesser period with the individual to be tested.

In applying these tests to the mental activities as ordinary measurements might be applied to the body, personal variations, state of health, fatigue, etc., are too often overlooked. Yet even in the measurement of the body the Bertillon measurements have shown that unless the many variations in body form and condition are understood and corrections allowed therefor, even in so apparently fixed an object as the body, results may vary so widely as to be of no value. The tendency to construct scales and puzzle tests and to have them applied indiscriminately can be provocative of a great deal of harm. These tests cannot determine actual mental capacity or knowledge, and certainly not the broader mental elements that go to make up the individual. The mere fact that an individual can solve the various puzzle tests or pass in the measuring scales does not make him mentally valuable, and, logically, the reverse should be true. Indeed, it is known that certain real defectives have remarkable development in one or more faculties—for example, certain imbeciles often have remarkable memories.

The broader conception of feeble-mindedness includes the consideration of those individuals who lack the elements necessary to make them moving spirits during the formative period of life and to prevent them from becoming obstructive elements during the period of natural decline. For this there is unfortunately no set scale yet established, although it has been attempted to devise broader tests to determine judgment, foresight, decision, the perspective sense, the sense of humor, etc. These are the mental elements necessary in responsible civil or official life, and not so much the abstract faculties. The loss of initiative in early life, and the blocking of progress by those holding positions by reason of seniority would then be less likely to occur.

#### THE DEPARTMENT OF HEALTH AND MEDICAL INSTRUCTION.

Poverty, say some of our more or less serious thinkers, is the greatest crime. It is fortunate for a great many worthy people that it is not technically a capital crime. Be that as it may, the time has almost come when a man may be his own judge, jury, and prisoner at the bar under the charge of ignorance. There are no extenuating circumstances in these days of compulsory education and educa-

tional opportunity, and a man can easily find himself sentenced to life imprisonment in his own limited intelligence if he neglects these opportunities.

In knowledge of physical facts and matters of importance to public weal or woe, the Department of Health is taking no chances on the education of our high school students. Its bureau of Public Health Education has just issued four leaflets: Important Facts About Milk, Important Facts About Typhoid Fever, Important Facts About Tuberculosis, and Important Facts About Diphtheria. These little monographs have been approved by the New York Association of Biology Teachers and are to be distributed to the high school students of the city. The existence of a permanent bureau which assumes and discharges educative duties along these lines should cheer up the overworked practitioner whose sense of humor folds its tent and silently steals away before the naïveté of his patients. The form and content of these leaflets give promise of establishing a fund of accurate information which will make for intelligent cooperation in following prescribed treatment and a sense of proportion in giving diagnostic evidence. Not only are they a valuable adjunct to the formal secondary school curriculum but they are most useful to the adult layman.

The average man's savoir faire may be sufficient to suggest that he remove himself from the immediate vicinity of a temperamental rampant bull and that he take measures to circumvent the animal's viciousness. But the average man is ignorant of protective conduct in the presence of an epidemic juggernaut and often of the constant everyday germ traffic. The popularization and distribution of such knowledge ought to simplify and facilitate the work of the Department of Health, help the individual in his adjustments, and to some extent relieve the physician in private practice.

#### News Items

**Sanitary Supervisor in the State Department of Health.**—The Civil Service Commission of the State of New York announces an examination, to be held on June 9th, open to both men and women physicians, for the position of sanitary supervisor in the New York State Department of Health. The salary is \$3,000 a year. All who are interested in this examination should write to the State Civil Service Commission, Albany, N. Y., for a special circular of information.

**New Officers of the Medical Society of the State of New York.**—The following officers were elected at the annual meeting of this society, held in Utica, Tuesday, Wednesday and Thursday, April 24th, 25th and 26th: President, Dr. Alexander Lambert, of New York; first vice-president, Dr. T. H. Haisted, of Syracuse; second vice-president, Dr. Albert W. Ferris, of Saratoga; third vice-president, Dr. M. B. Heyman, of Central Islip; secretary, Dr. Floyd M. Crandall, of New York; assistant secretary, Dr. E. L. Hunt, of New York; treasurer, Dr. Frank Van Fleet, of New York; assistant treasurer, Dr. Harlow Brooks, of New York.



**Physician Wanted for County Jail.**—The State Civil Service Commission will hold an examination on June 2d for jail physicians, New York County, which is open to men only, who must be residents of New York County and licensed medical practitioners of New York State. Salary, \$1,000 a year.

**Typhus Fever on the Mexican Border.**—Senior Surgeon Pierce, of the United States Public Health Service, reported that during the two weeks ending April 7th, one new case of typhus fever was reported at Laredo, Texas, making a total of 79 cases of the disease reported from points on the Mexican border since July 1, 1916.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Tuesday, May 1st, Laryngological Society; Wednesday, May 2d, College of Physicians; Thursday, May 3d, Obstetrical Society, Southeast Branch of the County Medical Society; Friday, May 4th, Kensington Branch of the County Medical Society, Physicians' Motor Club (directors).

**Louisiana State Medical Society.**—The following officers were elected at the annual meeting of this society, held in Alexandria on Tuesday and Wednesday, April 17th, 18th and 19th, under the presidency of Dr. W. H. Seemann, of New Orleans: President, Dr. Clarence Pierson, of Jackson; first vice-president, Dr. C. G. Unsworth, of New Orleans; second vice-president, Dr. A. B. Nelson, of Shreveport; third vice-president, Dr. C. J. Menville, of Terrebonne.

**Ohio County, W. Va., Medical Society.**—A regular meeting of this society was held in Wheeling, Friday evening, April 20th. The principal feature of the program was an address by Dr. William O'Neil Sherman, of Pittsburgh, on the Carrel Method of Wound Sterilization: Its Use in Military, Industrial, and Civil Practice. The address was illustrated by stereopticon and motion pictures. About two hundred and fifty members and guests were present.

**South Carolina Medical Association.**—The sixty-ninth annual meeting of this association was held in Spartanburg on Monday, Tuesday and Wednesday, April 16th, 17th and 18th, under the presidency of Dr. C. B. Earle, of Greenville. The following officers were elected: President, Dr. F. H. McLeod, of Florence; first vice-president, Dr. K. M. Lynch, of Charleston; second vice-president, Dr. L. Rosa H. Gantt, of Spartanburg; third vice-president, Dr. F. G. Ellesor, of Newberry; secretary and treasurer, Dr. E. A. Hines, of Seneca. Next year's meeting will be held at Aiken, on the third Tuesday in April.

**Penalty for Failure to Report Industrial Diseases.**—The State Industrial Commission of New York calls attention to the fact that cases of industrial diseases are not being reported by medical practitioners and institutions to the Department of Labor, State Industrial Commission, as required by statutory law. Article V, Section 65, of the Labor Law, making this requirement, has been in force since 1912, and has been in no way nullified by later ordinances of local boards of health of cities or towns. Attention is directed to the fact that the penalty of a fine is attached to failure to report these cases.

**New York University Class Reunion.**—The twenty-fifth anniversary dinner and reunion of the class of 1892 of the New York University Medical College was held at the Hotel McAlpin, Wednesday evening, April 11th. Dr. Robert E. Coughlin, recently elected class president to fill the vacancy caused by the death of Dr. John Sample Long, acted as toastmaster. Addresses were made by Dr. William Golden, of West Virginia, Dr. Henry Lyle Winter, Dr. Raphael Lewy, Dr. Seymour Oppenheimer, Dr. John F. Hagerty, of Newark, Dr. William M. Dunning, Dr. James Emmet Tower, Dr. Dennis A. MacAuliffe, and Dr. Frederick C. Holden. Others present were Dr. Warren Coleman, Dr. Almon Havens Cooke, of Buffalo, Dr. Jeremiah S. Ferguson, Dr. John Mance Gillette, of Sloatsburg, N. Y., Dr. Samuel Goldstein, Dr. Leopold Hahn, Dr. Reuben Hochlerner, Dr. Abraham Hymanson, Dr. Walter S. Reynolds, Dr. Henry C. Sherer, of Norwalk, Conn., Dr. John P. Sheridan, Dr. Joseph F. Sheridan, and Dr. Edmund Specht. There were 162 members in the graduating class twenty-five years ago, of whom 138 are living. The class will hold a dinner every two years in future.

**Positions under the State Board of Charities.**—Three positions in this service will be open on July 1st, as follows: Superintendent of the Division of Medical Institutions; superintendent of the Division of Dependent Children; superintendent of the Division of Mental Defect and Delinquency. The salary of each is \$3,500 a year. For full particulars regarding these positions address the State Civil Service Commission, Albany, N. Y.

**Women Physicians Wanted in State Institutions.**—An examination will be held on June 2d for women physicians, regular or homeopathic, in State hospitals and institutions, at a salary of \$1,000 to \$1,500 a year and maintenance. Candidates must be licensed medical practitioners of the State of New York and must have had at least one year's experience on the medical staff of a hospital or three years' experience in the general practice of medicine. For application forms address the State Civil Service Commission, Albany, N. Y.

**A Lecture on Cancer.**—The American Society for the Control of Cancer has prepared an outline of a lecture on cancer for the use of speakers engaged in the work of educating the public regarding the control of cancer. This outline has been adopted by the National Council of the society as being an authoritative summary of the essential points of our present knowledge of this disease. Copies may be obtained, free of charge, from the headquarters of the American Society for the Control of Cancer, 25 West Forty-fifth Street, New York.

**Canadian Medical Association.**—The annual meeting of this association will be held in Montreal, June 13th, 14th, and 15th, under the presidency of Dr. A. D. Blackader, of Montreal. Sir Thomas Roddick, of Montreal, is honorary president; Dr. Murray MacLaren, of St. John, is the retiring president. Dr. W. S. Morrow, of Montreal, is vice-president. Other vice-presidents are the presidents of affiliated societies, and the presidents of provincial societies ex-officio. Dr. W. W. Francis, who is secretary-treasurer, is in active service in the war zone in Europe, and Dr. J. W. Scane, of Montreal, is acting secretary-treasurer. Dr. D. G. Campbell is local secretary.

**American Therapeutic Society.**—The annual meeting of this society will be held in New York, Friday and Saturday, June 1st and 2d, under the presidency of Dr. J. N. Hall, of Denver, Colo. A provisional list of the scientific papers which will be read at this meeting has been issued. Among the subjects to be discussed are the treatment of circulatory disorders, the ductless glands and their therapeutic uses, infections and their treatments, management of gallbladder and kidney diseases, drugs and their uses. Dr. Thomas E. Satterthwaite is chairman of the committee of arrangements, and Dr. A. Ernest Gallant is secretary.

**Supplies for the Medical Department of the Army.**—In response to invitations sent out by the National Council of Defense some 250 manufacturers of articles used by the medical department of the Army met in Washington, D. C., recently in the offices of the Committee on Medicine and Sanitation. After hearing addresses from the members of the Council the manufacturers were requested to organize in nine classes, representing the different classes of products made by them. This they proceeded to do at once, each class selecting an executive committee to act for it. The members of these committees spent several days in Washington in conference with the Surgeon General's office and some of the committees also visited the New York medical supply depot later, to confer with Lieutenant Colonel Snyder, who is in command of that depot. The manufacturers gave assurance of their desire to cooperate with the medical department in every way to obtain the best service for the government at the least expense. As a result of these conferences invitations which had been issued for bids for supplies for a million men for a year were withdrawn and revised bids for three months' supplies were formulated. Additional supplies will be purchased from time to time as occasion requires. On April 23d, the Secretary of War formally declared the existence of an emergency under which the medical department would purchase its supplies in the open market without the necessity of advertising for bids. It is understood that this change will probably effect the saving of a million dollars annually in the medical department alone.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE VALUE OF THE NEW NONTOXIC TYPE OF VACCINES IN MIXED INFECTION.

By F. M. Wood, M. D.,  
Chicago,  
AND JACOB SOLOVAY,  
Chicago.

In the Harvey lecture for 1913 at Johns Hopkins University, Dr. L. Hektoen brought out the fact that when mixed antigens are injected into animals, the antibody curve is lower for the combined antigens than for the individual antigens when the latter are used separately. This conclusion has been held as a basis of judgment and of action against the use of mixed vaccines in the treatment of infection. It does hold true with mixed toxic antigens, containing partly split protein. In other words, the combined mixture of the toxins in the toxic antigens does lower the antibody curve in many of the infections. Perhaps the majority of those in human beings are mixed infections. The clinical use of mixed autogenous vaccines has been imperative in treating such infections and the results have often been disappointing in long standing cases of widely extended foci, on account of the toxicity of the vaccines used, and beneficial results have not been obtained in many cases. It is, therefore, desirable to determine by animal inoculations, whether mixed vaccines from which the toxic protein has been removed, produce antibody curves of equal height, when injected into animals correspondingly infected.

Research determination of the antibody curve for four different bacteria, using the corresponding nontoxic antigens, was as follows: The organisms used included: 1. *Staphylococcus aureus* from carbuncle of J. W. 2. *Streptococcus hemolyticus* of Sarah P. 3. The intermediate bacillus between the *Bacillus coli* and comma, also Sarah P. 4. *Streptococcus mucosus* also isolated from the feces of Sarah P.

The biological and staining characteristics of each bacterium were as follows: 1. This coccus grew on blood serum both anaerobically and aerobically. It liquefied gelatin, growth starting at the puncture with an opalescent pouch like that seen always in *Staphylococcus aureus*, lasted four days and becoming transparent again. At the edges of the junction between the gelatin and the test tube a yellow pigment deposit formed. In the pouch, where the liquid was, no yellow pigment formed whatsoever; so also in the anaerobic culture; on potato an offensive odor and the characteristic pigment were noted. On litmus milk, the formation of a coagulum and the abundant production of lactic and butyric acids were noted. Staining reactions showed that the organism was Gram positive, appeared like a bunch of grapes in each stained smear, except in the anaerobic one, in which some of the cocci were separated from each other and did not take the stain uniformly. The central portion was stained a red disc like spot.

2. The *streptococcus* on agar appeared as a scanty growth in twenty-four hours, in the form of white scanty colonies. On dextrose gelatin agar, larger colonies, which did not liquefy gelatin. On blood agar, containing defibrinated blood serum, hemolysis occurred, shown by the fact that the colonies decolorized the blood surrounding them. On potato (boiled) a growth appeared after forty-eight hours. Staining characteristics showed it Gram positive. It appeared in chains of ten to fifteen in the smear. These chains, on examination of the individual cocci by the use of the fine adjustment, showed between the cocci a cement like substance.

3. The bacillus was actively motile when examined by hanging drop. It ferments dextrose with gas production. No acid is formed in litmus milk. This speaks against the colon bacillus and for *Bacillus entericus*. No indol is produced. This is against *Bacillus entericus*. A luxuriant growth on potato; this is infarct *Bacillus coli*. It does not liquefy gelatin. These characteristics indicate that the bacillus is an intermediate one, perhaps a modified comma bacillus. It gives the group agglutination for the colon bacillus in dilution of one to 10,000, but it also agglutinates to the patient's serum itself in dilution of one to 50,000.

4. The *Streptococcus mucosus* was also isolated in pure culture from the feces of Sarah P. and appeared capsulated in stained smear, in chains of two and four.

*Test proper.*—Rabbits, eight in number, were tagged:

A. I.—Received 500 living germs in emulsion of the *Staphylococcus aureus*, of a twenty-four hour growth on blood serum at 5 p. m.

B. II.—Received 100 germs of the *Streptococcus hemolyticus* of a growth two weeks old at 5:05 p. m.

C. III.—Received the intermediate bacillus, 500 germs mixed from all its cultures, at 5:15 p. m.

D. IV.—Received 100 germs of the *Streptococcus mucosus*, from the Sarah P. culture from the feces.

Observation at 10 p. m.:

A. I.—Temperature 103° F. Pulse could not be counted; respiration fifty; general appearance bad.

B. II.—Temperature 105° F.; pulse eighty; respiration seventy-five.

C. III.—Comatose condition.

D. IV.—Same as B. II.

At the next day the reaction was more aggravated in each.

On the third day:

A. I.—A boil appeared at the site of the inoculation.

B. II.—Rabbit became normal.

C. III.—Still sick, refused food.

D. IV.—Sick, refused food, all the conditions of the second day still persisting.

At 5 p. m. another inoculation of the same live germs increased by the number of 100 over the original dose was administered to each rabbit. We now started another four rabbits; E, F, G, and H.

E. V.—Received 600 germs of the *Streptococcus hemolyticus* and the *staphylococcus* mixed.

F. VI.—Received the intermediate germ with the *Streptococcus mucosus*.

G. VII.—Received of all three germs 1, 2, and 3.

H. VIII.—Received all four germs. 1, 2, 3, and 4.

**Observation.**—The first four gave a very severe reaction, locally, but the general reaction was not as severe as the first. The reaction in F, G, and H was variable.

F. VI.—Showed tenderness of the abdomen, diarrhea, temperature  $104^{\circ}$  F., pulse could not be counted; respiration like an engine.

G. VII.—Variable effect. At times he would be comatose and the next moment would start to jump, stand on his hind legs, and fall down again with a screaming noise.

H. VIII.—Manifested symptoms of anaphylaxis; namely, inability to stand erect.

The temperature dropped and all rabbits looked weak. All were inoculated again with the same dose as the second one and observed. All were sick, but no evil effects resulted, except in A. I, who had boils all over his body. These boils contained *Staphylococcus aureus* and *Staphylococcus albus*.

B. II.—Became anemic, lost weight.

C. III.—The diarrhea is still persistent. Microscopical examination of the feces: nothing was found but mucus, in glairy rings.

D. IV.—Sneezed all the time, rubbing his nose with his paws.

E. V.—Became pale and anemic, and a few boils developed at the angle of the mouth.

F. VI.—No effect.

G. VII.—Variable disturbance, but very deeply impressed.

H. VIII.—Showed boils and exacerbations of temperature.

After ten days:

A. I.—Received 50,000 of the corresponding nontoxic vaccine.

B. II.—Received 10,000 of the corresponding nontoxic vaccine.

C. III.—Received 50,000 of the corresponding nontoxic vaccine.

D. IV.—Received 50,000 of the corresponding nontoxic vaccine.

E. V.—Received 60,000 of the corresponding nontoxic vaccine.

F. VI.—Received 100,000 of the corresponding nontoxic vaccine.

G. VII.—Received 100,000 of the corresponding nontoxic vaccine.

H. VIII.—Received 100,000 of the corresponding nontoxic vaccine.

**Observation.**—Improvement followed in each one after three days. Another inoculation of double the dose was given each one on the fifth day, with the result that all rabbits felt well. The serum of each was examined for its bactericidal power.

A. I, B. II, D. IV, E. V.—Serum smeared over the culture, gave good growth.

C. III.—No growth whatever.

F. VI.—No growth whatever.

G. VII.—No growth whatever.

H. VIII.—No growth whatever.

**Conclusion.**—No growth occurred with all the serums containing the intermediate ones, namely: A, C, F, G, and H. The agglutinating power of the serum was studied and showed as follows:

TABLE I.

Rabbit's Serum.	Agglutination.
M. I. c. c. of 1 to 10	To each loop of 24 hr. growth. None.
M. I. c. c. of 1 to 20	To each loop of 24 hr. growth. None.
M. I. c. c. of 1 to 50	To each loop of 24 hr. growth. None.

TABLE II.

F, G, B, and H, Rabbit's Serum.	Time period.
1 to 10	To each loop of 24 hr. growth. + + +
1 to 50	To each loop of 24 hr. growth. + + +
1 to 100	To each loop of 24 hr. growth. + + +
1 to 1000	To each loop of 24 hr. growth. + + +
1 to 5000	To each loop of 24 hr. growth. — + +

**Conclusion.**—There was no change in the agglutinating power of the intermediate bacillus whether alone or in combination with the other bacteria. The phagocytic power of each bacterium was observed as follows:

TABLE III.  
Washed corpuscles.

Unheated serum.	Washed corpuscles.	Bact. susp. 3 vol.	Result.
E. V. unheated serum 3 vol.	3 vol.	Bact. susp. 3 vol.	4/5 5
E. V. unheated serum 3 vol.	3 vol.	Bact. susp. 3 vol.	4/6
F. VI. Intermed. .... 3 vol.	3 vol.	Bact. susp. 3 vol.	3/1 4
F. VI. Strep. M. .... 3 vol.	3 vol.	Bact. susp. 3 vol.	4/4
G. VII. Staph. .... 3 vol.	3 vol.	Bact. susp. 3 vol.	4/5
G. VII. Strep. .... 3 vol.	3 vol.	Bact. susp. 3 vol.	4/5/6
G. VII. Intermed. .... 3 vol.	3 vol.	Bact. susp. 3 vol.	2/0/4
H. VIII. Staph. .... 3 vol.	3 vol.	Bact. susp. 3 vol.	4/5
H. VIII. Strep. .... 3 vol.	3 vol.	Bact. susp. 3 vol.	4/5/6
H. VIII. Intermed. .... 3 vol.	3 vol.	Bact. susp. 3 vol.	2/4
H. VIII. Strep. .... 3 vol.	3 vol.	Bact. susp. 3 vol.	3/4

The method of the preparation of the emulsion of the bacteria for the above experiments was that a twenty-four hour growth of the bacteria was diluted in ten c. c. of physiological salt solution, the dilution being made to approximately 2,500,000,000 per c. c.

#### CONCLUSIONS FROM THE ABOVE EXPERIMENTS.

The curve of immunity in rabbits, when three or more germs are injected in a mixed infection, is equal for the three, that is, the same number of antibodies were formed in these experiments when three species were injected at once, but the antibody curve was shortened in these experiments when more than three kinds were injected.

The vaccines used in these experiments were of the nontoxic type, hence we conclude that antigens previously used in computing the antibody curve must have contained partly split protein and hence were more or less toxic, and, when mixed, were less valuable as immunizing agents than when used separately. Nontoxic antigens of three kinds may be mixed without lowering the antibody curve for any of the three and perhaps for more than three. When four antigens were used in these experiments, the antibody curve was lower for the bacillus of the intestinal group, but we strongly suspect that the reason for this is because the bacterial endoplasm of bacilli of this group contains diffused toxins. The lower curve, therefore, for the bacillus of this group was possibly due to the presence of partly split protein in the vaccine. Be this as it may, the final conclusion is inevitable, that nontoxic antigens when mixed and used as a vaccine, produce as high antibody content in the serum as when used separately.

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**New Operation for Hypospadias.**—Arthur Dean Bevan (*Journal A. M. A.*, April 7, 1917) reports a most successful result with a new and simple operation for the formation of a new urethra in cases of hypospadias with the abnormal orifice less than two inches from the end of the glans. It consists, briefly, in dissecting up a large elliptical flap of skin from the under side of the penis containing the abnormal orifice near its distal end. A hole is then punched through the glans and the flap is drawn through by its proximal end. The edges are then sutured to the margin of the new opening and the interior of the new urethra is thus lined with the normal epithelium. The tube thus formed is elastic and retains its patency without a catheter.



**Treatment of Compound Fractures.**—Depage and Vanderhelde (*Presse medicale*, March 1, 1917) report that they have been able regularly, after Carrel treatment, to close the wound in compound fractures in two to four weeks after the injury. As soon as a patient reaches the ambulance hospital—on an average two to six hours after the injury—the wound is widely opened up, contused tissues excised, and foreign bodies carefully removed. Free bone fragments are taken out, all bone the vitality of which does not seem to be compromised being, however, left in. Bleeding is completely arrested and a sufficient number of Carrel tubes introduced. The wound is irrigated with Dakin's solution every two hours, as prescribed by Carrel. The dressings are renewed daily, the wound being cleansed with neutral oleate until all obnoxious matter has been eliminated. Bacteriological control is instituted every other day, and the wound sutured when two or three successive negative tests have been obtained. The suturing is done only after freshening the margins of the wound and removing scar tissue. Granulations are allowed to remain, as they do not interfere with union by first intention. Where a cavity exists in the wound, it can sometimes be filled by dissecting up the granulation tissue round it and doubling this tissue over upon itself. Where there is great tension on the skin, extensive skin displacements or grafting is resorted to. Among the seventy-five patients treated by the authors with this technic in only two was there failure to heal by first intention after the suturing.

**Remarks on the Treatment of Burns with Paraffin Mixtures, as Developed by the Experience of the Present European War.**—Rudolph Matas (*New Orleans Medical and Surgical Journal*, April, 1917) describes two substitutes for ambrine, which was originated by Dr. Barthe de Sandfort and has been exploited as a secret remedy by a commercial corporation. One of these substitutes, now in routine use, is known as No. 7 paraffin, and he says that the results obtained from its use have surpassed those obtained from ambrine or any tried preparation. Severe burns of the third degree accompanied by sloughing and very septic, have taken on healthy repair under it. Extensive burns of the flexor surfaces have healed without apparent scarring. The same is true of burns of the face. The formula for No. 7 paraffin (Hull) is:

R Resorcin, .....	1 per cent.;
Eucalyptus oil, .....	2 per cent.;
Olive oil, .....	5 per cent.;
Paraffin, soft, .....	25 per cent.;
Paraffin, hard, .....	67 per cent.

Melt the hard paraffin and add soft paraffin and olive oil. Dissolve the resorcin in absolute alcohol, soluble in two to one, add the alcohol resorcin, and lastly add the eucalyptus oil when the wax has cooled to about 55° C.

The paraffin treatment is begun at the first dressing; very exceptionally, in very septic burns, the paraffin is replaced by hot boric fomentations for two days, after two days of paraffin treatment. The burn is washed with sterile water and dried. It is then covered with a layer of paraffin at a temperature of 50° C., with a broad camel's hair brush, sterilized in wax. It may be applied with a spray,

especially in very painful cases, but sprays easily get out of order. A thin layer of absorbent cotton, cut the same size as the area of the burn, is placed over the first layer of paraffin, and this is covered with a second layer. The dressing is then completed with cotton and a bandage. The burns are usually dressed daily at first, later every two days. Blisters are not interfered with at the first dressing, but are cut away at the second. Sloughs usually separate after a few dressings; their separation can be accelerated by applying a layer of jaconet over the cotton and paraffin beneath the cotton and bandage dressing. Because of the difficulty in obtaining resorcin in large quantities betanaphthol has been substituted recently in the following preparation:

R Betanaphthol, .....	0.25 per cent.;
Eucalyptus, .....	2 per cent.;
Olive oil, .....	5 per cent.;
Paraffin, soft, .....	25 per cent.;
Paraffin, hard, .....	67.75 per cent.

**Organotherapy in Gynecology.**—F. B. Block and T. H. Llewellyn (*American Journal of Obstetrics*, March, 1917) report the results obtained by them with corpus luteum, thyroid, and pituitary preparations in various types of gynecological cases. Corpus luteum preparations from the ovary of the sow and that of the cow appeared equally potent, and the best results were obtained from relatively small doses. In eleven cases of hyposecretion of the ovaries due to inflammatory and sclerotic changes in these organs incident upon pelvic disease, corpus luteum extract was given in doses of two grains three times daily for one to six months, supplemented by hot douching and local applications of magnesium sulphate in glycerin. Eight patients were markedly improved, oligomenorrhea, flushes and dizziness, nervousness, and itching being relieved whenever present, headache and lassitude in eight out of nine cases, and backache in six out of seven cases. In two cases of natural menopause, vulvar pruritis and vasomotor symptoms were relieved, respectively, by six and fifteen grains of the extract daily. In a case of infantile uterus with bilateral ovarian pain and scanty flow at the menses, six grains daily for two months brought relief, though in a case of long standing surgical menopause no improvement followed. The beneficial results from corpus luteum seem to depend rather upon the amount of ovarian tissue remaining in the body than upon the dose of corpus luteum given. Thyroid substance, synergistic to the ovary, and substituted for corpus luteum in a few instances because of the prohibitive cost of the latter remedy, yielded only moderately encouraging results. The best effects were obtained in two cases of ovarian hyposecretion without demonstrable cause associated with amenorrhea. The dose never exceeded six grains a day and was often only one and a half grains a day. Pituitary substance, one half to one grain three times a day, promptly cured two cases of profuse menorrhagia and metrorrhagia at puberty. A patient with profuse menorrhagia and menses recurring every two weeks was improved similarly. In a case of bleeding due to chronic metritis the remedy failed. Ovarian and thyroid extracts in combination, more lately used, gave encouraging results.

**Autodisinfection of Wounds by Ether Solution.**

—A. Distaso and T. R. Bowen (*British Medical Journal*, February 24, 1917) were prompted by the unsatisfactory results of the use of antiseptics and vaccines to try to make use of the well known marked bactericidal powers of fresh, young tissues. This was accomplished by the use of baths or irrigations with a two per cent. solution of ether, which mechanically washed off the superficial organisms and caused very marked stimulation of the formation of new tissues. This plan gave exceedingly favorable results in a number of cases in which it was tried, but it was found that these could be further improved by the firm swabbing of the wounds when dressed in order to remove the pus and to further stimulate the oozing of blood. Under such methods of treatment infected wounds healed much faster than was the case with the usual methods of antiseptic or vaccine treatment.

**Diarrhea in Milkfed Babies.**—D. Marfan

(*Archivos de Medicina Interna*, January, 1917), states that he gives nothing but boiled water for twenty-four to forty-eight hours in the quantity and intervals suited to the age of the child. When the diarrhea has abated under this treatment he begins to give strained vegetable broth made with potatoes, carrots, turnips, rice, and salt. If there still is diarrhea he prefers that the child be provided with a wet nurse and then if necessary he prescribes a mixture of lime water two parts and syrup of rhatany one part of which he gives a coffeespoonful before each feeding. For a week afterwards he is fond of alternating feedings of the vegetable broth with small quantities of skim milk. In children under six months the malt preparations are of service and moderate fever should not prevent the administration of sufficiently nourishing food providing that the bowel movements are not too liquid or too numerous. If the weight can be kept stationary until the diarrheal attack passes over we should be satisfied.

**Valvular Lesions in the Aged.**—Graham E.

Henson (*Journal Florida Medical Association*, February, 1917) states that the same principles followed as for younger persons should be followed in general and we should let well enough alone until there is some evidence of beginning failure of compensation. During compensation very moderate exercise should be encouraged, but sudden severe exertion or rapid movements should be forbidden absolutely. With the beginning of failing compensation the patient should be put at absolute rest, but heart tonics should not be ordered until they are actually needed. Digitalis may be dangerous, unless its administration be watched very carefully to avoid cumulation. Veratrum viride or aconite in 0.015 mil doses may be used to lower the tension or slow the pulse; for the slow, weak pulse following failure in aortic stenosis sparteine sulphate is of value; and the nitrates are of great help in the overdilated heart of aortic or mitral insufficiency. Hoffman's anodyne, camphor, the ammonium salts, and alcohol should be the cardiac stimulants of choice. For the relief of dyspnea morphine is the most valuable drug, while amyl nitrite is of great service for immediate relief in some cases.

**Chronic Ulcer of the Stomach and Duodenum.**

—John B. Deaver (*Medical Adviser*, March, 1917) finds that simple excision of the ulcer with closure of the wound is applicable only to small early ulcers favorably situated. Ulcers of the anterior wall of the duodenum usually require excision, plication of the duodenum, and a posterior gastroenterostomy. Large indurated ulcers in this location are treated by amputation of the duodenum below the lesion, which is then pursestringed and inverted, followed by excision of the pylorus and posterior gastroenterostomy. The same applies to large ulcers on the posterior wall of the duodenum in its first part, providing that there are not too many adhesions to the posterior abdominal wall to prevent its being freed. Posterior gastroenterostomy with invagination of the ulcer gives the best results in large ulcers. As to gastric ulcers, the most frequent type is the pyloric, in which the indication is for pylorotomy. When the induration is on the lesser curvature subtotal gastrectomy is in order, and large indurated ulcers on the posterior wall of the stomach, including the greater curvature, are more safely treated by gastroenterostomy. Deaver never operates during acute hemorrhages and considers that the prognosis in perforation depends absolutely upon the time which elapses before operation, his own record being forty-six cases with one death.

**Principles of Early Treatment of Infantile Paralysis.**—W. Colin MacKenzie

(*British Medical Journal*, February 24, 1917) lays great stress upon the imperative need for immediate complete anatomical rest of the affected extremities. By anatomical rest is meant the placing and support of the extremity in such a position that all of the muscles acting upon any joint have been passively controlled. For the upper extremity the patient should be placed in bed at once with the extremity in the following position: thumb adducted, fingers slightly flexed, wrist slightly extended, hand midway between supination and pronation, elbow slightly flexed, and the arm abducted to a right angle or slightly more. Then a simple splint of iron with straps for the thorax should be applied as soon as possible in order to maintain this position. For the lower extremity both limbs should be rested from the outset to prevent tilting of the pelvis. This can be done at once with the aid of two padded boards separated by a crosspiece, placed behind the knees and up to the middle of the thigh. Later a double Thomas splint should take the place of this temporary dressing, the feet should be slightly raised to rest the iliopectineal, and the knee very slightly supported by a pad of cotton to relax the flexors. The footpiece should be carefully modeled to fit the foot, which should be held close to it by means of an elastic webbing. The patient should be kept in bed on a firm mattress. Later the muscular function of the involved part should be tested very gently, starting from the position of anatomical rest and measuring the amount of voluntary movement which is possible. Then active and passive movement should be begun and increased in proportion to the progress of restoration of function. Each of the affected muscles should be thus trained according to its individual degree of involvement.



**Dupuytren's Contracture.**—J. Hutchinson (*Lancet*, February 24, 1917) points out that the cause of continued contraction after removal of the palmar fascia is not due to either consecutive contraction of the flexor tendons or to the formation of intraarticular adhesions, but results from the prolonged extreme flexion of the second phalanx which presses its base against the neck of the first phalanx and leads to shortening of the glenoid and lateral ligaments of the joint. The cure of Dupuytren's contracture can only be made complete by the resection of the head of the first phalanx and slight shortening of the extensor tendon. No splints whatever should be used following this operation, and gentle, active, and passive movements should be begun within the first few days in order to prevent stiffening of the joints. The technic of this operation is described in detail and it is stated that the operation will give almost perfect cosmetic results in the great majority of cases.

**Radiant Light Treatment in Erysipelas.**—L. B. Williams (*American Journal of Electrotherapeutics and Radiology*, February, 1917) reports good results from this measure in all varieties of cases, from the mild to the most severe. Of the two cases reported, the first was that of an infant aged nine weeks, with vomiting and a slight discoloration at the usual facial site of erysipelas. A fifty candle power incandescent therapeutic lamp was used at a distance of eighteen inches for twenty minutes every two to three hours. Next day there was visible just a fringe of erysipelatous "margin" at one spot. On the following day there was no trace of erysipelas, though later a slight recrudescence was noted, which was dispelled by further treatment. In the second case, that of a man aged sixty-two years with high fever delirium, and what was believed to be erysipelas of a large part of one of the legs and of the foot, light treatments lasting an hour, with brief intermissions, resulted in prompt improvement, followed by recovery.

**Treatment of Keloids by the Finsen Rays.**—Gaucher (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, November 23, 1916) points out that, while the Röntgen rays and radium at present constitute the procedures of choice in the treatment of keloids, they present the distinct disadvantage of a possible late appearance of ulcerative dermatitis, which heals only slowly and is difficult to cure. He believes that by the use of the less dangerous Finsen rays the same therapeutical result can be obtained without the risk of dermatitis. Around a suppurating fistula remaining after nephrectomy for renal tuberculosis, small patches of verrucose tuberculosis began to appear and for these the Finsen rays were prescribed. The operative wound had, moreover, undergone keloid change. The rays, applied for some months, cured both the tuberculosis and the keloid, the site of the latter showing merely a whitish line, soft, free of retraction, and inconspicuous. Like results were noted in a case of keloid following excision of tuberculous cervical glands and, within one month, in the case of a keloid of about the size of a silver half dollar on the knee of a child of four years, appearing after a fall on that part at the age of two years.

**Hypochlorous Solution Electrically Produced.**—J. M. Beattie, F. C. Lewis, and G. W. Gee (*British Medical Journal*, February 24, 1917) describe a simple and economical method of preparing an efficient hypochlorous acid solution from hypertonic salt solution by means of an electrical current. This solution has the double advantage of containing an effective concentration of hypochlorous acid and of being hypertonic. The solution was tested and found to be of high bactericidal value, free from the property of coagulating albumen, nonirritant and stimulating to the process of repair. It was also found to be of decided value in curing diphtheria carriers when used as a spray and when applied to the tonsillar crypts by means of swabs.

**Treatment of Nephrolithiasis.**—A. Satre (*Journal de médecine de Paris*, February, 1917) points out that while free acid capable of precipitating uric acid from its soluble salts exists in the urine only in an insignificant amount, there is present in it a salt which may under certain conditions act like an acid, viz., sodium phosphate. This salt yields some of its base in the presence of more acid compounds, but if in an acid condition itself takes away some of the bases from any less acid compounds it may encounter. Excess of phosphoric acid in the system thus capable of precipitating uric acid. It seems probable that in subjects with a tendency to uric acid sedimentation, metabolism tends toward the formation of acid phosphates. Food of animal origin throws into the urine a much larger amount of phosphoric acid than vegetable food. Salts of the alkaline earths, however, also exert a capital influence on the phosphoric acid. Ingestion of chalk or magnesium carbonate fixes the phosphoric acid in the alimentary tract in the form of the relatively unabsorbable calcium or magnesium phosphate, and thereby materially reduces the phosphoric acid excreted in the urine. The less phosphoric acid there is in the urine, the more free sodium ions remain, and the less chance for the formation of uric acid crystals. Food of animal origin may be harmful in nephrolithiasis both because it is rich in nitrogen and because it contains large amounts of soluble phosphates. Only cooked meats should be allowed and, as far as possible, tissues the ashes of which contain much lime. Milk and various fruits and vegetables are, of course, useful foods. Dieting being soon overlooked, however, by patients who have recovered from their renal colic, Satre prefers to waive all restrictions in this direction and prevent harm from phosphates ingested by having the patient take one gram each of magnesium oxide and calcium carbonate at meal time. This dose prevents all passage of acid phosphates in the urine. The calcium also favors elimination of oxalic compounds in the bowel. Clinically, the precipitates of urates and oxalates rapidly disappear from the urine under this treatment. Sciatica, neurasthenic symptoms, and psychic depression also pass off, and the attacks of renal colic become less and less frequent. Constipation and flatulence are relieved. Where passage of gravel has alone been noted, the formation of calculi large enough to bring about colic can with certainty be prevented by the treatment.



**Ligation of Innominate for Aneurysm of Carotid.**—Thomas Sinclair (*British Medical Journal*, March 3, 1917) reports the successful treatment of a large traumatic aneurysm of the right common carotid artery in its lower portion by proximal ligation of the innominate artery. Resection of one and a half inches of the inner end of the clavicle, after detachment of the sternal and part of the clavicular head of the sternomastoid and partial division of the sternohyoid and sternothyroid muscles, gave sufficient exposure for the passage of a single ligature of No. 4, thirty day catgut. The distal end of the aneurysm was not tied. The wound was closed and an uninterrupted recovery followed. There was no cerebral deterioration and the circulation in the arm was good, although three months after the operation neither the radial nor ulnar pulse was palpable at the wrist.

**Nitrous Oxide Oxygen Anesthesia in Major Surgery.**—A. J. Browning (*Northwest Medicine*, February, 1917) believes this method of anesthesia is applicable to about eighty-five per cent. of all cases and that it has several very great advantages over other methods of general anesthesia which make it the method of choice in many cases. These advantages are that induction is rapid; there is no tendency to rouse latent foci of tuberculosis; it is free from deleterious effects upon any of the organs; it does not diminish natural immunity; recovery is almost immediate; the respiratory centre is kept stimulated and the blood pressure maintained by rebreathing, thus preventing shock; there are no postoperative disturbances; and oxygen, which is the best resuscitator, is always available. Special indications for the use of this anesthetic are found in patients with respiratory or renal disease, but it is not suitable for the very young or the aged, for those with arteriosclerosis or for administration for long operations unless the services of one highly skilled in its use are available. Its administration should be preceded by a dose of morphine and atropine wherever it is possible.

**Specificity in Antiseptics.**—Kenneth Taylor (*Lancet*, February 24, 1917) discusses the results of a series of laboratory and clinical investigations on the subject of antiseptics with regard to their specific effects upon different organisms. He emphasizes the necessity of adopting an analytical method for the study of antiseptics and suggests that specificity in the antiseptic treatment of wounds is as important as specificity in the treatment of systemic infections such as malaria. He has determined that such organisms as streptococci, staphylococci, *Bacillus pyocyaneus*, and *Bacillus aerogenes capsulatus* show widely different susceptibilities to the inhibitory effects of certain organic acids and antiseptics. These laboratory studies were elaborated and confirmed by the study of the alterations in the flora of infected wounds following the continued application of one or the other of the substances. No single antiseptic affected all of the organisms present, which is tantamount to saying that there is no "general antiseptic." Thus *Bacillus pyocyaneus* increased in the presence of Dakin's solution as a wound dressing and also when quinine hydrochloride or sodium bicarbonate were used,

while it was materially decreased when acetic acid was used. No antiseptic decreased the streptococcus group except sodium bicarbonate, while cresol and hypotonic saline slightly increased the percentage of these organisms. Cresol and Dakin's solution slightly diminished the number of staphylococci but this was unaffected by other dressings. None of the antiseptics except quinine hydrochloride had any effect upon the gas bacillus, but this agent caused its early disappearance in a striking manner. As a result of these observations it was suggested that the successive application of the several antiseptics might be employed to eliminate one organism at a time and thus accomplish a true sterilization of a suppurating wound.

**Skin Reaction to Quinine.**—Fred Boerner, Jr. (*Journal A. M. A.*, March 24, 1917) recalls the fact that certain persons are susceptible to quinine, manifesting rashes and cutaneous itching. Himself a victim of this susceptibility, he attempted the application of some powdered quinine sulphate to a scratch on his arm and found that it produced a local reaction consisting of itching, slight edema, and a mottled erythema. A control scratch showed no such reaction. The test was then applied to others known to be susceptible to quinine and gave a positive result each time. In nonsusceptible persons the result was negative. It was found that the reaction could be obtained best by using a ten per cent. aqueous solution of quinine bisulphate, though dilutions as high as one to 1,000 gave slight reactions. The reaction should prove of use in determining the presence of a susceptibility to quinine in cases in which it is suspected.

**Extreme Prolongation of Conduction Time from Digitalis.**—Lewellys F. Barker and E. W. Bridgman (*Journal A. M. A.*, March 24, 1917) present the detailed record of a series of observations made in a case of arteriosclerosis, partial heartblock, and slight myocardial insufficiency. The patient had been under the influence of digitalis for some time when seen and then showed an extreme prolongation of the conduction time of atrial impulse through the bundle of His. Polygraphical and electrocardiographical records showed a phasic variation in the conduction time such that a group of beats with conduction times from 0.23 to 0.26 second would be followed by a series of beats in which the time was progressively lengthened to 1.03 or even to infinity. The case is cited as representative of a type in which the administration of digitalis is dangerous on account of the possibility of its causing complete heartblock with sudden syncope or ventricular standstill. The class of cases in which its administration may be dangerous comprises those with coronary sclerosis associated with generalized arteriosclerosis and primary contraction of the kidneys; slight myocardial insufficiency; cerebral arteriosclerosis, or peripheral vasomotor crises. If digitalis is to be used in such cases its administration must be controlled by careful observation with the aid of tracings, preferably both polygraphical and electrocardiographical. The latter method is the only one capable of measuring the degree of involvement of the bundle of His, which is the important element.

# Miscellany from Home and Foreign Journals

**Functional Capacity of the Stomach.**—A. O. Wilensky (*Journal A. M. A.*, March 24, 1917) says that the value of any method of treatment, particularly when surgical, is not based solely upon anatomical results, and these are of value only in terms of physiological function. It is pointed out that we now have the means at our command to test the functional capacity of the stomach before and after surgical interference, and that this test should be made wherever possible. The methods include the estimation of the digestive and motor activity of the stomach for one day's cycle; the fractional method of gastric analysis for a similar period, the use of the opaque meal and the kymographic study of the gastric tonus and motility. The correlation of the results of all of these observations gives a complete picture of the functional state of the stomach. The results of such a study form the most trustworthy criteria upon which to base one's judgment of the cause and mechanism of the gastric disturbance, either before operation, or when there has been some recurrence of the anteoperative symptoms. The technic of such a method of study of gastric cases is given at length and four cases are cited in the paper to illustrate some of the results actually obtained.

**Tumors of the Spine and Cord.**—William Jason Mixer (*Boston Medical and Surgical Journal*, March 29, 1917) says that the diverse pathological conditions met with in the twenty-six cases he reports shows, not only the chances for a surprise which the surgeon has when he operates, but also the chance for improvement in differential diagnosis. When a tumor of the spine or cord is suspected a careful history should be taken, particular effort being made to bring out the following points: General physical examination for any evidence of malignant disease, syphilis, or birth injury or congenital defect; loss of strength in the arms or legs; clumsiness or stiffness; weakness or stiffness of the back; pain, its location and character; changes in sensation other than pain; change in sexual life; change in sphincter control. Neurological examination as follows: examination of cranial nerves, including that of the fundus; Romberg sign; rigidity of the spine; presence of kyphos or scoliosis; tenderness of spinous processes on percussion or manipulation; paralysis, weakness, wasting, or spasticity of any muscles or groups of muscles; ataxia of either arms or legs; all superficial and deep reflexes; condition of the anal sphincter. Sensory examination to include touch, pain, and thermal sense, with care to determine accurately the upper border of disturbance and the presence or absence of hyperesthesia; these sensory changes should be charted. Position sense. X ray, usually of the whole spine, with cylinder plates of suspected areas. Lumbar puncture with determination of pressure, freedom of flow of the cerebrospinal fluid, color, cell count, presence of protein, Wassermann, and colloidal gold tests. Operation usually is ill advised when the growth is malignant.

**Simple Ulcer of the Esophagus.**—J. B. Christopherson (*Lancet*, March 10, 1917) presents the detailed record and autopsy findings in a case of this rare condition. The patient was a man thirty-six years old, whose first symptoms developed nine days before death. He first noticed a sensation of something in the throat, with slight discomfort on swallowing or deep breathing. Slight fever developed on two occasions and lasted for one day each time. Eight days later he had a brisk hemorrhage with profuse hematemesis. The following day the hemorrhage and hematemesis were repeated and followed shortly by death. At necropsy an ulcer was found in the esophagus at the level of the bifurcation of the trachea. The ulcer had eroded through the descending part of the arch of the aorta where the esophagus had become adherent. Two other old ulcers were found lower down in the esophagus, the one healed, the other partly so. The ulcer which had caused the erosion was apparently an old one which had recently been lighted up by overexertion. The causes of such simple esophageal ulcers are given by the author as: 1. Traumatic, from corrosion, foreign bodies, and injuries. 2. Latent, from old acute lesions. 3. Specific, from syphilis. 4. Secondary, as the result of typhoid, kala azar, diphtheria, scarlet fever, or pneumonia. 5. Aneurysmal. In the present case all causes could be excluded except kala azar and typhoid, the latter of which was believed to have been the probable cause, although it was six years since the attack.

**Agglutination Curve and Its Importance in Diagnosis.**—Georges Dreyer and A. C. Inman (*Lancet*, March 10, 1917) depict a number of typical agglutination curves in typhoid and the paratyphoid fevers occurring in inoculated persons, and again point out that by the frequent quantitative determination of the agglutination titre it is possible to make a diagnosis of one or the other of these infections in such cases. They emphasize the necessity for using a standardized agglutinable emulsion of the organisms and the microscopical method of determining agglutination. The intervals between estimations of the titre should be about four days and it will be found that the maximum titre for the infecting organism will appear within the limits of the sixteenth and twenty-fourth days of the disease, usually the eighteenth to twentieth. The actual height of the titre is of no diagnostic value, since this may lie either above or below that of the inoculation titre. The important feature is the occurrence of a rise or fall, or both, in the curve of the titre or the infecting organism, combined with the period at which the maximum is reached. In typhoid inoculated persons infected with paratyphoid the T curve may remain unchanged, it may show a moderate rise, or it may rise markedly. In the last case the rise will be found to occur synchronously with that of the P curve, and is thus shown not to be due to typhoid infection. On the other hand, it may occur before the paratyphoid rise, when, also, it is obviously not due to typhoid infection.



**Nervous and Mental Manifestations in Women in Relation to the Generative Organs.**—Alfred Gordon (*Virginia Medical Semi-Monthly*, March 9, 1917) refers to the tendency of the hypophysis, thyroid, and adrenals to undergo hypertrophy after removal of the ovaries, and lays stress on the functional nervous disturbances likewise resulting, as observed in a series of 112 patients. The symptoms generally noted were restlessness; difficulty of self-control; dissatisfaction with everything; difficulty of finding contentment in one's own efforts; lack of interest in all absorbing subjects and objects; indifference, pessimism, and indolence. At times there were outbreaks of anger, with a tendency to attack other individuals. Insomnia, functional gastrointestinal disturbances, headache, vague pains or paresthesia, and a tendency to obsessions was also met with in some patients, though no true insanities were seen. The psychic disturbances in these cases persisted obstinately for several years. Subjects originally exhibiting psychoneurotic disturbances became decidedly worse after removal of the ovaries. In conclusion, Gordon enjoins caution in advising operations on the reproductive organs. Operations on account of complaint of vague nervous disturbances in women are to be avoided. Where an operation is performed, as much as possible of any normal tissue found in the uterus or ovaries should be preserved.

**Preparation of Vegetable Proteins for Anaphylactic Tests.**—R. P. Wodehouse and J. M. D. Olmsted (*Boston Medical and Surgical Journal*, March 29, 1917) give the following method: If the food in question is generally used in a cooked form, it is boiled somewhat as if prepared for the table. The supernatant fluid is decanted, the liquid remaining in the pulp squeezed out, and the whole extract strained through cheesecloth. If the food is generally used raw, it is ground fine in a meat chopper and allowed to soak in two or three volumes of water from twenty-four to forty-eight hours, using toluol as a preservative. From this point on the procedure is the same in both cases. The extract is evaporated as dry as possible on a hot water bath, about 50° C., with the aid of an electric fan. It is then redissolved in as small an amount of water as possible, and precipitated by adding three volumes of ninety-five per cent. alcohol. The precipitate is removed by centrifugation, washed with a mixture of acetone and ether, four to one, and pure ether, and dried in a desiccator. When dry a friable substance is obtained which can be ground to powder and is soluble in water or in dilute alkali. The extract from cantaloupe, strawberry, blueberry, and grape does not form a good precipitate with ninety-five per cent. alcohol, so it has to be triturated or macerated in hot absolute alcohol, and then ground in acetone and ether to bring about complete desiccation. The seeds of tomatoes have to be used to obtain a fair amount of protein. A watery extract of the ground and soaked pulp of grapefruit is neutralized and made faintly alkaline; this gives a very small amount of powder. Two preparations can be obtained from the ground pulp of watermelon, one in the usual way, the other from the alcohol by which this has been precipitated.

**The Leucotoxic Factor in Lymphatic Leucemia.**—Maurice Packard and Reuben Ottenberg (*Journal A. M. A.*, March 31, 1917) cite the fact that in lymphatic leucemia there is both overproduction and excessive destruction of the granulated leucocytes. In the aleucemic form of leucemia the striking feature is the relative reduction in the numbers of the granular leucocytes. It has been suggested that this is due to the presence of some leucotoxic element in the blood or tissues. This suggestion was apparently confirmed in a case reported by the authors, in which the transfusion of a large amount of normal blood into a patient with leucemia was followed in twenty-four hours by the disappearance of the granular leucocytes which had been introduced, while the other cells of the transfused blood were not materially affected. The destruction in this case amounted to approximately one quarter of as many leucocytes as the patient would normally have had in his circulation.

**Overlooked Common Duct Stones.**—Daniel N. Eisendrath (*Journal A. M. A.*, March 31, 1917) points out that stones in the common duct may frequently be overlooked, even after careful palpation has been made at the time of operation. In his own experience calculi have been found at the lower end of the common duct in one third of the cases in which palpation was negative. Stones located in either the hepatic or common ducts may fail to produce symptoms, which was found to be the case in twenty per cent. of the author's cases. Overlooked stones may cause recurrence following operations on the gallbladder and common ducts, or these may be due to stones newly formed in the intrahepatic bile passages. In every case of gallstones the common duct should be opened and explored for possible missed stones, such procedure, if properly performed, not increasing the mortality of the operation. The technic of this method of exploration has been described by the author.

**X Ray Demonstration of the Subdural Space.**—Harold Neuhoof (*Journal A. M. A.*, March 31, 1917) shows that many tumors and other lesions of the spinal cord or its coverings cannot be accurately localized by the methods at present available. By a series of experiments on dogs he has proved the ease with which the subdural space of the spine can be outlined by the injection or two mils of colloidal silver and the immediate taking of röntgenograms. The exposures should be both lateral and anteroposterior. The space appears normally as a sharply defined line of even contour and the presence of tumors, foreign bodies, inflammatory exudates, etc., can be easily seen and located by their distortion of this contour. Not only can they be located, but also their extent can be accurately determined. While the method cannot be applied to man, using colloidal silver, on account of its toxicity, this substance may be replaced by the thorium solution recommended by Burns. Not only should the method prove of service in diagnosis, but it should also be possible to employ it in the control of local therapeutic applications by mixing the solutions used with some of the thorium, the shadow of which would prove the extent to which the medicament had reached its desired goal.



**The Kidney in Obstetric Eclampsia.**—W. A. Newman Dorland (*Medical Record*, April 7, 1917) states that he looks upon this condition as not primary but secondary to vascular changes in the body of the mother; that the primary change in the toxemia which precedes eclampsia is an accumulation or a sudden influx in the maternal blood of noxious matters whose nature has not yet been determined. The action of these toxins is to produce vasomotor spasm and a consequent rise in arterial blood pressure, and this constriction in the renal arterioles causes starvation of the renal cells and a suppression of their eliminative function. There is no breaking down of the kidney tissue, and the correction of the vasomotor spasm restores the function by reestablishment of the proper circulation. The knowledge of the nature of the process therefore points out the line of prophylactic treatment, and in all cases rising blood pressure in the pregnant woman calls for the early administration of vasodilators, especially nitroglycerin and veratrum viride. These drugs have also a very powerful secondary diuretic action which is of service when ordinary diuretics fail.

**Eclampsia at the Boston City Hospital.**—Ernest Boyen Young (*Boston Medical and Surgical Journal*, April 5, 1917) reviews the 183 cases that have occurred in the Boston City Hospital during the past twenty-three years, and comes to the following conclusions: Incidence varies greatly in different years without apparent cause. Severe attacks occur mostly in primiparæ from twenty to twenty-five years old, in the latter half of pregnancy. A little over one half of the cases with convulsions have seizures after delivery. Nonoperative delivery is most favorable for the mother. The longer the convulsions continue the greater the mortality. Child mortality is high whether deliveries are operative or nonoperative, owing to prematurity and toxemia. High blood pressure increases the gravity of the prognosis. Venesection is a useful procedure in cases with high pressure and restlessness after delivery. Induction of labor and delivery with the least possible operative interference offer the best chance of recovery for the mother. Cæsarean section is justified in certain cases where delivery by other methods seems too prolonged or doubtful in outcome.

**Selective Action of Spirochetes.**—Morris Grossman (*Journal A. M. A.*, March 31, 1917) reports the observation of a family of father, mother, and four children, all affected with syphilis apparently acquired from the father. The striking feature is the similarity in the effects of the particular strain of spirochetes in all the individuals. The father had a spastic syphilitic hemiplegia and his pupils were irregular, unequal, did not react to light, and only sluggishly to accommodation. The mother had had attacks of recurring headaches with dizziness and nausea. Her pupils presented much the same phenomena as those of her husband. Of the four children the oldest had snuffles and an eruption at birth, was nervous and irritable, and was considered mentally below normal. The third child had an eruption at birth and convulsions at the age of seven years, followed by spasticity and dragging of the

legs. The other two had negative histories. The pupils of the oldest, second, and fourth children were widely dilated, unequal, irregular, and failed to react to light, accommodation, convergence, or the instillation of physostigmine. The third child had similar pupillary findings with nystagmus, Babinski reflex, inextinguishable ankle clonus, and increased knee and ankle jerks. In other words, all of the children had ophthalmoplegia interna of hereditary syphilitic origin. Intensive treatment has been carried out in all of the members of the family with some improvement in the mother and children, but none in the father. In the children whose eye phenomena improved the first sign of a change was the return of the reaction of the pupils to physostigmine. This family record emphasizes the need for the examination for the early discovery of syphilis in the children of a parent who shows evidence of the diseases, followed by prompt and energetic treatment.

**Traumatic Monomyoplegia.**—Mally and Corpechot (*Bulletin de l'Académie de médecine*, February 27, 1917) discuss forty-five cases of traumatic paralysis of a single muscle, due to injury of the motor nerve just before or after it enters the muscle tissue. The condition is usually caused by a small shell fragment traveling at high velocity or by a rifle bullet, and while associated with localized muscular atrophy, more or less pronounced, is of course unaccompanied by sensory disturbances or vasomotor or trophic changes. Abnormalities in the electrical reactions, varying greatly in degree, are to be expected. The condition must be differentiated from dissociated paralysis due to partial traumatism of the large nerve trunks or nerve roots; this is accomplished mainly by observation of the exact site and course of the wound, with its relationship or lack of relationship to the large trunks or roots. Sometimes monomyoplegia and dissociated paralysis coexist. Electrical studies are essential in the analysis of the condition where it is complex. Where nonoperative therapeutical measures fail, surgical procedures, especially nerve anastomosis, are indicated.

**Acute Exophthalmos in Quincke's Disease.**—Meyer-Huerlimann (*Correspondenz-Blatt für Schweizer Aerzte*, February 10, 1917) reports a case of this disease met with in a woman fifty-one years old which was characterized by acute circumscribed swelling of the face, the ear, the leg, probably with subperiosteal exudation not only there but also on several ribs, swelling of the soft palate, and of the pharynx, an acute edema of the larynx, sudden starting and ceasing diarrhea of an explosive character, and a great exophthalmos which developed very rapidly and disappeared quickly first of one and then of the other eye. There was no fever. The attacks came on within a few hours, the general condition was never affected very much, and the duration of the attack varied from one to fourteen days. No traces were left after the attack passed off. The importance of the case is that it seems to show that Quincke's disease may lead not only to swellings of the skin and mucous membranes, but also to exudations in the orbital tissue about the eyeball.

# Proceedings of Local and National Societies

## THE NEW YORK ACADEMY OF MEDICINE.

*Stated Meeting, Held February 15, 1917.*

The President, Dr. WALTER B. JAMES, in the Chair.

**The Nature of Resistance to Tuberculous Infection and Disease.**—An abstract of this paper, by Dr. ALLEN K. KRAUSE, of Baltimore, is published on page 791 of this issue of the JOURNAL.

Dr. HANS ZINSSER said that he was much interested in the immunological aspect of tuberculosis, and Doctor Krause's work was an example of the present tendency in immunology to get away from the study of intravascular reaction and to recognize that the questions of immunity could not be answered by study of serum antibodies alone. In other words, the reactions in the circulating blood were only a part of the story and studies of the activities of fixed tissue cells must be included. Kyes's work on the natural immunity of pigeons to pneumococcus, tracing it to phagocytic activities in the liver, and the similar work of Bull on the extravascular destruction of typhoid bacilli in rabbits, were examples of this.

The earlier work on tuberculosis concerned itself chiefly with the study of circulating antibodies, agglutinins, etc., and more recently, owing to the work of Wright, phagocytic activities were suggested as measures of resistance in this disease. It had, however, been recognized by many that the polymorphonuclear leucocytes, although they could take up tubercle bacilli, were probably not able to destroy them, perhaps owing to their not possessing lysoptic enzymes. Bartels even believed that such phagocytosis might act as a method of distribution, the tubercle bacilli being carried in the phagocytes through the lymph channels and deposited in various parts of the body. Little experimentation had been done in this direction with the tubercle bacillus itself, but in another acidfast bacillus, the rat leprosy bacillus, it had been found that the organism would retain its acidfastness within polymorphonuclear leucocytes for as long as two weeks, whereas the same bacilli in contact with growing rat spleen cells in Harrison-Carell tissue cultures, disappeared with relative speed. The fixed tissue cells were able to dispose of the leprosy bacilli, but the polymorphonuclear leucocytes could not.

Doctor Krause's remark about the influence of changed tissue susceptibility, perhaps due to a reaction similar to or identical with hypersusceptibility, opened a very complicated subject. Such acquired susceptibility probably played an important part in all infectious diseases, and it was quite noticeable, when working with typhoid bacilli, that large quantities of typhoid antigens elicited symptoms in normal animals which relative small quantities produced in animals actively and passively sensitized. In a chronic disease like tuberculosis, permanent sensitization might, under certain circumstances, be detrimental; or, again, by arousing immediate, vigorous reaction, might act in a protective way. These were questions which involved very difficult experimentation.

What had been said about tuberculosis had brought to mind the very strong analogy between syphilis and tuberculosis, with, however, the difference of the insolubility of the very waxy tubercle bacilli as compared with *Treponema pallidum*. In syphilis, the circulating antibodies played no part, or at least no circulating antibodies could be demonstrated. It was well known that the syphilitic subject resisted superinfection only so long as he was syphilitic; when he was sterilized, he was again susceptible to infection. This brought up the question of whether the subject infected with this organism harbored it for life unless medicinally sterilized with salvarsan or mercury. The only evidence of acquired resistance lay in the fact that reinoculation into a recovered testis of a rabbit was not possible during an indefinite period after recovery, while the opposite testis of the same rabbit was as susceptible as in a normal rabbit. This indicated that the rabbit had a purely localized resistance to syphilis in a particular part of its body, but that remote parts of its body were not resistant and shared in no sense in the localized immunity.

**Channels of Infection and Methods of Transmission of Tuberculosis.**—This paper, by Dr. WILLIAM H. PARK, of New York, is published in full on page 777 of this issue of the JOURNAL.

**The Differential Diagnosis of Various Chronic Pulmonary Conditions.**—This paper, by Dr. JAMES ALEXANDER MILLER, of New York, is published in full on page 773 of this issue of the JOURNAL.

Dr. ALFRED MEYER said that in the careful general examinations advocated by Doctor Miller, the development of the sense of hearing was of primary importance. A valuable method for sharpening the sense of hearing in the practice of medicine was contained in a book entitled *Ear Training*, by Jadassohn that could be procured from Schirmer, the music publisher, and could train in many both absolute and relative pitch. The speaker wished to emphasize the value of laboratory assistance in all doubtful cases. On complement fixation, in these cases, he still believed with Doctor Miller that this method was going to be of distinct service. The importance of stereoscopic x ray plates in demonstrating that cavities were near the surface of the lung, had been accentuated by the publication of the result in four cases of artificial pneumothorax where subsequently spontaneous pneumothorax occurred with consequent infection of the pleural cavity and exitus. But regarding the bronchoscope, there could be no question of its value in confirming x ray evidence, and the use of this armamentarium should be urged for exact pulmonary diagnosis, particularly of pulmonary abscess. The bronchoscope aided also in the localization and removal of foreign bodies which had even evaded the omniscient eye of the x ray. With reference to resection of the lung, the speaker personally knew of two successful resections of entire lobes and one of these patients was alive today,



three years after the operation; he also knew of two cases of resection of parts of two lobes, and he believed there was nearly an even chance for recovery in these cases with modern thoracic surgical methods. In regard to differential diagnosis in lung abscess, he did not consider that leucocytosis was always present in lung abscesses, for in a series of twenty-eight cases during the years 1913 to 1916, inclusive, in his service at Mt. Sinai Hospital, in twenty-three cases there were over 11,000 leucocytes, the average count being 19,225; but in five, or eighteen per cent. of the total number of cases, there were less than 11,000 and in one case the count was as low as 7,000. In pleural effusions, in cases of suspected pleural or pulmonary neoplasms, the speaker had repeatedly received valuable aid from the cytological examination of the aspirated fluid. This required a special technic, a report of which would shortly be published.

*Stated Meeting. Held March 15, 1917.*

The President, Dr. WALTER B. JAMES, in the Chair.

**Deviations from the Ordinary in Cardiac Function.**—An abstract of this paper, by Dr. W. S. Thayer, of Baltimore, was published in the March 31st issue of the JOURNAL.

Dr. JAMES G. GREENWAY, director of the Department of University Health at Yale, said that during the past few months he had listened to the hearts of a large number of students at Yale University, where all members of the freshman classes and all students engaged in competitive athletics must be examined. Up to the present time, about 12,000 men had been examined and a large number of the deviations referred to by Doctor Thayer had been encountered. It was not infrequent to find more than one of these conditions in an individual. For instance, a football player, possibly with an enlarged heart, or with such a massive chest wall or voluminous lungs that it was hard to determine the actual size of his heart, would in addition have a rapid pulse, a high blood pressure, and possibly extrasystoles. Many of these men showed an extremely unstable vasomotor condition manifested by profuse sweating under the arms, cold extremities, and flushing of the face, even actually fainting during examination. Manifestly with such an increased heart rate and variations in blood pressure and even extrasystoles were of little moment. On reexamination of such a man subsequently, when his confidence had been secured and he had lost his dread of the examination, all the above so called abnormalities might have disappeared. The important question, of course, to be determined was whether they were physically fit to undergo the strenuous exercise involved in keen competition. Were the above signs evidences of organic changes; were they physiological or functional?

In the examination of 1,082 students, a large number of murmurs had been heard. Of these, 163, or fifteen per cent., showed some form of systolic murmur. Before exercise, 123, or 11.4 per cent.; after exercise, sixty-four, or six per cent.; both before and after exercise, twenty-four. All these murmurs were dependent on a particular position of the body

or a particular phase of respiration for their being heard.

Murmurs with greatest intensity at apex, not transmitted, heard only in prone position.....	48
Murmurs with greatest intensity at base, second or third left space, not transmitted, heard only in prone position .....	46
Murmurs heard with greatest intensity at apex, but transmitted upward over precordia, heard only in prone position.....	17
Murmurs at apex transmitted to anterior axillary line, heard only in prone position.....	1
Murmurs with greatest intensity at base, second or third left space, transmitted to apex, heard only in prone position .....	8

Of the above murmurs only thirty-seven were recorded as being modified by respiratory phase. There were three which were not modified by the respiratory phase. In one case, an inconstant diastolic murmur was heard at the third left costal cartilage in the prone position, which disappeared on standing up and reappeared after exercise, lasting between one and two minutes; no other sign was present.

On examination after exercise, there were thirty-five with systolic murmurs heard with greatest intensity at the apex, very slightly transmitted, upward if at all. There were twenty-nine with systolic murmurs heard with greatest intensity at the base, or slightly transmitted down along the sternum (pulmonary systolic (?) murmur). In the above group there were 109 athletes and fifty-four nonathletes. Of the 1,082 cases, not including the above 163, there were fifteen cases of definite organic conditions and six or seven others in which there was a suspicion of their being organic.

Those men showing such signs as the above must return for further observation, and practically the most satisfactory method of determining their true significance was the ability of the heart to respond to effort. Usually a careful system of training resulted in an improvement, or even in the disappearance of some of the signs. Of the 1,082 men examined, only fifteen were actually restrained from some form of competitive exercise.

Dr. T. STUART HART said that of late the interest of the profession was less intensely centred in anatomical alterations in the heart itself, and was being more and more attracted to the study of them in connection with the functional disturbances with which they were associated.

One type of presystolic gallop occasionally heard was a useful clinical sign because it sometimes allowed one to distinguish an interval of delay between the auricular and ventricular contractions. It was pretty generally accepted that in certain cases the contraction of the auricle was associated with the production of a sound. In the speaker's experience, in cases of heart block with dissociation of auricular and ventricular contractions, it was rarely possible to hear the sound associated with the auricular contraction. Occasionally, in cases presenting a presystolic gallop, there was an abnormally long interval between the contraction of the auricle and the contraction of the ventricle, and in these the first tone of the gallop probably represented the sound produced by the auricular contraction; so by this simple method of auscultation, without the employment of instru-



ments of precision, one might be able to determine a delay of conduction between the auricle and the ventricle.

Several years ago the speaker and Dr. Francis Fraser studied seventeen cases showing sinus arrhythmias, which were not respiratory. These arrhythmias were mostly periodic, but the changes in rhythm were not synchronous with the respiratory phases. Eleven of these were associated with evidences of definite endocardial changes; of the other six, four patients had histories of rheumatic infection and two were merely delicate boys with no other evidence of cardiac abnormalities. One or two of these cases cleared up, the patients being carefully watched for three years. Several did not clear up and some had not done well, so it was concluded that such cases should be regarded with suspicion and should be watched over a long period of time to determine the significance of this abnormality.

In regard to extrasystoles, the conception of the nature of an extrasystole should be fixed firmly in mind. This was that for the particular moment, instead of the upper part of the heart being the pacemaker, the contraction started from some other part of the heart muscle. This phenomenon could be produced experimentally in a number of ways, such as electric stimulation, the introduction of toxic substances, mechanical injury to the myocardium, etc. If a part of the myocardium was injured, reflex stimulation easily produced premature contractions. Chemically, there could be distinguished two types of extrasystole corresponding to those experimentally produced: 1, those produced by toxins, coffee, tea, tobacco, and digitals, and absorption from the gastrointestinal tract; 2, those in which a very slight change, either chemical or structural, in some part of the heart muscle rendered this focus susceptible to reflex influences, and extrasystoles were called forth by pain, or disorders in other organs, unusual emotions, etc. The occasional, ordinary extrasystole was of little significance; but there was a possibility if nothing was done to interrupt it that it might become an established habit and grow more frequent. One should try to cure the condition. This could be done in many instances by removing the toxin, removing the cause of toxic absorption from the intestines, interdicting coffee, or tobacco, etc., and ordering graded exercise. In many people even occasional extrasystoles caused much discomfort and apprehension; these were worth getting rid of even if the presence of a few of them seemed to carry no serious import.

Dr. FRANK S. MEARA said that cardiac irregularities of the kind under discussion were fairly common in the young, but they might become so exaggerated that they were no longer recognized as comparatively harmless. These sinus irregularities in older people, however, had an entirely different aspect; they might even be misinterpreted as heart block while the electrocardiograph would show abrupt changes in the rhythm indicative of sinus arrhythmia.

The speaker said he was very much impressed by the explanation given by Doctor Thayer of the sounds heard in the second and third intercostal space that might be caused by pressure of the conus against the heart wall. That explanation had also been given in the *Lancet* by Foxwell, who described

the functional murmurs elicited in this area. A murmur at the apex, however, caused more concern, for while it was recognized frequently as functional, a careful scrutiny of the history might show a previous infection of rheumatism, and repeated examinations should be made before a final decision was reached.

Doctor Meara said he had had a few cases of high blood pressure in young men where he noticed that the blood pressure would be high after an active day. If young men examined for life insurance were found to have a high blood pressure, this should be further studied, for it might be possible that it was only temporary, perhaps induced by the excitement caused by the examination.

Doctor Hart's statement in regard to extrasystoles was very true. Lewis said that no man passed middle life without extrasystoles, but that their significance should be interpreted in the light of other cardiac findings. Ventricular systoles might be common, but when one found an extrasystole of the auricle, it was more commonly associated with myocardial changes and here the electrocardiogram would be found a valuable addendum.

Dr. LEON LOURIA said in reference to the fact that a murmur alone or an irregular beat was not sufficient evidence that the patient was suffering from an organic cardiac disease, that he was reminded of a case where he was invited to participate in the celebration of the fifty-eighth birthday of a man who twenty-five years prior was refused insurance by three companies on account his cardiac arrhythmia. It also reminded him of a physician who was very much concerned because of the irregular heart action of his wife who, during pregnancy, manifested an irregularity of the pulse causing definite subjective symptoms. Even the question of interruption of the pregnancy loomed up strongly. However, without drugs and with a little reassurance the pregnancy continued to term, after which the heart resumed a regular cycle. An interesting example of the deviations in cardiac function was a bradycardia following infectious disease. In a recent case a patient had pneumonia and the attending physician was alarmed because the pulse rate, after the crisis, dropped to forty-six, although the patient did not present any untoward symptoms. The pulse rate soon returned to normal without any drugs.

Dr. WALTER I. NILES said that he had noticed the frequency with which the split or reduplicated second sounds were heard with weakened myocardiums. Some work recently brought out at Cornell by Dean showed that these reduplications might be due to the rebound of the valve; though this was not definitely proved, it would tend to indicate a loss of tone in the myocardium. The explanation of the systolic murmurs over the pulmonic area, offered by Doctor Thayer, namely, contact of the conus arteriosus with the chest wall, was undoubtedly the correct one. In such instances pulsation in the second and third left interspaces was very likely to be visible. This might be brought about by dilatation of the conus or retraction of the lung and it was probable that both causes were operative in many instances.

The question of systolic murmurs at the apex was always a subject for controversy; in connection here-

with he had recently had a conversation with the medical director of a large life insurance company, who said that his company had decided to reject all adults with systolic murmurs at the apex of the heart, regardless of the size of the heart and other circulatory findings, because the figures showed that such individuals were poor risks even without that murmur.

Much reliance could be placed on the electrocardiograph especially, of course, in the diagnosis of arrhythmias and also in prognosis. For example, when one found evidence of deflection in some portion of the conducting tissues, it probably indicated degeneration in that region and the electrocardiogram was often the only evidence of degeneration which could be demonstrated.

Dr. ABRAHAM JACOBI said that he believed that many cases thought to be organic heart disease were not heart disease. He saw many such cases in older people, but more in those between twenty and forty years of age and in children from five to ten years of age when they were very frequent. These children were often anemic, overtaught at school, and underfed at home. If they were fed better and taught less and given a little iron, or, as he preferred, arsenic, for a few months, they would lose their heart murmurs by the improvement of the myocardium. Many children had low hemoglobin and weak heart muscles with a consequent murmur; even in people twenty, thirty or forty years of age with a murmur, a test of the hemoglobin would frequently show it to be sixty, seventy, or seventy-five per cent. Under proper constitutional treatment that murmur would be lost and the hemoglobin would come up to eighty-five or ninety per cent. or more. Too much reliance was placed on instruments of precision to the neglect of clinical evidence. He was not so well pleased with the poor results of some of the methods of treatment as he was with the good results he had had from his way of treating these patients. He was of the opinion that in many cases in which heart murmur was heard, the murmur would be lost after a few months' treatment such as his.

Doctor THAYER, in closing the discussion, said that the plan now in operation in the large colleges of placing capable men in charge of the work of examining the hearts of large numbers of young people, conducted as Doctor Greenway was doing at Yale and Doctor Browne at Harvard, provided the opportunity of collecting figures of real value. Another advantage to be considered was that a considerable proportion of those examined could be followed up later on, and this would serve to throw much light on the question of the effect of athletics on the heart, so that considerable valuable data would be assembled in the course of a few years. With reference to the neurotic character of some of the individuals and the effect of the examination itself, he cited the case of a young man who had always been in excellent health and with perfectly good control over himself under ordinary circumstances, coming up for examination for the Reserve Corps, at which time his pupils were greatly dilated, pulse rate 120 and he was sweating profusely; to

have taken the blood pressure then would, of course, have meant nothing, so he was sent away and told to return later.

The speaker said, but he could not confirm, what Doctor Hart said of the bad prognosis in cases of sinus arrhythmia, as he had not made such studies in connection with the electrocardiograph as Doctor Hart had made.

Regarding Doctor Niles' observation with reference to his conversation with the insurance man, probably no one would deny that individuals with cardiac murmurs were not as good risks as those without, but there was a certain number of these cases that were perfectly good risks. A great deal depended upon the conscientiousness of the observer. There were many misinterpretations of these heart murmurs, and the life insurance companies would do well to consider the question of the significance of slight cardiac murmurs, and in large cities it would be advisable to send such applicants for life insurance to physicians who made a special study of these heart murmurs and were capable of passing sound judgment upon them, and in this way they might save very many good risks that they now lost.

## Book Reviews

*[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]*

*Cataract. Senile, Traumatic and Congenital.* By W. A. FISHER, M. D., Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College. Chicago: Chicago Eye, Ear, Nose and Throat College. Pp. 119. (Price \$1.50.)

This little book differs materially from most similar works on the subject of cataract—the author has something to say, says it energetically, and, whether we agree with him altogether or not, we enjoy his optimism. For the most part he deals with his modification of the Smith-Indian method of extraction in capsule, which he thinks has rendered that operation safe and the one of choice; other things are the management of traumatic and congenital cataracts, the dressing and treatment after operations, and the use of kittens' eyes for the teaching of operative technic.

It is impracticable to consider every detail in which Fisher's technic differs from that of Smith, but a few remarks may be made on his preparation of the patient, the discarding of eye specula, the dressing, and after treatment. It is at least questionable whether healthy conjunctivæ should be subjected to a 1 to 2,000 solution of bichloride of mercury as a routine measure. In this respect Smith's technic is adhered to, but that surgeon practises in India, where healthy conjunctivæ are exceptional. Wherever disease is commonly absent the rather remote possibilities of harm should be taken into account. To make a subconjunctival injection of cocaine above the sclerocorneal junction seems to be a wise precaution against the pain sometimes caused by an iridectomy, but the need of one below the cornea is not so clear.

Great stress is laid on the danger incident under certain circumstances to the presence of a speculum during an operation for cataract, and the absence of such danger when the lids are held away from the eyeball by lid hooks or retractors in the hands of one assistant, while the brow is held up by pressure with the thumb of another. That this change in technic may be appreciated it needs to be mentioned that Smith is accustomed to introduce a speculum, make the corneal section, remove the speculum, and have the upper lid held up by a single hook in one hand of an assistant, who also presses upon the brow with the same hand and draws down the lower lid with the other. Fish-



er's hooks are double, and so doubtless hold the lid better, but the principal change is the making of the section with the lids held apart by two assistants. The reviewer wishes that he could feel as confident as the author that this is an improvement in technic which removes, or even reduces, the danger to the eye. Not that he minimizes the danger from the speculum. To do away with that he has used specula of various types, has operated many times with the upper lid held up and pressed firmly on the brow by the finger of an assistant, on one occasion with the lids separated by retractors in the hands of an assistant, somewhat, though not exactly, in the way described by Fisher, and has operated along the lines of Smith's technic. From this experience he feels justified in hazarding the opinion that the greater the number of assistants actively employed about the eye the more awkward becomes the position of the operator, the more complicated and difficult the technic to be learned, and the greater the danger to the eye. The principal risk in Smith's operation seems to him to appear during the manipulations some little time after the speculum has been removed.

The dressing employed is commendable as it provides for the formation of a protector that has been moulded to the face, though it is hardly superior to any other properly applied dressing covered by an efficient mask. The management of traumatic and of congenital cataracts advocated is very good, but hardly differs materially from that employed by other first class eye surgeons.

The management of traumatic and of congenital cataracts advocated is very good, but hardly differs materially from that employed by other first class eye surgeons. The main thing in both is to get an accurate idea of the existing conditions and to conduct treatment accordingly.

*Diagnosis and Treatment of Surgical Diseases of the Spinal Cord and Its Membranes.* By CHARLES A. ELSBERG, M.D., F.A.C.S., Professor of Clinical Surgery at the New York University and Bellevue Hospital Medical College; Attending Surgeon to Mount Sinai Hospital and to the New York Neurological Institute. With 158 illustrations, three of them in colors. Philadelphia and London: W. B. Saunders Company, 1916. Pp. 330. (Price, \$5.)

This splendidly gotten up work will, we predict, take rank as a classic in the bibliography on this subject. The illustrations are numerous and show infinite care and attention to detail. Indeed, the artist, Lenhard, seems to have a positive genius for this work. The first part of the book contains the anatomy, physiology, and pathology of the spinal cord, as well as the symptomatology of surgical spinal disease. There are some excellent x ray plates, illustrating various phases of vertebral pathology. The second part is devoted to the surgery of the spine, cord, and nerve roots; it also contains a complete description of lumbar puncture, with illustrations, which is the best we have seen in the literature. So many books dismiss this important subject with a brief paragraph so that the general practitioner feels that he must summon a neurologist for it. The third part of the volume treats of surgical diseases and their treatment and is up to the standard of the rest. A brief, unsatisfactory paragraph is given to "railway spine."

*La syphilis et l'armée.* Par G. THEIBERGE, médecin de l'hôpital St-Louis. (Collection horizon précis de médecine et de chirurgie de guerre.) Paris: Masson et Cie, 1917. Pp. 196.

The timely value of such a book as this can hardly be over-emphasized. Its practical service is assured through the author's direct and fearless presentation of facts and discussion of means of control and recognition of medical responsibility. The facts are the increasing prevalence of syphilis through military life, its widespread sources of contagion, the menace which it affords to the efficiency of the army and no less to civil society in its continued effects. These are dealt with individually in such a manner that they are brought directly to the practical attention of medical and military authorities, particularly of the latter in whose province they most effectually lie.

The frequency of syphilis is emphasized as well as the variety of opportunities which offer themselves to the soldiers for acquiring and disseminating infection, and also the reaction of military and civil sources upon each other. The inevitable invasion of the disease thus into married life is likewise brought to attention. Detailed instruction is

given in regard to diagnosis, particularly in the chancre stage, the first manifestation of the disease and the period of direct contagion. Secondary syphilis is also fully dealt with, while there is but brief reference to tertiary symptoms, since it is the first two stages which are of concern in military medical service. The question of treatment is submitted to the same exactitude of detail in a definite attack upon conditions as they exist.

This point of view is also present in the discussion of prophylaxis and surveillance of prostitution. The author bases his work upon a broad social movement of education and selfcontrol, but realizes nevertheless that he has here to deal with a very practical situation pressing upon military and civil authorities alike, a contagious disease which must be combatted with means as precise as those applying to any other contagious disease following in the wake of military events. It is therefore first of all and most directly a problem for the physician, while upon him also falls the responsibility of most efficacious service in the question of individual moral instruction and incentive.

Our physicians and our military authorities will find here a practical treatise which they cannot afford to neglect, as military conditions begin to prevail in our country and our men enter also the zones of infection and dissemination which have been rendered so active abroad.

*Clinical Tuberculosis.* By FRANCIS MARION POTTINGER, A. M., M. D., LL. D.

In the review of this book, published in the April 14th issue of the *Journal*, the name of the publisher, C. V. Mosby Company, of St. Louis, Mo., was inadvertently omitted.

## After Office Hours

Those interested in the predetermination of sex should see the picture of the "rocking-stone" in the *Wide World* for May, whereby the hillfolk of the Himalayas settle the fatal question early in the game.

In the *Outlook* for April 4th, Dr. Richard C. Cabot discusses the national situation from the point of view of a hospital doctor, as he modestly calls himself. Like all subjects he touches, he throws new light upon it, and furnishes food for thought.

Let not the swelling tide of best sellers cover from sight entirely a book, "The Creative Will," by Willard Huntington Wright, whose conceptions of art and literature are sound and who believes in constructive criticism. His comments on free verse are illuminating.

The progress towards more scientific, and more humane, treatment of social offenders is slow, but sure. The first step has been education of the prison officials, the warden, the physician, etc. Now it is suggested that this enlightenment be extended downwards. Allan P. Childs, in a letter to the *New Republic* for March 31st, deprecates the "lack of education in prison officials, especially the guards." He does not believe that any of them have even looked in a book on criminology. Possibly this is so, but some of the onus rests upon the prison physicians themselves. Would it not be an excellent thing for them to give a few talks on criminology to the prison guards and thus awaken an interest in the subject?

In the *Independent*, April 21st, Edward H. Forbush put the question, "What are we going to do about the cat?" to 500 correspondents. One hundred and seventy-five replied, "Kill it."

The cat must go! Her doom has been sounded by a million admirers of our songbirds throughout the land. True, she is a pretty, fastidious, graceful feline pet, but her few virtues are overbalanced by her many vices. She is lazy, treacherous, and cruel; she scratches the hand that feeds her, her attachments are spatial and not personal, she makes the night hideous, and her pathway is strewn by the mangled and bloody remains of the poets of the forest. Good-bye, Grimalkin! You have had your day! You were petted by many, eulogized by a few, and even sung of by the poet Gray, but beneath the snug velvet of your paws



and behind your treacherous purring there lurked the cruel fang and the rasping claw. Let the feathered chorus of springtime burst forth in a roundelay and preen themselves in the sunshine, for their arch enemy is doomed!

\* \* \*

Lord Northcliffe says some startling things in the *May Metropolitan*. For example, that we are much more interested in ancestors than the English, more snobbish, and even less democratic. He goes on to give some interesting facts about how England has handled her war problems, especially the financial ones. If we can avoid the blunders she made, we have that much of a start in the great struggle.

\* \* \*

Is man a god to the microbes who inhabit his veins? So Mark Twain professes to believe in a tremendous satire, as yet unpublished. These minute beings are represented as building temples to their deity and employing priests to wait upon him with their petitions. How little the public knew the real Mark Twain, the Mark Twain of *The Mysterious Stranger*, of *What Is Man*, and finally of this Gargantuan satire, the largest thing ever written by an American.

## Meetings of Local Medical Societies

MONDAY, April 30th.—Poughkeepsie Academy of Medicine.

TUESDAY, May 1st.—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine; Ogdensburgh Medical Association; Oswego Academy of Medicine; Medical Association of Troy and Vicinity.

WEDNESDAY, May 2nd.—Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Psychiatric Society of New York; Society of Alumni of St. John's Hospital, Brooklyn (annual); Schenectady Academy of Medicine.

THURSDAY, May 3rd.—New York Academy of Medicine (stated meetings); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society; Physicians' Economic Society of New York; Gloversville and Johnstown Medical Association.

FRIDAY, May 4th.—New York Academy of Medicine; New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn; Practitioners' Society of New York (annual); Corning Medical Association; Alumni Association of Roosevelt Hospital (annual).

SATURDAY, May 5th.—Benjamin Rush Medical Society, New York.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending April 18, 1917:*

ACKER, R. B., Assistant Surgeon. Granted ten days leave of absence from May 1, 1917.  
BROOKS, J. E., Acting Assistant Surgeon. Granted two days' leave of absence from April 13, 1917.  
CREEL, R. H., Assistant Surgeon General. Relieved as member of board of examiners convened by Bureau letter dated September 9, 1916.  
DRAPER, W. F., Passed Assistant Surgeon. Detailed as recorder of board of commissioned officers of which Assistant Surgeon General W. G. Stimpson is chairman, vice Assistant Surgeon General Creel relieved.  
FOSTER, M. H., Surgeon. Granted three days' leave of absence on account of sickness from March 22, 1917.  
FROST, W. H., Surgeon. Granted seven days' leave of absence from April 16, 1917.

GEIGER, J. C., Assistant Epidemiologist. Ordered to proceed to such places as may be necessary in the Southern States to make malaria surveys and collect epidemiological data relating to the disease.

KRULISH, E., Passed Assistant Surgeon. Granted seven days' additional leave from April 21, 1917.

LAVINDER, C. H., Surgeon. Directed to attend conference of social workers in New York, N. Y., as service representative.

MILLER, K. E., Assistant Surgeon. Detailed to attend a meeting of the Association of Health Officers of North Carolina at Asheville, on April 16, 1917.

MOSSMAN, P. D., Assistant Surgeon. Continued on duty at Trachoma Hospital, Welch, W. Va.

PHELPS, E. B., Professor. Ordered to proceed to Tuscaloosa, Ala., for consultation with the local health authorities regarding the establishment of a municipal pasteurization plant.

WARNER, H. J., Passed Assistant Surgeon. Granted ten days leave en route to Ellis Island, N. Y.

WARREN, B. S., Surgeon. Detailed as medical officer to the United States Employees' Compensation Commission to co-operate in the organization and operation of the work.

YOUNG, G. B., Surgeon. Authorized to deliver a course of lectures before the Women's Branch of the Navy League, Norfolk, Va.

### Boards Convened.

Board of which Assistant Surgeon General W. G. Stimpson is chairman reconvened to grade the examination papers of the Assistant Surgeons examined April 16 to determine their fitness for promotion.

Board of commissioned medical officers convened at Ellis Island, N. Y., upon call of the chairman for the purpose of making amendments to the book of instructions for the medical inspection of aliens; Detail for the board, Senior Surgeon J. C. Perry, chairman; Surgeon C. H. Lavinder, Surgeon E. H. Mullan, Assistant Surgeon M. V. Safford, recorder.

## Births, Marriages, and Deaths

### Married.

ELGIN-SHRIVER.—In Hanover, Pa., on Tuesday, April 10th, Dr. Eugene Elgin, of East Berlin, and Miss Celia Oneda Shriver.

HILL-DEXTER.—In Brookline, Mass., on Saturday, April 14th, Dr. Lewis W. Hill, of Boston, and Miss Pauline Wyman Dexter.

### Died.

BECK.—In Coney Island, N. Y., on Sunday, April 22d, Dr. Sigmund Beck, aged sixty-one years.

BLICKENSDEFER.—In Shawnee, Okla., on Monday, April 9th, Dr. Charles Blickensdefer, aged fifty-one years.

BURDICK.—In Kane, Pa., on Monday, April 16th, Dr. William P. Burdick, aged fifty-seven years.

CLAWSON.—In Philadelphia, Pa., on Friday, April 13th, Dr. James E. Clawson, aged eighty-nine years.

COX.—In Lorain, Ohio, on Wednesday, April 11th, Dr. Samuel S. Cox, aged fifty-seven years.

FLY.—In Binghamton, N. Y., on Friday, April 20th, Dr. Henry Oliver Fly, aged seventy-one years.

MCCANN.—In Lowell, Mass., on Thursday, April 12th, Dr. Alfred E. A. McCann, aged forty-nine years.

MCDANIEL.—In Rutherfordton, N. C., on Tuesday, April 10th, Dr. Charles Bostic McDaniel, aged twenty-eight years.

MORGAN.—In Slatington, Pa., on Wednesday, April 11th, Dr. Robert D. Morgan, aged thirty-three years.

MOYER.—In East Mauch Chunk, Pa., on Thursday, April 12th, Dr. Lewis W. Moyer, aged fifty-two years.

MOTT.—In Cohoes, N. Y., Saturday, April 14th, Dr. Albert Mott, aged sixty-seven years.

READ.—In Newark, N. J., on Tuesday, April 17, Dr. Joshua Ware Read, aged eighty years.

SCRUMAKER.—In Albuquerque, New Mexico, on Wednesday, April 11th, Dr. Milton D. Schumaker, of Tarentum, Pa., aged fifty years.

VARDEN.—In Atlanta, Ga., on Wednesday, April 11th, Dr. George Kent Varden, aged thirty-four years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV. No 18

NEW YORK, SATURDAY, MAY 5, 1917

Whole No. 2005.

## Original Communications

### THE UNITED STATES NAVAL HOSPITAL AND MEDICAL SCHOOL.

By ROBERT C. RANDELL, M. D.,

Washington, D. C.,

Passed Assistant Surgeon, U. S. Navy.

The new Naval Hospital, Washington, D. C., is situated upon a beautiful tract of land of about sixteen acres, rising in a gentle hill and overlooking the city on the north and east, the shrubbery and drives of Potomac Park on the south, and on the south and southwest beyond the Potomac, which washes the shores of the grounds, the hills of Virginia crowned by Arlington and Fort Myer. An interesting historical episode in connection with the grounds is recorded by the presence near the southern boundary of a rock known as Braddock's Rock. It is so called because General Braddock landed on the rock in his ill fated expedition of 1755, undertaken for the capture of Fort Duquesne, in which expedition Washington was his aide de camp. The rock at that time was, of course, on the water front, but in reclaiming the flats in this locality, grades have been extensively altered and the protective embankment limiting the channel is now some hundred yards from the rock.

The grounds represent a reservation in L'Enfant's plan of the city of Washington devoted to scientific and educational purposes from which their use has never at any time deviated. The Naval Observatory, authorized by Congress in 1842, occupied this site until 1894, when the tract was transferred to the Bureau of Medicine and Surgery, and the old observatory building is now used as the headquarters of the Naval Medical School.

The present hospital has been open for use only since 1906, the date of the completion of the handsome and commodious buildings authorized by Congress, replacing the antiquated and cramped structure near the Navy Yard, which had housed naval patients since the Civil War. The main building is near the centre of the grounds, facing the north and the Naval Medical School. The houses for the medical officer in command and for one junior medical officer, the sick officers' quarters, and the Hospital Corps quarters occupy the eastern boundary of the reservation from north to south. At the northwest are two houses for a junior medical officer and for a nurses' home respectively. To the rear, or south, is the contagious disease building, and in the

southwest corner are the power plant, steam laundry, stable, and conservatory. The buildings are all uniform in construction. The building material is light buff vitreous brick, structural steel frames, concrete floors and ceilings, and slate roofs. The interior finish is plain, with all angles coved and the doors flush panel.

The entire institution is supplied with electric light, power, and heat from a central plant. The buildings have independent hot water or steam heating systems; the radiators have automatic thermostats. The main hospital and the contagious disease building have independent plenum and exhaust systems of ventilation. Provision is made for cleaning the air supply either by gauze filters, as in the main building, or by a water air washer, as in the contagious disease building. The heating of the incoming air is accomplished, when desired, by passing it over heating stacks, the temperature being automatically controlled by a damper regulating the admission of the cold air through a bypass. The exhaust system is connected with motor fans in the attics over the various spaces. The service rooms are connected with this latter system only.

The main hospital consists of a central three story administration building, an operating pavilion in the rear, and four one story pavilion wards, one on either side of each of the above buildings, all having connecting solarium corridors. The basement beneath the administration building is utilized for a large and well appointed hydrotherapeutic room, an x ray room, a dark room, a dispensary, and medical store-rooms. Beneath the operating pavilion are the main kitchen, pantry, refrigerating room, and mess rooms for patients and employees.

The basement under each ward has a machinery room containing the blower and heater and the serving and soiled linen rooms for the corresponding ward unit. Also in the basement of the northwest ward is a suite of rooms for the outpatient clinics, in that of the southwest ward mess rooms for the Hospital Corps, in that of the southeast ward a garage, a disinfectant, and the mortuary and necropsy rooms. The basements beneath the various corridors are utilized for cells and the storage of bags and hammocks, and for other purposes.

A large porte cochère protects the main entrance to the hospital on the north side of the first floor of the central building, its roof affording space for a sun porch for the patients on the second floor. From

the entrance vestibule a hall leads to the rear and laterally to the corridors to the wards. On this floor are the offices of the medical officer in command, the executive surgeon, officer of the day, and the record

The four wards are similar in size—fifty feet, eight inches by fifty feet, eight inches by fifteen feet—each having accommodations for eighteen patients, including two in the quiet room. The estimated air



Quarters for sick officers, United States Naval Medical School and Hospital, Washington, D. C.

clerks, two rooms and a toilet for a medical officer, and a telephone and orderly station.

The second floor has six rooms for sick officers, a dining room, and a pantry. On the third floor are rooms intended for the Hospital Corps. The operating department in the rear has operating room,

space is 1,613 cubic feet per patient, the floor space being 107.5 square feet per bed. The corridors are utilized for solaria, being widened near each ward. The utility rooms are located on each side of the entrance.

The sick officers' quarters have a basement and



United States Naval Medical School, Washington, D. C. Here, under normal conditions, the student officer goes for his training before taking the final examination for appointment in the medical corps.

anesthetizing and recovery rooms, a dressing and instrument room, and preparation rooms. The floors and wainscot are tiled, the walls finished in white enamel, and the ceiling of pressed steel.

three stories. The entrance is on the north side, over which on a level with the third floor is a large portico supported by six pillars. Beneath this, on a level with the second floor, is a smaller portico



immediately over the entrance. These porticos serve as a veranda for the corresponding floors. The first floor has an office, a reception room, library, a nurses' and dressing and medicine room, diet kitchen, and five rooms for patients. The second and third floors have seventeen bedrooms and the usual service rooms.

As a rule there is a bathroom between each two

each being bisected by a wide corridor running north and south, open at each end, permitting free circulation of air. The elevator shaft, entirely enclosed, runs through the centre of these corridors. On either side of the south end of this corridor on each floor is a six bed ward and, in connection with each, a diet kitchen with an independent dumbwaiter to the basement and serving room, a toilet and lavatory,



View of the United States Naval Medical School and Hospital, Washington, D. C.

rooms. All floors have elevator service. On the second floor two rooms have been utilized for an operating room and a dressing room.

The contagious disease hospital is planned to accommodate four types of this class of diseases. The entrance for patients is on the south side of the basement into the receiving room, thence by elevator to all floors. The remaining space in the basement

and two quiet rooms. In addition to the four isolation units there are two rooms for nurses and an office and suite of rooms for a resident medical officer. The diet kitchens are provided with steam tables and electric ranges. The toilets are tiled and the partitions gray Tennessee marble. Steam sterilizers are provided for the disinfection of utensils.

The entrance to each ward from the open corridor



Bacteriological laboratory of the United States Naval Medical School, Washington, D. C.

contains the disinfecting plant, main kitchen, serving rooms, a dormitory and mess rooms for the attendants, a mortuary, storerooms, and a machinery room. The arrangement of the two floors above is similar,

is through a vestibule with a door at each end. This with the exhaust ventilation prevents infection from one unit to another. The capacity of this building is thirty beds.

The nurses' quarters have a kitchen, storerooms, and a bedroom for the attendants in the basement; on the first floor are the quarters and office for the head nurse, a reception room, a lecture room, and a dining room; and on the second and third floors are

six months, but owing to the present state of activity and enrollment sessions have been temporarily abandoned. It has been found impossible to carry the young men through the school as a preliminary to commissioning in the regular service without so hampering the urgent need for officers for duty in the present crisis as to be a serious detriment. When a more settled state of activity is reestablished it is the purpose to give these officers a postgraduate course as the opportunity arises.

The subjects covered are medical zoology and pathology, bacteriology, serology, and clinical microscopy, tropical medicine, surgery, naval hygiene, chemistry, ophthalmology, psychiatry, röntgenology, medical department duties, and naval drills. Physical and military drills, inseparable from a course of instruction for beginners at a military or

naval school, are given daily and continued throughout the course of instruction.

Clinical instruction is given to the student officers at the Naval Medical Hospital and at St. Elizabeth's Hospital, the huge government institution for the care of the insane. At the latter hospital, Dr. William A. White gives weekly clinics. This course is invaluable for all medical men. About 4,000 patients are available from whom to select valuable clinical material.

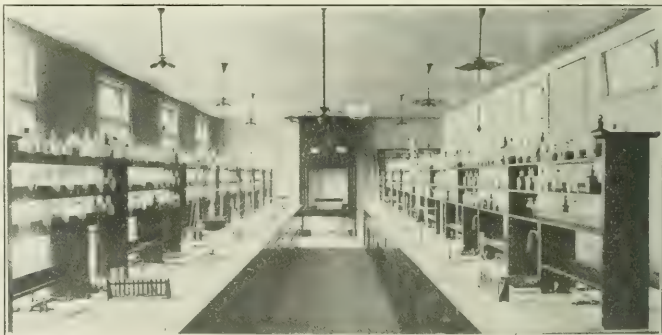
accommodations for eighteen nurses. The building for the hospital corpsmen is two and one half stories in height, in addition to the basement. It has accommodations for fifty-seven men, an office, a lecture room, a recreation room, and mess rooms. The power plant consists of three ninety horsepower boilers, supplying power to all the hospital buildings, the water, steam, and electric mains being transmitted through conduits.

The total normal capacity of the hospital is as follows: Main hospital, seventy-eight beds; sick officers' quarters, twenty-two beds; contagious disease hospital, thirty beds; total, 132 beds. This is capable of expansion to 175 beds, or by utilizing the Hospital Corps quarters to 240 beds.

The Naval Medical School was established by the Navy Department's order of May 27, 1902, for the instruction and training of newly appointed medical officers in professional branches peculiar to naval requirements. The course of instruction, following close upon entry into the service, is primarily intended to prepare an already well educated medical man for grappling with the special problems presented by a rapidly growing naval medical service and to enable him from the very beginning of his career in the service to assist in solving some of these problems. The course of instruction usually lasts



Library of the United States Naval Medical School, Washington, D. C.



The Chemical Laboratory, United States Medical School, Washington, D. C. In this laboratory are conducted practical courses in air and water analysis, examination of foods, drugs, stomach contents, etc.

The Naval Medical School is under the command of Medical Director E. R. Stitt, U. S. Navy, probably the ablest authority on tropical medicine in this country and the author of standard textbooks upon that subject as well as upon laboratory procedure. An efficient corps of instructors is maintained for

the careful and painstaking guidance of the student officers, and these are aided by the voluntary contribution of lectures by well known members of the newly organized Naval Reserve Force.

The school building, originally occupied by the Naval Observatory and later by the Museum of Hygiene, has with slight remodeling and some additions proved peculiarly adapted to its present purpose. In addition to large, well lighted laboratories for class work, there are smaller laboratories for the instructors, for the routine laboratory work of the adjacent naval hospital, and for the examination of specimens of interest sent in by medical officers throughout the service.

The class laboratory for pathology, clinical microscopy, bacteriology, medical zoology, etc., contains twenty-six working places, each consisting of a desk with plate glass top set on rubber matting and supplied with microscope and accessories, gas, electric light, and water. Outside of this laboratory is a large 37° C. incubator, with a separate compartment for each student. There are also incubators kept at a constant temperature of 20° C. and



Wardroom of the battleship *Nebraska*. The mess room of a battleship, where officers' meals are served and where at hours of unemployment they may gather for social diversion.

ovens run at 60° C. In the basement is a cold storage room kept constantly at a temperature just below freezing.

The chemical laboratory contains thirty-two working places, with all the requirements for clinical chemistry, and for examination of milk, water, air, etc. A complete equipment for photomicrography is installed in a specially constructed room in the basement. An animal house is run in connection with the laboratory. In the museum the classified material already at hand covers most of the subjects dealt with in tropical medicine and parasitology. This material is provided with ample shelves in a specially fitted room, and a systematic arrangement has been perfected by which it is expected to fill gaps rapidly in the various collections and to replace the specimens constantly consumed in classroom work by material directly from the tropics through naval medical officers and others working in tropical regions.

The library contains, in addition to standard works on medicine and surgery, the leading domestic and foreign medical periodicals, especially those dealing with medical zoology, pathology, bacteriology, and tropical diseases.

## ROENTGEN FINDINGS IN THE UPPER RIGHT ABDOMEN.

*With Special Reference to the Duodenum, Gallbladder, and Pancreas.*

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The Röntgen and clinical findings recorded in this paper are a part of the observations made during an analysis of one thousand cases referred to us for x ray examination of the intestinal tract. Data concerning functional phenomena in the abdomen, demonstrable by Röntgen methods, were tabulated and are submitted in the hope that special attention will be drawn to cutaneous manifestations of duodenal toxemias and the pathological and mechanical factors causing this special form of autointoxication, and

that the value of x rays in differential diagnosis of lesions of the duodenum, gallbladder, and pancreas will be further appreciated.

In the upper right quadrant of the abdomen there is a group of organs and parts having a great variety of functions; these organs are complicated in structure and have a mechanical arrangement which permits of wide variations in the relative position and provides a prolific field for attacks of disease with numerous sequelæ. This portion of the

abdomen normally contains the liver, gallbladder, pyloric end of the stomach, a part of the duodenum and pancreas, the right suprarenal gland, the greater portion of the right kidney, a part of the great vessels, the upper portion of the ascending colon, the right transverse colon, usually a portion of the ileum and jejunum, a complex blood supply and lymphatic system, and some of the sympathetic nervous system and pneumogastric filaments.

There are numerous departures from this arrangement; any one of the above mentioned organs may not occupy the upper right quadrant, or there may be entire displacements or transposition of viscera. The gallbladder may be found anywhere in the abdomen; the stomach and duodenum may be entirely displaced to the left and below the right quadrant; the kidney may be in the pelvis, with the suprarenal gland accompanying it; structures not normally found in the upper right abdomen may appear in that position, and occasionally, for instance, the cecum and appendix may be lying in this region, either as a result of congenital development or from formation of adhesions; any portion of the colon may be found in the upper right quadrant, even the sigmoid may appear in this region. Any sections of



the jejunum and ileum may be found in the upper right quadrant and may be involved in adhesions and other manifestations peculiar to the intestines. The hepatic flexure of the colon, together with the

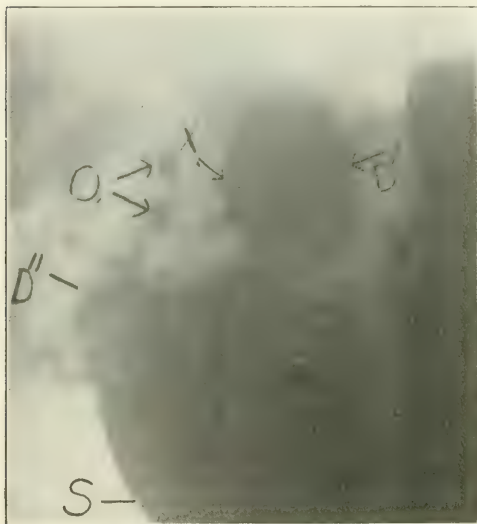


FIG. 1.—Gallbladder pressing upon the duodenum, producing a pressure defect in the first portion, at point marked X'. D'' is the continuation of the second portion of the duodenum, below the gallbladder area. O, defines two arrows pointing to shadows of two small gallstones. This figure represents the mode of localizing the gallbladder by administering a bismuth meal.

two arms, the ascending and transverse colon, is a frequent location of extensive complications ranging from adhesions, bands, and veils, to diverticula and numerous abnormalities and malignant processes. The x rays have proved of greatest value in the determination of these conditions.

The liver, being the largest organ in this portion of the abdomen, is usually very conspicuous. X ray examination informs us as to its relative size, marked abnormal development of its shape, and the presence around it of large collections of pus; occasionally calcium deposits and cysts may be seen within it. We have found only one case in our experience in which calcium deposits were found; they lay just to the outer side of the normal location of the gallbladder, and in this instance, when they were reported, the unusual position of the shadow was suggested as a reason for their not being gallstones. We have had several cases of tumor of the liver in our experience, easily demonstrated by the x ray examination. This work usually calls for a preliminary examination, following which bismuth or barium meals are administered, or a bismuth enema is given.

The gallbladder is easily demonstrated when its walls or contents are of abnormal density which is sufficient to cast a shadow on the x ray plate of greater density than the surrounding tissue. Frequently we can see shadows of the gallbladder when the contents are only fluid or even when the walls are only thickened by connective tissue; also, pure cholesterin deposits can be depicted on the x ray

plate. Such gallbladders are very difficult to demonstrate except under ideal conditions demanding absolute fixation and complete suspension of all respiratory movements. Pathologists have pointed out the existence of fine crystalline deposits deep in the mucosa of pathological gallbladders; these may contain some lime salts, which always materially increase the density of the gallbladder or its contents.

Various figures have been given for the approximate proportion of gallbladders which can be demonstrated on the x ray plate. Doctor Case, of Battle Creek, gives a percentage of about forty-nine, although he thinks this is a little high; Doctor George, of Boston, states that he can demonstrate the gallbladder in seventy per cent. of the cases or even more, if care is exercised. Our earlier experiences did not justify us in claiming the demonstration of more than about forty-five per cent. of gallbladders, but more recently we have been obtaining images of a larger percentage, and are convinced that roentgenograms of almost all pathological gallbladders can be obtained. Also, we are satisfied that the value of the x ray in determining conditions of the gallbladder can be greatly enhanced by taking into consideration adhesions involving the gallbladder with adjacent structures, a condition which can be demonstrated by the administration of bismuth or barium salts in almost 100 per cent. of the cases. From observations we are convinced that this is of greater importance than the determination of the gallbladder alone, as the adhesions of a vast percentage of the cases are the cause of the distressing symptoms that lead to operation; such findings cannot be made with the x ray plate alone, but result from our additional use of the fluoroscope. In our experience, we have found two cases demonstrating the presence of duodenal contents in the gallbladder. The proof of this phenomenon is the entrance of bismuth into the gallbladder. One of these patients had been subjected to a laparotomy and somewhat elaborate surgical procedure. At the time of the examination, a pool of bismuth was found lying far to the right in the region of the gallbladder, just above the hepatic flexure; its shape and size was not that of the normal gallbladder, but its fixed position, together with its extreme lateral location, proved it to be to the right of the stomach and duodenum.



FIG. 2.—This cut has been reversed to a positive. White portions represent bismuth in stomach and duodenum. In the plate to the left the arrow points to a pool of bismuth in a small ampulla of Vater lying between the shadow of the first and second portion of the duodenum. In the plate to the right the arrow points to the pool of bismuth in the ampulla of Vater remaining after the second portion of the duodenum is empty.

Another case exhibited a pool of bismuth lying anterior to the second portion of the duodenum, being slightly larger than a normal gallbladder, but pear shaped and giving other characteristics of a

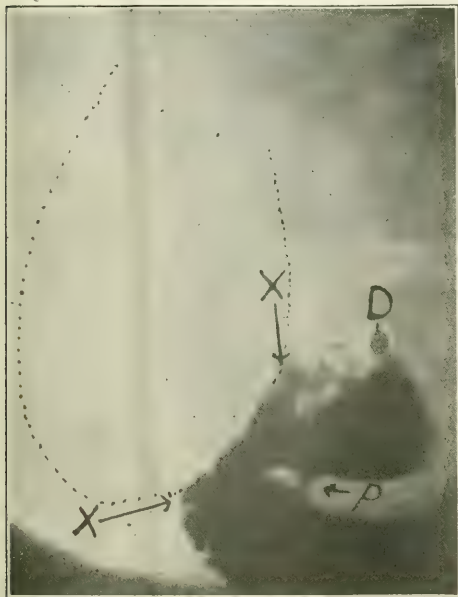


FIG. 3.—P, pylorus; D, first portion of duodenum; X-X, with arrows points to area of pressure upon second portion of the duodenum by a shadow of a large gallbladder which is outlined by dotted lines, visible on the plate, but impossible to reproduce on paper.

definite pouch, independent of the duodenum. Carmen, of the Mayo Clinic, recently reported one case in which there was perforation between the duodenum and gallbladder with the ascent of the opaque material from the duodenum into the branches of the hepatic duct.

Rosenow undertook some experiments which have definitely proved that the gallbladder may become infected through the systemic circulation. This does not apply to all gallbladder infections, and as Doctor Judd, of Rochester, recently pointed out, the frequency of the coexistence of ulcer of the duodenum and cholecystitis is well known, and he states that it is probable that in these cases of cholecystitis the infection is secondary to infections caused by organisms from the ulcerated area in the duodenum. He also points out that the

normal duodenum is free from bacteria, but it can readily be seen that if there is delayed drainage in the duodenum, a culture field for bacteria is being maintained, and that the mucosa is rendered more susceptible to infectious processes. It is probable that when the bacteria exist in the duodenum they can travel directly up the ducts through regurgitation of the duodenal contents into the ducts and by the spread of the infectious process through the continuity of the mucosa.

Röntgenologists frequently see sections of the stomach or duodenum indented by an oval mass corresponding to the contour of the gallbladder; some of the accompanying illustrations will exhibit this condition. If under the fluoroscope a tender point corresponding to this oval indentation can be demonstrated, and can be confirmed by a conspicuous shadow found in the same location in supplementary examination of the gallbladder region, the gallbladder has been located. That this localization is of value in diagnosing gallbladder disease, must be accepted. The location of the tenderness can be defined and credited to the gallbladder instead of the duodenum or pancreas; also, with this indentation in the shadow of the stomach or duodenum, together with the conspicuous shadow frequently suggestive of the gallbladder, the relative size of the gallbladder can be determined. Should there be found in this localized field, ill defined lines of a threadlike character forming circles or whirls, we are justified in concluding that the gallbladder contains stone covered with small deposits of lime salts. The difficulty of recognizing pathological gallbladders when the abdomen is opened is becoming more fully appreciated by the surgeons. Doctor Judd states: "It is difficult to recognize all cases of cholecystitis even when the abdomen is opened so the gallbladder can be seen and felt." This being so, we may arrive at a period in the development of Röntgen work which will permit the findings of the x ray plate to be a material factor in guiding the surgeon to a decision as to the existence of a pathological gallbladder and

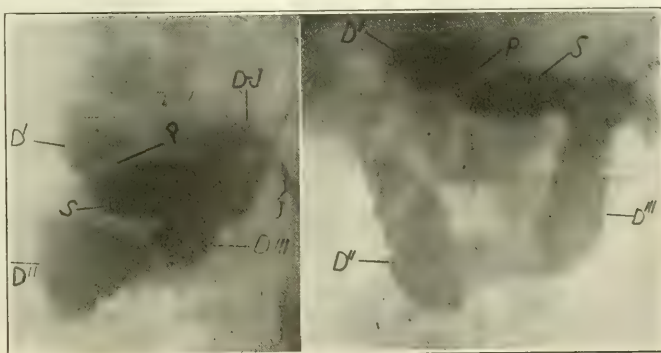


FIG. 4. S, stomach; P, pylorus; D, first portion of duodenum; D'', second portion of duodenum; D'', third portion of duodenum; DJ, juncture of duodenum with jejunum. Plates taken with the patient standing erect; plate to the left illustrates the stomach hanging above the level of the lowermost portion of the second and third sections of the duodenum. Plate to the right illustrates the stomach pushed upward by the hand, exposing the area occupied by the pancreas. The tremendous size of the dilated duodenum in this case is well illustrated by comparison of the stomach and duodenal diameters.

determine his procedure when the abdomen is opened.

The pyloric end of the stomach is readily demonstrated by administering bismuth or barium salts. It is so frequently found to the left of the median line that we cannot always regard it as an entity in the right abdomen; in fact, this is so frequent that

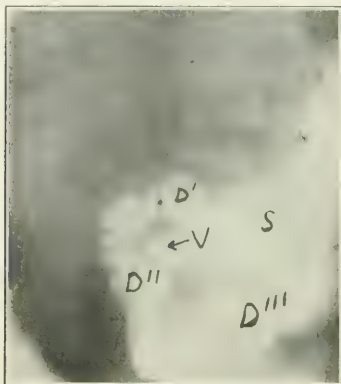


FIG. 5.—This cut has been reversed to a positive. White portion represents bismuth in stomach, duodenum, and ampulla of Vater. S, stomach; D', first portion of duodenum; D'', second portion of duodenum; D''', third portion of duodenum. V indicates arrow pointing to a large pool of bismuth in the ampulla of Vater. The second and third portion of the duodenum are markedly dilated, being almost the diameter of the stomach.

the gastroenterologist has allowed this factor to enter into his differentiation of gastric and duodenal ulcer, pointing out that the position of the stomach in the left abdomen favors the ulcer being within the stomach. However, the x ray has so thoroughly eliminated the hazard in locating the position of an ulcer as to render such fine points in diagnosis of minor importance. Following bismuth, we can localize a foreign body in the stomach whether it occupies the pylorus or some other section; we can determine the presence of gastric ulcer, and its relative position; we can define the location of a duodenal ulcer, differentiating it from a pancreatitis or tenderness originating from the gallbladder; we can determine the presence of diverticula of the stomach and duodenum or any section of the intestine in this region. The relative length, size, and free drainage of the stomach and duodenum is easily determined.

In recent times, we have been giving the second and third portions of the duodenum very careful consideration in our work. This has permitted us to make some observations that in some respects we regard as original, not having been able to find literature bearing directly upon this subject from the standpoint that we have observed it. This has chiefly to do with the results of delay in the drainage of the duodenum and the resulting effect upon the gallbladder and pancreas, and especially, cutaneous manifestations of duodenal toxemia. These observations have frequently permitted us to determine the existence of a pancreatitis where it was unsuspected. Also, we have been impressed with the frequency of an advanced malignancy of the pancreas without material symptoms, a warning of the ap-

proaching fatality coming but a brief time before the death of the patient, for the pancreas has always been somewhat of an enigma, surprising the internist at most unfortunate times.

The duodenum is divided by anatomists into three or four portions, depending on its shape. There are numerous departures from these two classes. The most common shapes are the V shaped and the U shaped, the V shaped consisting of three portions, and the U shaped of four portions. The first portion of the duodenum can be considered anatomically as the terminal portion of the stomach. It is not so limited in diameter or mobility as the remainder of the duodenum, moving in normal conditions freely with the stomach to the point where it passes the duodenohepatic ligament. From this place, it normally descends in front of the suprarenal capsule and the right kidney, having to its inner side the head of the pancreas and great vessels, while to the outer side lie the gallbladder, liver, and occasionally the hepatic flexure. The third portion of the duodenum, or the third and fourth portions, crosses the great vessels and spine, running upward to the left, sometimes lying on the anterior surface of the upper pole of the left kidney and suprarenal gland, and enclosing the lower part, and sometimes a portion of the anterior surface of the pancreas. Sections of the pancreas may pass anterior or posterior to the various segments of the duodenum or even entirely surround a portion.

The several sections of the duodenum are of varied length, the first portion being about five centimetres, the second portion about eight centimetres,

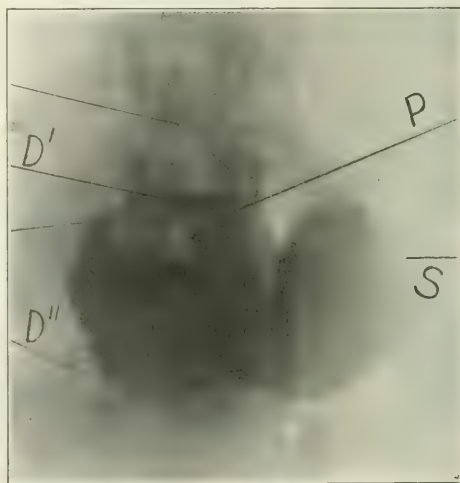


FIG. 6.—S, stomach; P, pylorus; D', first portion of duodenum; D'', second portion of duodenum, which is dilated together with the first part of the third portion, until the cavity is almost the size of the stomach, and is caused by adhesions in the third portion.

and the third portion about twelve to fifteen centimetres. Entering the second portion of the duodenum is a canal which carries the bile and pancreatic secretions. This enters the descending portion



of the duodenum obliquely in the left side. Just before its entrance into the duodenum there is situated a small cavity known as the ampulla of Vater; this cavity is normally but a few millimetres in diameter, but is occasionally found to be about 1.5 centimetres in diameter, and we can recall one case in which it was about 2.5 centimetres. When the common duct is large and its orifice is somewhat patent, the duodenal contents will pass into the ampulla of Vater; we have witnessed this a number of times. That this condition is occasionally a factor in the precipitation of pancreatitis we are convinced. Just what the cycle of events is which permits the inhibition of drainage of the duodenum and the accompanying pancreatitis, toxemia, etc., it would be difficult to say; however, we can probably illustrate what may occur in a given case. The patient gives a history of typhoid fever several years previous, since which time he has been subject to periods of headache, and gives an outline of his subjective symptoms about as follows: On arising, he feels excellent and will enjoy his breakfast, but from three to five hours after breakfast he begins to feel a malaise and mild headache; this will increase. At lunch he may eat without enjoying his food. In the afternoon the headache may become so intense as to require some means of relief; there is also distention in the upper abdomen and perhaps a feeling of diffused pain in the epigastrium. He states that rest in bed or a reclining position may relieve him. Upon x ray examination it is observed that there is a delay in the drainage of the duodenum, material entering from the stomach accumulating in a large sac like duodenum, almost the diameter of the stomach; tenderness is found both in the region of the pyloric end of the stomach and to the right of the second portion of the duodenum, but by displacing the stomach upward or to the left, the tender area is not changed. After determining that the duodenum is not draining properly and that it was unusually distended, if further inquiry is made into the history of the case, it is frequently found that the patient has been having skin lesions, such as dry eczema or psoriasis; several other types of scaly skin lesions may occur. Also, frequently, there is a history of sugar in the urine, although this is a factor in only about one third of the cases.

Several writers have contributed to the subject of duodenal lesions and a determination of their presence by the x rays. Jordan, of London, has pointed out the importance of determining the presence of duodenal retention as a result of kink at the ligament of Treitz; Pfahler, of Philadelphia, has indicated the value of this method of determining duodenal conditions. The writers have discussed kink of the duodenum and the resulting delay in the drainage, in papers heretofore published. They have so far confined themselves to the mechanical problem involved, and have not taken into consideration the possible clinical manifestations or results which may arise from a delay in the duodenum.

Our observations have taught us that while the obstructions of the third portion of the duodenum may be far from complete, they result in retarding the contents of the duodenum to such an extent as to delay the intestinal contents and cause toxic

symptoms from absorption of material in the duodenum.

Several contributors to medical literature have suggested the importance of duodenal toxemia or duodenal poisoning, but so far as we have been able to find in reviewing the subject, no attention has been given to some of the most marked clinical manifestations of duodenal toxemia. Our observations have led us to believe that the delay in the duodenum brings about organic changes in the pancreas and gallbladder, together with their drainage canals, and that serious constitutional toxemias are brought about and that one of the most marked manifestations of this poisoning is in the skin.

We have frequently, after fluoroscopic a duodenum, asked the patient if he had any skin lesions and have been answered: "I have been treated for psoriasis," "I have psoriasis," or "I have scaly patches on my skin," or a history of eczema may be given. In one instance, a physician who had an obstructed duo-

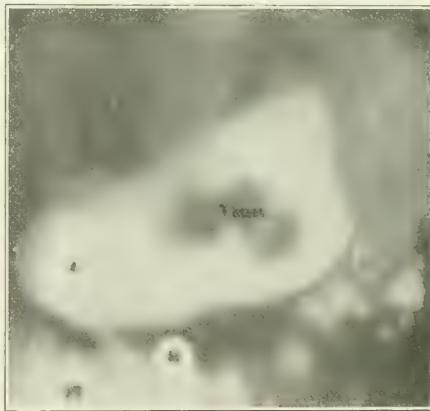


FIG. 7.—This cut has been reversed to a positive: The white portion represents the lumen in the stomach and intestines. Tumor in the pancreas. Tumor was found to be sarcoma, which by pressure, displaces the bismuth in the stomach. The area of tumor pressure is defined by the large irregular dark defect in the middle of the stomach shadow.

denum stated that he had a dry eczema of the extremities which had developed in recent years. Also, frequently a superficial inspection of patients with duodenal delay will convince the examiner that there are mild cutaneous manifestations of duodenal toxemia. In contradistinction to this, our work has led us to believe that the retention in the lower ileum and colon is more commonly found in the individual with an oily, oversecreting skin or an atrophied, pigmented skin.

The distinctive characteristics of the duodenal toxemia suggests that the split protein autointoxication stimulates proliferation of the horny layers of the epithelial structures, while toxic material absorbed in the lower intestinal tract, being end products, both bacterial and metabolic, have a selective action upon the secretory glands of the skin, primarily stimulating them and in the reaction from this stimulation, atrophy of the skin occurs. "The majority of the German observers consider the inflammatory changes in the papillary layer of the corium

to be primary; Unna thinks the first lesion is parakeratosis; Robinson and many English writers believe the primary lesion to be hyperplasia of the epithelium; while Crocker, Brooke, and others consider the changes in the corium and epidermis to be synchronous, and due to the same cause acting on both simultaneously" (1).

Some years ago, a well known laboratory experimenter demonstrated that the higher section of the intestinal tract, especially that portion within a few feet of the stomach, had a greater capacity for absorbing split proteins. Accepting this as true, we can look upon the phenomenon which takes place in the duodenum when delay in its drainage occurs as an absorption of partly digested protein material, with its resulting manifestations of autointoxication and skin lesions of a distinctive type.

#### CONCLUSIONS.

1. The duodenum and its two accessory organs, the pancreas and gallbladder, should be considered as an entity, a duodenal trinity, to be studied as a unit, and when an incomplete obstruction is found in the second or third portion of the duodenum the pancreas and gallbladder should be suspected as being involved secondarily.

2. The duodenal contents may readily escape into the ampulla of Vater and thence into the pancreatic and common bile duct, providing an easy route for infections of the pancreas and gallbladder.

3. The x ray permits us to localize tenderness exactly so as to determine whether its source is the duodenum, the gallbladder, or the pancreas.

4. Pancreatitis can be diagnosed very easily by the aid of the x ray when accompanied by the fluoroscopic examination, and the result may be an earlier determination of the malignancy of the pancreas.

5. The location, size, and shape, together with the pathology of the gallbladder, can frequently be fully determined by the x ray examination, and the image on the x ray plate is a guide as to the surgical procedure to be followed when the abdomen is opened.

6. One of the most conspicuous manifestations of duodenal toxemia is in the skin, and the skin lesions which prevail are of the dry, scaly variety.

#### REFERENCE.

1. PUSEY: *Principles and Practice of Dermatology*, 2nd Ed., p. 402, 40 EAST FORTY-FIRST STREET.

#### Appendicitis Consequent on Acute Pharyngitis.

—Charles Bennett (*British Medical Journal*, March 17, 1917) reports a case of acute appendicitis which was apparently due to hematogenous infection from an acute inflammation of the pharynx and fauces. At operation the appendix, the last foot of the ileum, the cecum, and part of the ascending colon were red and congested. The appendix was removed and the abdomen closed; recovery was good, but the fever did not fall until the throat condition subsided. The gross appearance of the appendix suggested the occurrence of a blood infection, the primary location of the organisms being external to the mucosa. This was confirmed by examination of the organ, which showed acute inflammation and pus in the mesoappendix and beneath the serous coat of the organ, while the coats nearer the lumen were apparently nearly normal.

## STENOSIS AND STRICTURE OF THE URETER.\*

BY LEO BUERGER, M. D.,  
New York.

In discussing this subject it is desirable to point out that true stenosis or stricture of the ureter comprises all types of permanent diminution of the calibre of the ureter that are not neoplastic, and should exclude spasmodic strictures, obstacles due to presence of calculus, incrustations, malposition, kinks, torsions, compression by abdominal organs, neoplasms, and secondary infiltrations with tumors. I shall endeavor here to give a brief résumé of some of my own observations on stenosis and stricture of the ureters with several case histories that may be of interest. My own cases may be classified as the congenital and acquired varieties, but I shall mention only a small part of my own material.

#### CONGENITAL STENOSIS OF THE URETER.

Most congenital stenoses belong to one of two classes: those in which there is a narrowing at or very near the ureteropelvic junction, and those in which there is stenosis, atresia, or maldevelopment of the lower end of the ureter.

*Stenosis of the ureteropelvic junction.*—I have operated upon several patients whose condition belonged to this category, and have studied the pathological specimens. As a rule, we deal here with a congenital aplasia of the ureteropelvic junction. The uppermost portion of the ureter has the diameter of a small probe or larger, at most two to four millimetres in diameter (Fig. 1), and the ureteral lumen is commensurately diminished, permitting at times the forcible introduction of a fine probe, but, strange to say, being sufficiently narrow to prevent the contents of the kidney from flowing through the ureter. When these cases come to operation, there is usually an enormous hydronephrosis with thin membranaceous walls. In some instances I have found that considerable pressure is required to force the contents of the hydronephrotic sac through the narrowed ureteropelvic junction. This condition must be differentiated from that in which there is an anomalous or high implantation of the ureter with kinking, and also from that in which an aberrant vessel brings about distortion and pressure and thus prevents the evacuation of the renal contents.

Clinically, experience teaches that this condition is apt to exist for years until an enormous hydronephrosis develops, and that the symptoms may be absent until the tumor has attained such size that it gives signs of its presence merely by its weight, size, and pressure effects. Sometimes, however, there is an associated inflammatory process, as in a patient operated upon by me, where the perinephritic inflammation altered the clinical picture.

CASE I.—J. I., aged twenty-two years, had no symptoms referable to the presence of a hydronephrosis. Three weeks before examination he had a burning sensation in the left lower quadrant and in the left lumbar region, accompanied with fever. On examination, the left lumbar region was rigid. There was some rigidity and tenderness in the left hypochondrium. An indefinite mass of con-

\*Remarks made in the discussion of ureteral stenosis before the Section in Genitourinary Disease, New York Academy of Medicine, January 17, 1917.

siderable size could be palpated in the left hypochondrium and ballotted from behind. On May 1, 1916, I removed a large hydronephrotic kidney, about ten inches in length. The hydronephrosis was due to a congenital stenosis of the ureteropelvic junction. Because of the possibility of the presence of a polycystic kidney on the other side, an exploratory laparotomy was performed as a preliminary to the nephrectomy. The patient made an uneventful recovery.

The cordlike appearance of the narrowed ureter, the total absence of all periureteral inflammation and fat formation,



FIG. 1.—Hydronephrosis due to congenital stenosis at ureteropelvic junction.

and the absence of kinking remove all doubt as to the type of disordered mechanism responsible for the urinary retention.

In other cases, however, by reason of dilation of the pelvis of the kidney and sagging of the lower pelvic wall, the ureter assumes a high position at the ureteropelvic junction, and the question of valve formation and

secondary angulation must be considered in a proper estimation of the anatomical and pathological mechanism. If, however, all instances of this type are excluded, there still remains a large number of cases in which true congenital aplasia and stenosis of the ureter exist. Some of these are aseptic, others are associated with perinephritis, and in still others a small stone in the kidney may lead to the assumption that a calculus may be in part or wholly responsible for the lesion. The absence of periureteritis, ureteral lesion, and thickening of the ureter, however, speaks for the exclusion of a lesion at the ureteropelvic junction and calculus formation as causative factors. In one of my patients, hematuria was the only symptom. Pain was absent, and at operation I found the typical stenosis of the ureteropelvic junction, enormous hydronephrosis, and a small stone in one of the calyces which was responsible for the hematuria.

#### *Congenital stenosis of the lower end of the ureter.*

—In another class of cases the lower end of the ureter is concerned, and these may be subdivided as follows: 1, total aplasia of the lower end of the ureter with complete absence of a portion of the ureter without any visible indication of ureteral meatus in the bladder; 2, atresia or aplasia of the lower end of the ureter with distinct indication of the presence of an orifice; 3, congenital narrowing of the lower end of the ureter, and 4, narrowing of the lower end of the ureter with prolapse and cystic dilatation of the intravesical part of the ureter, or ureterocele.

Cystoscopists frequently encounter minute, puncti-

form ureteral orifices which can be demonstrated by the ureteral catheter to be abnormally narrow. Some of these are so small that they permit but a very small stream of urine to trickle through. If indigo carmine is given in such cases and the contractions of the ureter watched, the site of the ureteral orifice will be seen to bulge and balloon, producing smaller or larger intravesical intrusions. These may be lenticular, hemispheroid, or even pyriform, and are covered by thin walled mucous membrane through which the indigo carmine may often be distinctly visible. Sometimes a faint trickle of colored urine may be seen to escape slowly through the stenosed orifice.

When this condition has been present for years, and when the stenosis is still more marked, a veritable pyriform tumor, called ureterocele or cystic dilatation of the lower end of the ureter, may be produced. A most interesting case of stenosis of the lower end of the ureter, with cystic dilatation of the lower end of the ureter, so called ureterocele, was observed by me in 1912 (Fig. 2). The history is as follows:

CASE II.—M. D., male; aged thirty-six years; Russian. For the past ten months he had been conscious of pain in the small of the back, radiating down the thigh. At first the pains were cramp like in character and were soon followed by some burning at the end of the urethra on urination. On consulting a physician he was told that the urine was cloudy. Somewhat later he began to have frequency of urination, occasionally at night, but there was never any blood in the urine. Somewhat later pain was also present in the left lumbar region. Abdominal examination did not reveal any tumor. November 12, 1912, I found on cystoscopic examination a moderate degree of inflammation of the bladder. At the site of the left ureteral orifice there was a typical cystic mass (Fig. 2) about the size of a terminal phalanx of a moderate sized little finger, with a smooth, glistening surface, and with a slit like orifice, somewhat behind and to the inner side of the summit. The right ureter was easily catheterized, and practically normal urine obtained. A diagnosis was made of leftsided ureterocele, or cystic dilatation of the lower end of the ureter, with stenosis of the ureter. It was impossible to put a catheter into the slit like orifice, nor was any indigo carmine or urine seen emanating from it.

On November 18th, the operating cystoscope was inserted and the cystic ureter still found as at the last examination. With a knife introduced through the operating cystoscope



FIG. 2. Ureterocele due to congenital narrowing of ureteral orifice.

a number of incisions were made into this sac, which was followed by collapse and sudden disappearance of the cyst. Then a rather large ureteral orifice became visible, surrounded by redundant mucous membrane. The telescope was removed with a view to inserting a large catheter into the ureter, and to my surprise, upon reinserting it, the sac had filled up again, indicating that the ureter above, as well as the kidney, must have been dilated, or at least must have



ered down sufficient fluid to fill the sac again. Thereafter, with the operating punch forceps, pieces of mucous membrane were removed, lessening and enlarging the ureteral orifice, and then a No. 6 French catheter was inserted into the cavity, very dilute urine being collected, its urea content being 0.4 per cent. On November 25th, cystoscopy revealed that the ureterocoele had become completely changed in appearance, being represented by a flattened sessile mass, bearing a ureteral orifice of irregular contour at its summit. A No. 6 French catheter was inserted into the ureter up to the kidney. On November 27th, a forty per cent. argyrol solution was injected into the left kidney, two catheters being passed side by side into the left ureter, both entering for a distance of thirty-one centimetres. The urine collected showed one per cent. urea, was slightly



FIG. 3. Inflammatory perimetrial fibroadipomatosis causing stricture of the ureter.

cloudy, containing white blood cells and a few red blood cells. A pyelogram was made, and showed an enormous dilatation of the renal pelvis.

The patient refused operation for the hydronephrosis and escaped future observations.

An interesting case and one which I believe belongs to the class of congenital stenoses of the lower end of the ureter, was observed by me in July, 1914.

CASE III.—Mrs. L. R., aged twenty-seven years, had been having attacks of left lumbar pains for three years. At times the pain radiated downward and into the left leg. It recurred every four to five weeks, but was never associated with hematuria or vomiting. Cystoscopic examination, July 2, 1914, showed a normally active right kidney, but at the site of the left ureter there was merely a punctate indenture, which permitted the catheter to enter for one half centimetre. Nowhere in the bladder was there any evidence of inflammation. No renal tumor or enlargement was palpable on the left side. The patient reports, January 16, 1917, that in the last three years she has had but one attack of pain and at the present time she feels perfectly well.

The presence of the stenosed ureteral orifice in this case suggests that the pain must have originated in a hydronephrotic or atrophic left kidney. The negative x ray and the absence of gonorrheal inflammation, cystitis, or any other cause for the production of an inflammatory stenosis led me to believe that we were dealing with a case of congenital stenosis or aplasia. I was all the more positive of this since the conformation of the orifice, its dimpled condition, the absence of the ureteral mound, all indicated a lack of development of the intramural portion of the ureter. In the literature, too, instances are recorded of both unilateral and bilateral congenital stenosis of the ureteral orifices, the degree of obstruction becoming progressively more marked until hydroureter, hydronephrosis, and pyonephrosis develop.

Pelissier (1) cites the following case of bilateral ureteral stenosis complicated by calculus of the bladder, the patient succumbing after suprapubic lithotomy.

CASE—E. S., aged twelve years, was admitted to the hospital complaining of abdominal pain, difficulty in urination, painful and frequent micturition, and inability to retain the urine. On admission to the hospital, the boy's condition was poor, his appearance cachectic, the abdomen distended, the urinary bladder filled with 1,500 c.c. of foul urine. Diagnosis of a calculus with cystitis and retention of urine was made. On February 4, 1909, suprapubic cystotomy was performed, a vesical calculus removed, and the bladder was drained. On February 7th the patient died. At autopsy the bladder presented in the region of the right ureter a tumefaction about the size of a thumb, which was recognized as the distended right ureter. The corresponding kidney was hydronephrotic, containing pus, the ureter being distended. A similar condition obtained on the other side, except that the lower end of the ureter showed no intravesical intrusion. The vesical orifices of the ureters were difficult to find because of their minute, punctiform nature, their orifices not even admitting the finest probe.

In short, here was a case of congenital maldevelopment or stenosis of the lower ends of the vesical orifices of both ureters with hydronephrosis, hydroureter, and consequent infection, both kidneys and both ureters being filled with pus.

#### ACQUIRED STENOSIS OF THE URETER.

If the stenoses due to tuberculous inflammation are left out of consideration I classify my own cases as follows: 1, the traumatic cases, usually postoperative; 2, those due to inflammation, particularly periureteral inflammation; 3, those associated with calculus; and 4, cases dependent upon gonorrheal inflammation.

*Traumatic postoperative stricture.*—As this type of stricture of the ureter presents no particular points of interest from the pathological standpoint, I shall simply mention that most of the traumatic strictures are directly traceable to previous ureterotomy for impacted calculus; a few follow hysterectomy and reimplantation of the ureter after resections of the bladder. Whenever infection takes place, even of mild degree, after ureterotomy, or when a hematoma forms, particularly in cases in which a considerable ureteritis and periureteritis had already existed at the time of ureterotomy, or whenever the ureter has suffered considerable handling at the time of operation, subsequent narrowing or even complete stricture of the ureter

may take place. The cause of such postoperative strictures or stenoses may be other than the mere traumatism. It may be well here to point out that the hilus, ureter, and pelvis of the kidney are particularly prone to manifest inflammatory exudate that subsequently develop into large masses of inflammatory lipomatous and connective tissue. By pressure alone these may cause considerable or almost complete, coarctation of the ureteral lumen.

*Traumatic strictures after catheterization.*—A study of the role of ureteral catheterization in the production of strictures, particularly of the lower end of the ureter, has, as far as I know, not been thoroughly carried out. Nor am I willing to state at the present writing that the evidence at my disposal is sufficiently convincing to warrant the opinion that even the most careless ureteral catheterization, such as is attended with the infliction of considerable trauma and infection, may be followed by a stricture of the ureter. A number of observations, however, lead me to suspect that any considerable traumatism, particularly when coupled with infection, may produce lesions of no inconsiderable import, such as might be followed by a diminution of the lumen of the ureteral canal.

CASE IV.—A young woman, who consulted me for pain in the right renal region and frequency of urination, gave a history of a number of attempts at ureteral catheterization. Upon examination with the cystoscope, I found the right ureter edematous, surrounded by some hemorrhages. The ureteral catheter met a considerable obstruction at the lower end of the ureter, and through the vagina, the lower end of the ureter could be felt distinctly thickened, hard, and tender. There were even evidences of slight retention of urine above the stenosed and narrowed ureter. Indeed, the findings pointed to the possibility of renal tuberculosis, but after thorough study I was able to exclude tuberculosis of the kidney and ureter, and the sequence of events attested to the correctness of this view. For, while under observation, the induration of the ureter, the edema, the orifice, as well as the obstruction, all disappeared.

Here, indeed, was an example of the effects of traumatism possibly coupled with infection, which under other circumstances may have led to disastrous consequences as far as the patency of the ureter was concerned.

*Inflammatory types of stenoses.*—Here belong the stenoses of the ureters that may be attributed to an inflammatory lesion of the wall of the ureter itself, or that result by virtue of a periureteral inflammation. Although renal lithiasis may complicate these conditions and a history of an attack of ureteral or renal calculi may be elicited, a careful study of the pathology reveals no direct relationship between the descent of a calculus and the stenotic condition of the ureter. In fact, my own observations lead me to believe that these coarctations are independent of the presence of calculi.

A most interesting type of ureteral stenosis is that produced by the growth of inflammatory fatty tissue, either about the ureter alone, or around the pelvis of the kidney, the ureter, and the ureteropelvic junction. Such a condition is well illustrated by the specimen shown in Fig. 3. Here is a somewhat hydronephrotic kidney, the seat of an intense perinephritis, metaplasia of the pelvis of the kidney, with stenosis of the ureter near the ureteropelvic junction. The kidney contained no pus, but there

were distinct evidences of a chronic pyelonephritis with little or no change in the pelvis other than a complete metaplasia of the epithelium into the squamous variety. About the pelvis there is an enormous amount of inflammatory fat, disposed in an annular or circumferential manner, and causing considerable diminution of the lumen of the ureter at its uppermost portion with practically complete functional obstruction. Nowhere in the ureter is there



FIG. 3. Ureterogram showing stricture near ureteropelvic junction.

any evidence of ulceration, so that it may be safely concluded that the stenotic process is produced from without and not because of a lesion in the ureteral wall or in its mucosa. Although there were some concretions in the calyces, and although concretions may have been passed through the ureter from time to time, they themselves can hardly be regarded as being directly responsible for the stenosis. That the obstruction in the upper ureter was real was suggested both by the history and by the findings at cystoscopic examination.

Cystoscopy on two occasions demonstrated the absence of flow from the affected kidney, the ureteral catheter meeting an obstruction nineteen to twenty centimetres from the bladder. Nor was it possible to inject argyrol beyond the obstruction in a quantity sufficient to properly visualize the pelvis of the kidney.

CASE V.—L. M., male, thirty-two years of age, had had recurrent attacks of pain in the left loin radiating to the back, and occasionally downwards toward the scrotum, for about three years, each attack lasting about two to three days, and coming on at intervals from two to four weeks. With the attacks there were associated nausea, vomiting,

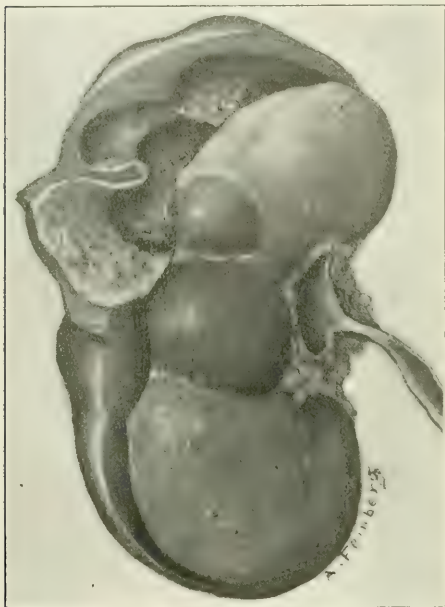


FIG. 5.—Kidney in case of stenosed ureter depicted in Fig. 4; upper pole a closed tuberculous focus; lower portion hydronephrotic due to ureteral stenosis.

and chilly sensations without fever. Lately urination had become more frequent and the urine cloudy. No calculus had been passed. On June 8, 1915, my cystoscopic examination revealed the following: Good excretion of urine from the right kidney; no flow from the left. An obstruction was encountered in the left ureter at about nineteen centimetres. Argyrol was injected into the left ureter, but did not penetrate into the pelvis, so that the ureter alone was visualized. On June 11, 1915, a second cystoscopy again demonstrated an obstruction at about nineteen centimetres in the left ureter, and it was impossible to inject argyrol beyond the obstruction. On June 16, 1915, the kidney was explored and removed. It was found very little enlarged, markedly adherent, there being a considerable amount of perinephritic adhesions. The patient made an uneventful recovery. On January 26, 1917, he wrote that he was feeling perfectly well.

We were dealing here with a case in which small calculi or concretions may have passed from time to time within a period of three years without being noticed by the patient, the clinical picture being that of calculus of the kidney, but the pathological alterations, showing the results merely of a chronic inflam-

matory process causing stricture of the upper part of the ureter, and chronic pyelonephritis.

Another type of inflammatory stricture of the upper part of the ureter in which, however, the possibility of a calculus as the cause could not be excluded, was recently observed in a man who consulted me for a large perinephritic exudate. A stricture in the upper portion of the ureter about twenty-one centimetres from the ureteral orifice in the bladder had led to hydronephrosis, distention of the pelvis and upper ureter, perforation of the pelvis, periureteral inflammation, and a perinephritic abscess containing urine and pus.

CASE VI.—W. P., male, thirty-eight years of age, consulted me on October 4, 1916. He had some pain in the back for some time. Eighteen days previously he was seized with severe abdominal pain and pain in the left loin radiating down to the lower abdomen on the left side and the testicle, associated with the appearance of pus in the urine. Physical examination showed the usual evidences of a perinephritic exudate and moderate elevation of temperature. Cystoscopic examination revealed a stricture at about twenty-one centimetres from the ureteral orifice on the left side. Very little urine was obtained from the left side. This contained *Bacillus coli communis* and many pus cells. Although a calculus was suspected at the site of the ureteral obstruction, none could be demonstrated in the x ray plates. Tentative diagnosis of ureteral calculus and of possible pyonephrosis with perinephritic exudate was made.

On October 5, 1916, the perinephritic abscess containing urine and pus was incised. A large cavity filled with foul urine and pus was evacuated and drained. Inasmuch as a urinary fistula persisted and all attempts to overcome the obstruction by the insertion of ureteral catheters and bougies failed, it was decided to explore the renal region. Therefore, on December 28, 1916, the fistulous tract was followed up with a view to determining the cause of the obstruction in the ureter. The operation was most difficult, the kidney being bound down by large masses of scar tissue and the upper ureter and pelvis of the kidney encased in large masses of inflammatory tissue and fat. It was soon seen that the fistulous tract did not lead into the kidney itself, but into the ureter at the site of the ureteropelvic junction where the periureteral inflammatory deposits were so massive and the ureter so compressed and disorganized, that nephrectomy was inevitable. Upon removing the kidney, which was moderately large, multiple abscesses were found in the cortex; the pelvis was inflamed and dilated. To summarize, this was a case of a moderately hydronephrotic kidney with multiple abscesses in the parenchyma.

The following is another exceedingly interesting example of ureteral stenosis of the upper end of the ureter in which three lesions existed simultaneously: a closed tuberculous cheesy focus, a hydronephrosis, and ureteral stenosis.

CASE VII.—S. M., female, twenty-seven years of age, consulted me on June 22, 1916, because of attacks of pain in the right lumbar region. She had had recurrent attacks about once a month during the past year and a half, which were becoming more frequent. The pain is situated in the right lumbar region, does not radiate, is not accompanied with vomiting or vesical symptoms, and lasts about an hour. Two months ago she had a similar attack associated with fever and frequency of urination, so that the bladder was treated with irrigation by her family physician. The urine has been cloudy for at least one year. Cystoscopic examination on June 22, 1916, showed that the affected kidney was moderately hydronephrotic, the capacity of the pelvis being somewhat over fifteen cubic centimetres. Its excretion was poor, indigo carmine being excreted in very faint concentration in about one half hour. The specimens from the right kidney showed a small number of pus cells and traces of albumin. Subsequent cystoscopic examination demonstrated an obstruction at the ureteropelvic junction, and a pyelogram showed a dilated ureter below this point;



but it was impossible to introduce the thorium solution for pyelography into the kidney (Fig. 4). On second examination these findings were corroborated, the ureter being demonstrable throughout its whole course, but no fluid could be forced into the kidney itself. In brief, the clinical diagnosis, aided by the findings at cystoscopy and pyelography, was hydronephrosis and stenosis at the ureteropelvic junction with infection. At operation, August 30, 1916, this, a most remarkable specimen, was removed (Fig. 5). The upper pole of the kidney presented a closed focus of tuberculosis of the cavernous type, a cavity with somewhat arid mass, cheesy balls, containing thin, milky fluid, completely separated from the lower portion of the kidney, which occupied somewhat less than one half. The lower portion of the kidney was hydronephrotic, and was sequestered from the ureter, as it were, by stenotic ureteropelvic junction. The strictured ureter would hardly admit the finest probe, although fluid undoubtedly escaped through it from time to time. Below the stenosed ureter at the ureteropelvic junction the ureter was found considerably enlarged, thickened, and inflamed, although nowhere presenting any tuberculous lesions. The pelvis of the hydronephrotic portion, which is connected with the ureter through the stenotic channel, has undergone complete metaplasia.

In view of the complete separation of the tuberculous focus from the pelvis of the ureter, it is not surprising that no tubercle bacilli were found, and that no symptoms referable to the presence of a tuberculous focus were present.

*Strictures or stenoses of calculous origin.*—The ureteral lesions produced by the lodgment or impaction of extensive ureteral calculi are so well known that they hardly require detailed comment. It may not be amiss, however, to describe a specimen obtained from a patient in whom an exquisite example of spontaneous exclusion of the kidney was produced by stenosis of the upper end of the ureter, a lesion resulting from the traumatic influence of ureteral calculi. The specimen consisted of a kidney and ureter with a calculus (Fig. 6).

The kidney was moderately enlarged, measuring twelve by seven centimetres, being a sac containing slightly turbid fluid. The parenchyma had practically disappeared, being reduced for the most part to a thin membrane, here and there measuring three to six centimetres in thickness. In the region of the hilus there was an enormous mass of fat which extended downward along the course of the ureter. On opening the kidney the pelvis was seen to form the central portion of the interior of the sac, the picture being that of a typical hydronephrosis of long standing, where practically not a vestige of renal tissue was left. Just outside of the pelvis there were masses of fat such as usually accompany inflamed and pyonephrotic kidneys. In the lowermost pole of the kidney in one of the pockets there was an irregular quadrilateral stone measuring eleven millimetres in diameter.

The ureter was imbedded in a mass of fat and connective tissue, being a cord almost 3.5 centimetres in diameter. On being opened, its walls were found to be considerably thickened, intimately adherent to the surrounding fat, and everywhere dilated to four times the normal size.

The ureteropelvic junction was anomalously placed, being considerably lower than normal, as if it arose at the lowest pole of the kidney. Here it was difficult to find the ureter because of the surrounding fat and its small size. In this region its

diameter was reduced to that of a fine probe, and its lumen is in places less than one millimetre in diameter. At a point just below the pelvis, the lumen was absent, the ureter being impervious. About five centimetres below the ureteropelvic junction there was a pocket in the ureter, harboring a somewhat pyramidal shaped calculus, twenty-three by fourteen by nine millimetres. Here the mucous membrane seemed to have formed a shelf or valve like fold upon which the calculus rested. There was no evidence of any other stenosis or obstruction other than the stricture near the ureteropelvic junction

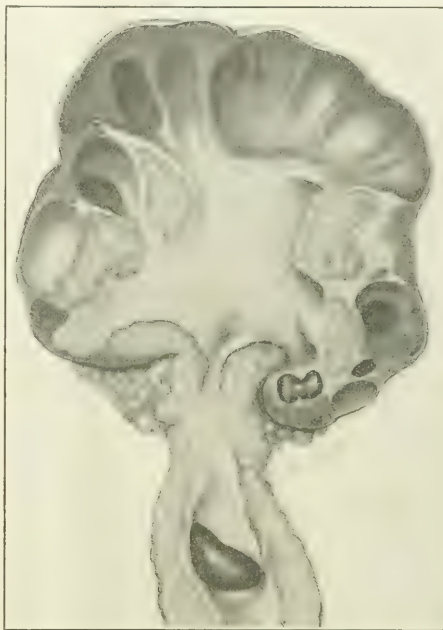


FIG. 6.—Spontaneous exclusion of a kidney; stricture of ureter due to lesions produced by descending ureteral calculi.

and the obstacle afforded by the presence of the calculus.

When we compare this specimen with those previously presented, we see at once that the lesion which attends stricture formation due to calculus involves the wall of the ureter itself, although the pressure effects of the periureteral fat formation may be a factor in increasing the degree of the stenotic process.

*Gonorrheal stricture.*—My own data on this subject are meagre. In the case recently observed and reported of a young man who had had an intractable gonorrhea for many months the gonorrheal process had extended into the lower end of the ureter. With the ureteral catheter I encountered a stricture of the lower portion of the ureter, was able to overcome the obstruction and demonstrate the presence of retention of urine in the kidney, the collected specimens yielding pure cultures of gonococci.

CASE VIII.—F. B., male, thirty years of age, consulted me January 4, 1916, with a history of having had a gonorrheal infection for somewhat more than one year. He had had the usual active treatment at the hands of a number of practitioners and specialists, including bladder irrigations. A severe cystitis was said to have developed. The prostate became inflamed, and all efforts to bring about complete cure of the gonorrheal process had failed, gonococci being still present in the urethral discharge and in the urine. On January 7th cystoscopic examination showed a rather unusual type of inflammation of the bladder. The region of the trigone, particularly on the left side involving the nteral mound and the sphincteric region, was the seat of numerous raspberry or strawberry like elevations, and not the usual follicles of follicular cystitis; the intervening mucous membrane was thickened and velvety, almost hemorrhagic in places. Catheterization of the right kidney revealed good excretion of clear urine, indigo carmine being excreted within the normal time. On the left side, the ureteral catheter met with an obstruction in the lower end of the left ureter, which was overcome with considerable difficulty, it being necessary to pass the catheter more than fifteen centimetres before a flow of urine was obtained. Then a rather copious flow of bloody, cloudy urine followed. Four specimens were collected from the left kidney each containing about five c.c. Bacteriological and microscopical examinations yielded typical gonococci in all the four specimens obtained from the left kidney, each specimen containing about four c.c. of urine. Even the last or fourth specimen contained gonococci, demonstrating conclusively that the gonococci came not from the bladder, but from the kidney.

Briefly, cystoscopic examination showed urethrocystitis, inflammation about the left ureter, retention of urine in the kidney, stenosis at the lower end of the ureter, typical gonococci being cultivated from the urine from the left kidney.

On January 25th cystoscopy was again performed, a stricture being again encountered in the left ureter, but it was possible to inject a ten per cent. argyrol solution beyond the stricture, as evidenced by the absence of any reflux. About five c.c. were injected and the catheter was withdrawn. The recovery from the gonorrheal infection was most remarkable in its rapidity after this treatment. The urine became clear on February 1 and has remained clear ever since.

Prostatic massage was continued for some time, as well as ureteral irrigation, and within fifteen days after the argyrol injection into the kidney the gonococci were absent and remained absent.

The intensity of the inflammatory lesions above the ureter, the obstruction to the passage of the ureteral catheter, and the evidence of retention of urine above all indicated that in a subacute or in a more or less chronic gonorrheal process, the lower end of the ureter may be involved, and the foundation was laid for future chronic scar formation just as in the urethra.

Whether or not intense gonorrheal inflammations in the female may cause some of the unexplained strictures of the lower end of the ureter, reported by Hunner and others, future clinical, cystoscopic, and pathological investigations may determine.

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1000 PARK AVENUE.

**Toxicity of Salvarsan and Neosalvarsan.**—Oliver S. Ormsby and James Herbert Mitchell (*Journal A. M. A.*, December 9, 1916) report that the recent supplies of both of these products have proved decidedly more toxic in their hands than the former supplies. The greater toxicity was manifested by the production of a strong and sickening odor and taste, erythema, nausea and vomiting, urticaria, lachrymation, and respiratory embarrassment.

## STUDY OF DRUG ACTION

### *Seventh Paper.*

By THOMAS J. MAYS, M. D.,  
Philadelphia.

#### MEDICINE AND MUSIC.

In the infancy of our acquaintanceship with Nature, we first perceive her material and tangible forms and pay very little attention to her more spectacular performances. The way to milk is of greater moment to us than the Milky Way or the solving of some transcendental or metaphysical proposition. When we look at the revolutions of the old waterwheel, it seems difficult to see any reason why it should not turn as it does with all that weight of water hanging in its side pockets. We fail to note that the turning of the wheel is only one phase of its operation, and overlook the fact that the whole phenomenon is animated by the hidden force or spirit element which draws the water loaded pockets towards the centre of the earth. The water, after making half a turn of the wheel loses its power of repeating the same act, and now the energy of the sun's rays is called into play and changes it into vapor and lifts it into clouds, whence it descends in the form of rain, collects at a level above the wheel and is again ready to repeat the same operation. The material side of phenomena is, therefore, more obvious to us because we can see, hear, feel, touch, and handle it with our ordinary unaided senses; but we must not lose sight of the truth that every change that takes place in this worldly sphere, no matter how diminutive or how stupendous, is at bottom set going by some force, the effect of which is exactly equivalent to the amount of energy expended. That which is true of the power of water in transforming the energy of the sun's rays into driving the machinery of the mill, is also true of other transmitters and concentrators of force, such as are found in the steam engine, the electric dynamo, and the animal body.

On the other hand, over and above the cosmic and microcosmic movements that are inevitably and continually wrought by the physical forces, we are taught by our great physicists and philosophers that even the minutest concepts of matter, the atoms, resolve themselves into vortices of energy, and that in the last analysis nothing exists but force. As Emerson felicitously phrases it, "Nature is not final. First innuendoes, then broad hints, then smart taps, are given, suggesting that nothing stands still in nature but death; that the creation is on wheels, in transit, always passing into something else, streaming into something higher; that matter is not what it appears."

Indeed, to one who strives to take a serious and candid view of this whole subject, it seems as though the material form of nature is but a sort of a temporary, intermediate sounding board, a clearing house certification, poised between the evanescent and the permanent, which gives timbre, quality, character, standing, stability, and individuality to the whole gamut of Nature's manifestations, from the creation of the lowest atom to the highest forms of expression in our intellectual and emotional life, and that all of these phases are mere symbols of

the existence of that unknown reality behind the visibility of things.

Suppose we take a piece of matter, a drug, like arsenic, for example, and examine its action in the light of what has just been said. From this, it is obvious that the activity of this substance depends on the strength of its inherent energy, and not on its material content; the functions of the latter being merely that of a skeleton or a hull, giving stability to the former. If left to itself, it remains inert, but when brought in contact with living matter, its potency awakens and gives rise to a chain of phenomena which opens a new department of medicine known as the science of therapeutics, the fundamental factors of which consist of the action and reaction between the forces of inorganic as well as of organic life. The concomitant sequences of this action are classified as stimulation, excitation, invigoration, etc., when the organic reaction is of moderate degrees; and as irritation, sedation, depression, narcotism, etc., when the reaction is pushed to a maximum point.

It may be concluded, therefore, that drugs are a group of forces which in many and perhaps in most instances have an elective affinity for special organs of the human body and which possess the medical properties of controlling the processes of disease, and that the principle of their actions is entirely analogous to that of the other physical forces that pervade the universe. Among these agents may be found that phenomenon which we know as music, a force, the elective operation of which is confined to the field of the human emotions. Practically, it has long been known that music has the power of exhilarating and depressing human feeling, but it seems that no one has fully succeeded in giving a very definite reason for these contrary effects. Spencer asks: "How do we account for the expressiveness of music? Whence comes it that special combinations of notes should have special effects upon our emotions?—that one should give us a feeling of exhilaration, another of melancholy, another of affection, another of reverence? Is it that these special combinations have intrinsic meanings apart from the human constitution?—that a certain number of aerial waves a second, followed by a certain other number, in the nature of things signify grief, while in the reverse order they signify joy? Few will be so irrational as to think this. . . . How, then, are musical effects to be explained? If music, taking for its raw material the various modifications of voice which are the physiological results of excited feelings, intensifies, combines, and completes them; if it exaggerates the loudness, the resonance, the pitch, the intervals, and the variability, which in virtue of an organic law are the characteristics of passionate speech. . . . it produces an idealized language of emotion; then its power over us becomes comprehensible."

According to this writer, the emotional expression of music has no meaning apart from the human constitution; or, in other words, the power of music in controlling human feelings does not reside in the independent mechanism of the physical scale of tones, but in the artificial modification and combination of expressed, excited, and exaggerated feel-

ing, and is, therefore, entirely a subjective phenomenon. Attractive as this theory appears to be, it is not acceptable, because, if music is, as it is generally regarded to be, the result of a consonant vibration of matter, it must emerge as such wherever and whenever the necessary physical combinations for its production take place. It matters not whether it comes from some ringing rocks, a musical valley, a singing teakettle, a Stradivarius violin, or the human larynx—it is a force that is moulded into being by the elements of ordinary clay.

Once more: Why does music at one time, as in the case of patriotic, drinking, and national airs, arouse and electrify human emotion to the highest pitch of ecstasy, while at another time, as in funeral marches and dirges, depress men to the lowest depths? Does not this property reside in the very fibre and makeup of music? This diversity is generally attributed to the fact that the former are usually written in major keys, and the latter are most often expressed in minor keys. This is true in a certain sense, although the statement gives but a semblance of the actual condition. The real truth is that, owing to an inherent difference in the mechanism of the two keys, physiological effects are produced by them which differ both in degree and in kind.

When, for example, the sounds of the major chords C, E, and G are compared with those of the minor chord C, E flat, and G we find that the small and almost indistinguishable difference in the number of vibrations between E and E flat, coupled with the accompanying modification of the two scales, furnishes the solution to the query why cheer, exhilaration, hope, and happiness are promoted by major music, and why melancholy, dejection, and depression are induced by minor music.

It must be fully understood, however, that a minor chord does not stand for an actual discord, but merely for a jar, just sufficient to cause what Professor Helmholtz denominates "dysharmony." In defining this peculiar phenomenon, this eminent authority says: "Harmony and dysharmony are distinguished by the undisturbed current of the tones in the former, which are flowing as when produced separately, and by the disturbance created in the latter, in which the tones split up in separate beats. In dysharmony, the auditory nerve feels hurt by the beats of incompatible tones. It longs for the pure efflux of the tones into harmony. It hastens toward that harmony for satisfaction and rest."

Professor Helmholtz's analysis of the cause and effects of harmony and dysharmony on the human constitution enables us to draw a very lucid picture of the delicate mechanism that is brought into action under these circumstances. On the one hand we have the highly impressible element, the human emotions; and, on the other, two variations of the same force exerting itself in different directions, the one acting in harmony with the normal emotional movements of the body, and the other taking a course which is somewhat crosswise to the latter. The effects of the first variation may, perhaps, be more readily comprehended when it is stated that, as long as an artificial force moves in harmony with another force or function, it exerts a stimulating



or supporting effect on the same; but, when we consider that even a trifling clash with a sensitive normal chord, which only signifies a dysharmony and not a discord, although it is stated that up to the time of Bach it was regarded as a discord, it is evident that it must possess a disturbing and depressing action on the human emotions.

We have no graphoscope with which to elucidate the minute outline of a stimulus which promotes a wave of joy and delight in our feelings when listening to an expressive and rapturous musical cadence, or to measure the emotional irritation that is necessary to call forth a feeling of depression and desperation; yet, it is more than likely that the hurt which is inflicted on our auditory nerves by the implication of incompatible tones, as expressed by Helmholtz, is altogether sufficient to incite the melancholic gloom and dejection which are incidental to music in a minor key.

Thus, music plays the same part in swaying the emotional nature of man as drugs do in moulding his more material organization. Its stimulant and its enlivening action lies within the bounds of the various major keys, while its depressant action is confined to the minor keys. In short, moderate quantities of major compositions evoke joy, animation, hope, happiness, and courage, and its behavior may be compared to that of a stimulant dose of strychnine or of quinine; while music in a minor key depresses emotional activity, the nature of which is equivalent to the action of a bromide or of a sleeping potion.

Before following this subject further it is in place perhaps to anticipate an objection that may be raised against the above classification of the effects of major and minor musical works on the human body. Why is it, it may be asked, if minor keys are likely to subdue any quiet emotional activity, that most lullabies, which are supposed to soothe restlessness and to promote sleep, are written in major keys? Does it not seem that minor music would be more serviceable in bringing about quietness and repose? This is only an apparent contradiction. If it is true that major music possesses a stimulating property an idea which has every evidence in its favor, it is not difficult to demonstrate how this form of music may serve as a sleep producer in individuals who are in ordinary good health. Sleeplessness may be due to at least two factors: one, to a depressed mental or nervous state, and the other to nervous excitability or irritation, both being grounded on a temporary weakened or exhausted condition of the body. In these cases it is preferable to resort to agencies which tone up and stimulate the weakened and overburdened nervous system, and which, in their action, as has already been indicated, incline to move harmoniously with the natural forces of the body, the class to which major music belongs, rather than to employ depressant means which would ordinarily interfere and disturb the trend of the natural forces of the body. Moreover, stimulants and tonics are more permanent in their effect, and their administration is also in accord with the common practice of giving a little hot milk, beef tea, a few drops of aromatic spirits of ammonia or a sip of anise or peppermint tea for the same purpose, and

which are far preferable to the pernicious custom of flying to the paregoric bottle or to some soothing syrup.

Then again, major music, which is assumed to be of an exclusively stimulating nature, is often combined with minor passages in the same composition, and, indeed, in national airs and war songs, the sole object of which is to arouse and excite human passion. This is another seeming inconsistency, but really an alliance of this kind is in perfect harmony with the main purpose of this essay. Such a departure is frequently taken advantage of for the purpose of precipitating strong contrasts between different passages, and of thus heightening the effect of the music as a whole. This is particularly obvious in the composition of the "Marseillaise," probably the most vigorous and intensely belligerent air ever produced. In this hymn the eighth and ninth lines are depressed into a minor key, and the immediately succeeding major lines are thrown into such a bold and brilliant relief that the intensity and the power of the emotional sequences are driven beyond the bounds of description. It is related that when Rouget de Lisle, the composer, gave the first rendition of this production, his audience was thrown into a state of rapture which changed into furore when he made the final passage from the minor part to the major refrain: "To arms! To arms! Ye brave! Ye brave!" etc.

It is also true that similar effects are brought about in some lullabies, and in other songs which are written in major keys, by the employment of one or more minor chords or by the introduction of one or more accidentals. Brahms's lullaby, "Guten Abend, Gute Nacht," is an exquisite example of the latter style. Professor Helmholtz, in the passage already quoted, places the purpose of such a combination clearly on a physiological basis, as has already been stated, in which he says that when the ear is offended by dysharmony it longs for harmony and rest.

The influence of music in arousing and controlling human conduct, whether employed consciously or unconsciously, is, perhaps, nowhere more marked than it is in the ordinary affairs of every day life. The strains of a brass band, marching through the streets of a town, sends an alluring thrill through the whole population; and it is well known that music of this class is indispensable in time of war for the purpose of stimulating and exciting the feelings of the people; to maintain discipline and order among the soldiers while going into battle, and when making long and tiresome marches; to cheer the wounded and sick in hospitals, and to relieve the monotony and despondency of camp life. Much of our social and domestic deportment is notably strengthened and invigorated by music that pertains to the home, to the cradle, to parting, to wandering, to college, to church, to patriotism, and to nationalism. So do the waltzes, the polkas, the minuets, the mazourkas, the schottisches, etc.

Music often becomes a medium of expressing various modes of humor and disposition. Persons who are possessed of a melancholic or dispirited temperament seldom on their own initiative play or enjoy sparkling or cheerful music; while those of

a happy, optimistic inclination revel in lively and vivacious melodies. Those who are disabled by long drawn out maladies are disposed towards music written in minor keys, and it has frequently been observed by careful study that when disease assumes a more favorable turn in such invalids and presages ultimate recovery, they are relieved of their load of despondency and a longing for major music returns. This may serve to explain why nations and countries, as in the Far East, which have passed through or been long exposed to the sufferings and privations of war, are given to music in minor scales even in their dances and merrymaking songs. No more convincing proof of this has been furnished than that which is contained in the Lamentations of Jeremiah, where in emotional language of the greatest power and beauty, are portrayed the horrors and desolation of Jerusalem, the slaughter of its inhabitants, and the misery of its survivors.

A modern confirmation of the statement that minor music is a natural and fitting exponent of a depressed emotional condition is found in that remnant of the Serbian army which has so far escaped the present European holocaust, as it has recently been vividly described by a well known and reliable war correspondent, Corey, who spent some time in its camps: "At night, most of them were stretched at full length on the damp earth, their heads were resting on their blanket rolls. Few talked. It is a bitter army, a sad army, an army in which one rarely hears laughter or song. Each man is fighting for that little home across the hills and for a cherished personal vengeance. Last night a flute was being played. It was a queer sort of a flute, cut out of a cornstalk or some such thing, and the flute player was accompanied by another soldier on a weird country fiddle. It had only a stick for a body and a bridge and a single string. The combination was of minor strains, dolorous in this dark camp. The night was overcast and gloomy. . . . The flute and fiddle were the first music I have heard in all the army."

Very little systematic attention, so far as the writer knows, has been given to the influence of music on disease, although it is known that during the thirteenth century, when the Arabs held dominion over a large part of Europe, they established great hospitals for the treatment of all kinds of disease. "A striking feature of some of these institutions was a music room, where musicians played almost continuously throughout the day for the benefit of the sick. The Arabian physicians of that day believed that music had a very positive healing effect."

As a clear illustration of music as a means of alleviating pain, the following history, which happened in the experience of an intimate friend of the writer, is worthy of mention in connection herewith. A gentleman of middle age suffered from a very painful neuritis of the right shoulder and upper part of the arm. It lasted for more than a month and he became very nervous and irritable, as well as sleepless by night. Everything was done to make him comfortable, but medicine applied locally and given internally did not seem to have any decided effect on his trouble. In truth, he thought he became worse and was very

much discouraged. One day, while confined to his bed on the second floor, a very strange occurrence took place. His daughter, who is a very skillful and accomplished musician, sought to amuse her father by playing the piano. She did not select any special kind of music, but essayed at random any piece that came along. She had not gone very far when the patient found that some of the music had a singularly disturbing effect on his pain, causing him to be more irritable than ever before, while some other kind had a soothing and quieting influence on him and brought about a feeling of sleepiness and repose. On carrying the experiment further, it was soon learned that the disagreeable effects were caused by major music and that the grateful and sedative results were occasioned by music set in minor keys.

When we come to inquire more closely into the why and wherefore of the relief that was given to this pain by the influence of minor music, it must be borne in mind that the nerve which was at fault here was irritable and excited, was subject to a condition of hypersensibility, similar to that which obtains in a strychninized frog just below the border where a spasm is liable to be produced by the slightest provocation, and that relief of any kind would have to come in the form of something which had the power of subduing and calming this undue agitation. This could have been effected, at least temporarily, by a hypodermic injection of morphine, a dose of chloral internally, or by a local application of some soothing remedy. But music in minor notes, which likewise possesses a depressing and quieting influence, was capable of accomplishing the same without the aid of ordinary medication.

Furthermore, in the practical application of music as a curative agent, it must be borne in mind that this method has been tested in the treatment of certain forms of insanity and various sorts of nervous disease, it is said, with gratifying results. Whether any efforts were made to differentiate between the effects of the several kinds of music does not appear.

It is the writer's belief that as an agent in the treatment of pulmonary consumption, music probably has a stronger claim on the scientific attention of the medical profession than many of the remedies which are in use at the present day. Indeed, no system of treatment in our enlightened knowledge of the nature of this disease can afford to ignore the perturbed nervous and mental condition which is an everpresent factor, and which is actually demonstrated to belong to that domain of phenomena which is pronouncedly influenced by the musical scale. In selecting the form of music which is most available in the treatment of consumption, it seems probable that by far the larger number of such cases are benefited by music written in major keys; for it is a patent fact that, no matter how cheerful and elated patients of this kind may seem to be in their lonely moments, there is nearly always present an undercurrent feeling of tribulation and of oppression. This is particularly true at the present time when, to the burden which naturally and legitimately belongs to this disease, they are compelled to shoulder the load of a social atmosphere which re-



gards them as dangerous infectious centres. Cover this asperion with a sugar coating as thick as you may, it remains an ever present menace to the recovery of such sufferers. Some of the most important features in the treatment of cases of this kind are the efforts to make them as forgetful of themselves as possible, to protect them from all annoyances, and to place them under the influence of agencies that create surroundings of cheerfulness and buoyancy, in which major music plays a significant rôle.

From what has been said in the foregoing pages, it seems to be clear that our early impressions are mere semblances of their later and apparently more true appearances, and that the power of modifying, swaying, and adjusting human functions and emotions, such as that which resides in drugs and in music, is a part of the selfsame force that controls and coordinates our whole existence, the only elementary difference being that one is visualized in a different material mould from the other.

1829 SPRUCE STREET.

## IS EPILEPSY A BACTERIAL INFECTION?

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In a series of papers dealing with epilepsy and constipation Reed, of Cincinnati, has announced the discovery of a bacterial organism, at first described as a coccus and later as a spore forming bacillus, which he believes to be the cause of epilepsy. I shall not go further into the literature of the subject than to say that the subject was well worked over in conjunction with the claim of Marie Bra that the organism described by her as the neurococcus was the etiological agent of epilepsy. Her claims were rejected by several workers and the subject did not again come up until reopened by the work of Reed. It is regrettable that Reed makes positive statements, unsupported by the detailed scientific data and protocols needed for a critical review of his claims.

The one thing which deterred me for many months from taking up the subject was the change in the morphology of the parasite described by Reed from a coccus in the earlier reports to a spore bearing bacillus in the later ones. This change is incomprehensible to me even yet, in view of the characteristic appearance of photographs published by Reed and by Hinkleman and in view of the characteristic appearances presented by the organism in cultures furnished by Reed.

During more than twenty years over 4,250 epileptics have been under observation at the Craig Colony for Epileptics; during the same period hundreds of employees, nurses, and doctors have been in daily intimate contact with the patients; surgical operations and autopsies have been done, both numbered in the hundreds; and in all this material during all these years not one fact has come to notice which would suggest that epilepsy was an infectious disease.

There is an admitted relation between the emergencies of epilepsy, by which I mean single seizures,

serial attacks, status epilepticus, and mental disturbances, and conditions in the gastrointestinal tract. This has long been recognized in our clinic and the emptying of the large bowel is regarded by us as of primary importance in the treatment of epilepsy, but we have never believed that a specific bacterial flora was concerned in this admitted relationship.

The ideas of Reed have been favorably received in certain quarters and hope of a long awaited "cure" has been aroused in the minds of the epileptic population of the country. One hears, too, of the finding of the "Reed bacillus" by various observers and confirmatory articles have appeared. Knox recently published a series of articles dealing with the disease as a bacteriological problem, both from the etiological and therapeutical standpoint. The retraction issued by Doctor Reed affects his own work only and leaves that of the confirmatory writers *in status quo*, and with the work of Knox, makes it desirable to add to the literature another series of cultures in which practically negative results are reported. The present paper is in the nature of a preliminary report and considers especially the question: Is there a spore forming bacillus in the blood of epileptics?

**Blood cultures.**—Reed states that the organism is almost always to be found in epileptics and his assistant, Doctor Hyatt, states in a personal communication that this is most likely in the first hour after attacks.

The blood cultures were taken by Dr. G. K. Collier in the operating room under full surgical asepsis. The pipettes used to receive the blood were baked in the dry heat oven at 180° C. for twenty minutes. The needles and rubber connections used with the pipettes were separately sterilized by steam under pressure, 120° C. for twenty minutes being the routine. Media received the same treatment, 120° C. for twenty minutes. The media used so far has been ordinary beef tea and agar, since Reed's results were obtained with these. The reaction was standard at about one per cent. of acidity. The blood from each puncture was divided between two flasks and each was grown for from ten to fourteen days at about 40° C. I regarded the use of two flasks as of importance because any organism present in the blood ought, at least ordinarily, to show in both flasks, while contaminations should be more likely to show in one only. The results of the blood cultures made is shown in the table herewith, the results being shown according to the time elapsed after the attack.

### RESULTS OF CULTURES.

Time after seizures.	Number of cases.	Result.	
Not noted	18	13 negative	
In 1st hour	18	18 negative	
In 2nd hour	12	12 negative	
In 3rd hour	19	18 negative	1 positive of 2 flasks
In 4th hour	16	16 negative	
In 5th hour	19	19 negative	
In 6th hour	6	6 negative	
In 7th hour	2	2 negative	
In 8th hour	3	3 negative	
In 9th hour	1	1 negative	
In 10th hour or later	17	17 negative	
	131	130 negative	1 positive of 2 flasks

It will be noted that in only one instance is a positive result shown and then the organism was



found in only one of the two duplicate flasks. This organism agreed in general with the Reed bacillus and was obtained in a culture made during the third hour after an attack; a later culture in the same case, made during the second hour following a seizure was negative. It does not seem to me that a diagnosis of the Reed bacillus in the blood of this case is warranted, based on only one fourth of the inoculated media showing a growth.

Contaminations occurred in about ten per cent. of the flasks, but in only four instances were both flasks contaminated, and these were all coccus forms. The majority of contaminations were coccus forms, of various sizes, and bacillus contaminations, none of which resembled the Reed bacillus, were in a minority.

It would seem that if an organism was almost always to be found in the after seizure blood of epileptics, that we should have found more than one flask to be positive, the other being sterile, out of so many cultures.

**Cecal material.**—Reed assumes that the cecum is the special habitat of *Bacillus epilepticus*. I therefore made use of cases coming to autopsy and cases in which we were able to obtain at operation a sample of the intestinal contents, either by direct sampling of the feces through an opening, ileosigmoidostomy usually, or as contained in the appendix. Mesenteric glands, especially those of the postcecal group were crushed and cultured. Of this material, numbering twenty-one cases, of which four were at operation and seventeen at autopsy, four yielded a spore forming bacillus which was of the Reed type. The technic used was as follows:

The flasks of bouillon were inoculated and incubated for two or three days. They were then allowed to stand in a cool place for a day so that spore formers would form spores. They were then heated at 70° C. for twenty minutes to kill colon and other forms. Following this they were incubated again for a couple of days and then transplants were made to determine the presence of a growth of spore formers. The presence of spore formers in the intestinal contents is not unknown and the finding of such organisms in epileptics does not necessarily predicate a specific infection causing epilepsy.

***Bacillus epilepticus*.**—Through the kindness of Doctor Reed, to whose openmindedness I must bear tribute, I had two strains of his bacillus for examination. These two organisms were not in all respects alike, but with the strains separated from the above cultures in my work, bear so close a resemblance to the common hay bacillus, *Bacillus subtilis*, that I feel their identity or intimate relation was a warranted assumption.

I accepted as positive only those organisms which showed the morphology illustrated in Reed's late articles and in that of Hinkleman. These organisms in my hands grew easily in ordinary beef tea, forming an even cloud and with a slight pellicle, which sank early and did not reform. On agar, they formed a yellowish gray, wrinkled growth. The colonies were whitish and slightly elevated, especially

at the centre, and the periphery was typical, the strands of bacilli lying parallel and presenting the appearance of smoothly coiled hair. Deep colonies sometimes presented as irregular masses of strands or roots with nodules on them. The resemblance of the surface colonies to anthrax colonies was striking.

The resistance of the organism to heat was extreme and without more than ordinary precautions, might account for a series of contaminations. In one series the cultures grew up to an exposure of fifty minutes at boiling heat, this amount being sufficient to sterilize. It was therefore evident that any apparatus prepared by a few minutes boiling as in the case of ordinary practice for syringes and needles might carry over infection from case to case.

#### CONCLUSION.

On the basis of my work so far, I do not feel that the blood of epileptics contains a bacillus. Fecal cultures sometimes show spore bearing bacilli of the type of Reed, but as they resemble *Bacillus subtilis* of wide distribution in nature and as spore formers are known to occur in normal stools, this does not prove their etiological relationship to the disease. The work will be continued in order to make doubly sure whatever result obtained.

#### A WARNING NOTE ABOUT RICKETS.

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Osler says: "Like scurvy, rickets may be found in the families of the wealthy under perfect hygienic conditions. It is most common in children fed on condensed milk, the various proprietary foods, cow's milk, and food rich in starches." Frequently, too little animal fat and protein are found in the dietary. When they are added, together with the lime salts, the symptoms of rickets are soon arrested. Unfortunately, the effects already shown in the bones, especially bowlegs and knock knees, are long in disappearing, even if the legs ever are brought into good shape again. Of course, properly adapted and fitted shoes and braces may do much in many cases, aided by suitable medicament, such as codliver oil, lactophosphate of lime, and perhaps phosphorus, but in any event, mechanical treatment must be long continued and is wearisome to child and parent.

I make this communication in view of the case of a child lately seen, who has had every possible care that money and affection could give, but in whom knock knee has developed because a wrong system of feeding has been followed, the result, I believe, of too much modern science and too little old time child's management as to suitable food. Beware of giving young children too much pasteurized milk, proprietary food, or even cereals, to the exclusion of brown bread and butter, stewed fruit, or roasted apple, and a little meat once a day.

I am now considering especially children two or three years old, who are healthy and vigorous unless rickets develops unawares, by reason of a faulty dietary.

#### REFERENCE.

1. OSLER: *Principles and Practice of Medicine*, 8th ed., 1915, p. 442.

## SOME CONSIDERATIONS IN THE DIAGNOSIS OF GASTROINTESTINAL DISEASES.\*

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With the advent of abdominal surgery and roentgenology, gastrointestinal diseases have assumed an entirely different aspect from that of the period antedating direct inspection and visualization of visceral pathology. The dictum of internists, that neurasthenia constitutes about eighty per cent. of all gastrointestinal diseases, has been discredited by section *in vivo*, and we have come to a realization of the dependence of neurotic manifestations upon organic changes in the viscera. Diagnostic methods have made rapid strides since then and we now take a saner view of this class of diseases. It is regrettable, however, that the pendulum has swung too far in the other direction, leading to a denial of disease of the stomach by the surgeon, except ulcer and cancer, these diseases being suspected on mere superficial impressions. It is needless to say that such an attitude is unwarranted in the light of the every day experience of the internist.

To take a comprehensive view of the question from a diagnostic standpoint we must bear in mind that symptoms referable to the gastrointestinal tract may be primary or secondary to disease in other organs, that gastric symptoms may be the expression of disease in a neighboring or remote abdominal organ, and that intestinal symptoms may be caused by disease of the stomach or of some other viscus. If we reflect for a moment on the sensitiveness of the secretory function of the stomach and intestines, the fine adjustment of the secretions and their dependence on nerve influence, and on the chemical stimulation of the secretagogues, and if we further consider the interrelationship of the various secretions and the effect produced on them through the agency of the autonomic nervous system as affected by the hormonopoietic system, we realize the wide range of variation of this function, and the difficulty of a proper interpretation of its perversions.

The motor functions of the stomach and intestines react upon each other, and are also affected by constitutional diseases. In anemia, neurasthenia, or general asthenia there is always reduced peristaltic movement of the stomach. In diseases of the intestines, appendix, or gallbladder gastric peristalsis is variously affected. The motility of the small intestine is of far reaching importance in connection herewith. Irritation in the right upper quadrant of the abdomen causes hypermotility and rapid emptying of the first part of the duodenum. In diseases of the gallbladder, in gallstones, or in duodenal ulcer this hypermotility is readily observed on the fluoroscopic screen. Disease of abdominal organs remotely situated, as appendicitis, affections of the colon, incompetence of the ileocecal valve, spasm of the ileal sphincter mechanism, and other conditions which cause ileal stasis, bring about a spastic state of that part of the duodenum. The descending and inferior parts of the duodenum empty rapidly by propulsive and churning motions. Obstruction at the duodenojejunal flexure causes dilatation of the

duodenum and is a potent factor in the production of fatal consequences. The efforts exerted by the intestine to propel its contents beyond the obstruction may result in forcing them into the ampulla of Vater, thus giving rise to infectious cholangitis or pancreatitis. Food normally remains longer in the ileum than in any other part of the intestine. Prolonged retention is caused by adhesions, kinks, or sphincteric spasm, and gives rise to the well known symptom complex of intestinal stasis. Excessive fermentation and putrefaction go on unhindered, with the formation of irritating and toxic substances, which give rise to local and constitutional symptoms. The products of fermentation which result from the breaking down of sugars cause flatulence and are not toxically significant, but excessive fermentation usually leads to excessive putrefaction. The products of putrefaction include substances containing sulphur and nitrogen, thus forming a chemical basis for the production of toxic effects. The substances which are highly irritating to the intestines and stomach are the higher volatile fatty acids. They cause colicky pains, diarrhea, and vomiting. The spore bearing anaerobes are mainly concerned in their production. Because of their acid properties they may cause intoxication by withdrawal of alkali from the body, if formed in excessive quantities; small quantities are burned up, but the excess is excreted and is free to do mischief.

Gastric or pancreatic insufficiency plays an important rôle in the causation of disturbances of the gastrointestinal tract. The pancreas is stimulated to secretion by a hormone which has its origin in prosecretin in the mucous membrane of the duodenum, and is converted to secretin by the action of the acid chyme. This secretin acts directly on the pancreatic cells through the blood, stimulating them to the secretion of zymogens, which are converted into active ferments by the action of intestinal kinase. Trypsin carries the splitting of the protein molecule begun in the stomach by pepsin to the polypeptid stage, and even gives rise to some aminoacids. The further fractioning of the protein molecule is accomplished by erepsin of the intestinal juice. Amylase and lipase are concerned in the digestion of starch and fat. The internal secretion of the pancreas is important for the intermediary metabolism of carbohydrates. In gastric achylia from any cause this chemical stimulant to pancreatic secretion is lacking, hence the well known train of symptoms characteristic of this disease. In pancreatic disease the external secretion alone, or both the external and internal secretions, may be absent. With the involvement of the external secretion alone there is a great reduction in the assimilation of protein and fat, giving rise to azotorrhea and steatorrhea, the characteristic pancreatic stools. When the internal secretion also is involved, glycosuria, rapid emaciation, and cachexia ensue.

In the consideration of pancreatogenous pancreatic insufficiency we take cognizance of local and systemic diseases which may affect the organ—pancreatitis, carcinoma, cysts, or cirrhosis among the local causes, syphilis and arteriosclerosis among the systemic. The incomplete elaboration of the vari-

\*Read at a meeting of the St. Mark's Alumni, January 12, 1917.



ous foodstuffs in this condition yields an excellent pabulum for bacterial activity in the large intestine, with resulting excessive fermentation and putrefaction.

The effect of a diseased gallbladder or appendix on the stomach is well known clinically, although the manner in which the stomach is affected is not so well understood. The gastric irritability, heartburn, epigastric pressure and fullness, belching, and vomiting that accompany disease of the gallbladder, are matters of daily experience. In appendicitis the epigastric pain in time relationship with food ingestion or not, the full feeling and capricious appetite all point to irritation of the stomach by some agency, whether through the medium of the nervous system, or infection, or both, is not positively established. The occurrence of organic changes in the stomach in these diseases, as chronic gastritis, hypochlorhydria or hyperchlorhydria, or ulcer, serve to emphasize the severity of such irritation.

Disturbances of the circulatory, respiratory, or excretory systems, as well as of chronic infections and toxemias, react upon the digestive organs with greater or lesser severity. In the early stages of pulmonary tuberculosis, in fact, from the very beginning of the infection, Mohler and Funk have found a downward progression in both the motor and secretory functions of the stomach. Persistent nausea and vomiting without an ascertainable cause may be an early manifestation of hyperthyroidism. Reduced secretion and hypermotility often accompany this disease. Watery diarrhea alternating with spastic constipation is always present in the severer forms of thyroid hyperactivity.

The significance of the various diagnostic methods varies with the particular disease. Gross lesions generally find absolute confirmation in laboratory and röntgenographic procedures. Such is not the case in by far the majority of patients who present themselves to the internist for diagnosis. Greater reliance should always be placed on a thorough investigation of every feature in the history of the patient and on a complete physical examination. All other aids to diagnosis should be regarded as links in the chain of evidence. Examination of the gastric contents and stool should be practised as a matter of routine, and the information so gained is frequently well worth the expenditure of extra time and labor. Quite as often, however, we are not a bit enlightened by our findings, but this should not act as a deterrent to perseverance in this important field of investigation. Röntgenology in gastroenterological diagnosis has not, as yet, measured up to its reputation, and has fallen far below our expectations. It demonstrates most impressively the size, shape, and position of the stomach and intestines. By its means gross pathological changes are readily recognized, but upon impartial consideration of the information so obtained we cannot escape the conviction that the illustration so grotesquely rendered is no more enlightening than that gained by other and less bizarre methods. It usually fails us, like many a friend, when we are most in need of its help. In the large number of obscure cases, where our best endeavors fail, röntgenography offers no hope. In early gastric cancer fluoroscopy and röntgenography are alike disappointing, but when a palpable mass is present it is

all that can be desired. In connection herewith I might cite from a valuable contribution on Röntgen Diagnosis of Gastric Ulcer, by Carman. For thoroughness and completeness he has no peer. On the question of early diagnosis of gastric cancer, he concludes that the röntgenographic findings in conjunction with clinical signs may lead to a reasonable suspicion of cancer.

I have endeavored to show, in this short paper, that gastrointestinal diagnosis, in a broad sense, is a problem in general medicine. That the data obtained from the employment of all the diagnostic methods at our command should be studied in connection with the clinical findings. And that, above all, we should not pin our faith on any one procedure.

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## CASES CULLED FROM PRACTICE.

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Attending Physician, Department of Neurology, Vanderbilt Clinic.

In going over some of the history cards of my patients, I came across a few cases which seemed to me rather interesting. While they have nothing in common, each case has, I think, something of interest, and possibly is worthy of report. The cases speak for themselves; I shall therefore refrain from further introduction.

CASE I.—Mrs. J. R., aged forty-seven years, married, came to me one year ago complaining of cramping sensations in the epigastrium. Her family history was negative. Past history: Scarlet fever at ten years, diphtheria at twelve. As a girl, and up to her marriage at twenty-one years, used to vomit frequently and aided a good deal. Menses regular; bowels have been constive with occasional unaccountable diarrheas of short duration. Present history dates back four years. It began with a choking sensation in the throat, which lasted a few months and then disappeared. Then, following excitements, she would vomit after meals. She had indefinite pains all over the body, dyspnea on exertion, palpitation, occasional insomnia, frequent diffuse headaches, at times spots before the eyes, and said that she had double vision. Frequent diurnal urination and three or four times at night. For past four weeks has had cramps in the pit of the stomach. These cramps would come on thirty or forty times a day, would last for a few seconds, and patient would become dizzy. Vomited very often after meals. Had been treated by numerous physicians with varying and rather indifferent results. Physical examination: Pupils react, slight von Graefe's sign, fundi normal, vision 20/50 in both eyes. Cranial nerves normal. Tremor of tongue and some pharyngeal anesthesia. All deep and superficial reflexes present, sensation normal, heart normal, pulse sixty-eight; lungs normal; abdomen slightly tender over epigastrium, otherwise nothing was felt. Marked dermatographia. Urine negative as to sugar, albumin or casts; indican in excess. Blood pressure: diastolic, 95; systolic, 142.

The diagnosis of cardiospasm was made in addition to constitutional vagotonia because of the following cardinal symptoms: von Graefe's sign, pharyngeal anesthesia, bradycardia, frequent urination, unaccountable diarrhea alternating with chronic constipation, frequent unexplained vomiting (reversed peristalsis), and sudden cramps (spasms) in pit of the stomach. The patient was given atropine 1/50 gr. t.i.d. The cramps and the vomiting disappeared within two days. Gradually the patient began to feel better. The atropine was continued for several weeks; no other medicament was given. The patient became practically well.

By way of remark, I should like to call attention to the fact that this case might have been considered, and in fact it was treated, as a general neurosis, or



one of the many gastrointestinal disturbances. Recognition of the underlying vagotonic constitution explains many of the indefinite neurotic symptoms, and the therapeutical test with atropine absolved me from the necessity of making a gastric analysis. An x ray, nevertheless, would have been of great help in determining the cardiospasm.

CASE II.—A. S., male, aged twenty-five years, hat maker, complained of severe generalized pains and aches all over the body. His greeting remarks on entering my office are not without interest, either social or medical. "Doc," he said before taking a seat, "I don't believe you can do anything for me. I have been to a number of physicians and the last one treated me for rheumatism and took away twenty-five dollars from me. Now I'm worse than ever. I lost faith in all doctors, but my dentist, Doctor Z., recommended you to me, so I thought I'd take one more chance on one dollar." His blunt candor piqued me, but here is the story: For one year or more the patient had aching pains in all his joints and he felt as if his bones would break. Pain was severe in the evening and at night and even more severe on rising. He was extremely miserable. No other complaint. Past and family history negative. Denied venereal disease. No alcoholism. Physical examination, except for some anemia, showed absolutely nothing. Urine was negative. Fearing to confirm his opinion of doctors, I thought I would go into his history a little more carefully, and I learned that he had been a soldier in the United States army. Further inquiry elicited the fact that he had served in Washington, and before that in Cuba, guarding sugar plantations. A soldier and Cuba! Syphilis or malaria? As it is easier to get an answer to the latter, I made a blood smear and, sure enough, found the plasmodium. Needless to say, the Peruvian bark saved the profession. Parenthetically I may add that the pains subsequently reappeared, but hypodermic injections of quinine and urea hydrochloride seemingly effected a complete cure.

CASE III.—M. J., carpenter, single, aged twenty-seven years, complained of severe pain in precordium, left chest, left shoulder, and arm, and severe pain on inspiration. Was laid up in bed and treated for pleurisy and later for neuralgia. Pain was extremely severe on inspiration and motion of the upper extremity, and practically constant. Family history negative. Syphilis denied. Gonorrhea (?) two years before; cured in two weeks. Another attack of gonorrhea eight months before; seemingly cured. No previous illness or any trauma. Physical examination: Mouth negative; lungs, no sign of present or past pleurisy; shoulder: pain on movement and slightly tender on pressure but no swelling or edema. Hernia on right side, otherwise negative. Rectal examination revealed a large, tender prostate. Prostatic fluid showed no gonococci. I made a diagnosis of gonorrheal arthritis. Subsequent blood examination gave a positive complement fixation test. Appropriate treatment led to a cure. Incidentally, I should like to put in a good word for the thermic lamp; in this case it was Aladdin's.

CASE IV.—Mrs. L. W., age twenty-eight years, came to me complaining of headache. Family history negative, except for the death of one sister from tuberculosis. Past history negative. Menses, regular in time and normal in quantity up to date of marriage one and one half years before, were immediately consecrated under the nuptial canopy and laid on the altar of Hymen, and were retrieved two months after delivery; but they had become very profuse. Besides the headache the patient always had a sense of fatigue, increasing as the day progressed. Headaches were dull and diffuse. Inquiry revealed that the hands felt particularly dry and the hair was coming out. Physical examination was negative. What attracted my attention was the sparseness of hair at the outer third of the eyebrow. The hair of the scalp was coarse and the face showed marked hirsuties. The headache, dry hands, falling hair, tired feeling, profuse menstruation, particularly sparseness of outer third of eyebrow, recalled to me the description by Hertoghe, of Belgium, of his cases of *myxedème fruste*. I therefore put the patient on one grain thyroid extract, three times a day, and ordered the baby weaned. Ten days later the patient reported cured. All the signs and symptoms had disappeared. To make

sure of the diagnosis I withdrew the drug, and within four weeks all the first complaint reappeared. I gave thyroid again and kept up the treatment with gradually diminishing doses, for two months. Once more all subjective symptoms disappeared, the eyebrows grew again, the hair no longer fell out, and the menses became normal. Ten months have elapsed and the patient is still well. Very likely pregnancy was the cause of the condition.

CASE V.—J. A. L., age thirty-nine years, an actor playwright, casually remarked to me one day during a conversation in my office that he thought there was something the matter with him. For some time he had had trouble in urination, had to strain a good deal, and was often troubled with a thick, slimy discharge. Nothing else bothered him. He felt perfectly well physically, did a great deal of writing and other mental work. A detailed history revealed the following: Past and family history negative. Had been married and had one healthy child. Venereal: Gonorrhea at twenty years and two subsequent attacks shortly thereafter; seemingly cured. At twenty-two years contracted syphilis and was treated with mercury by inunction and by mouth for four years; apparently cured. Present history: Two years ago began to notice that his underclothing would get wet at times and he observed an occasional slimy discharge. Had burning sensation on urination, urinated frequently by day and by night, and had to strain a good deal. He was rather hard of hearing. No pain, no headache, no disturbance of vision, no cramps. He was a teetotaler, did not smoke, bowels were regular, appetite was good, was sexually vigorous, and his mentality was excellent. Nevertheless I agreed with him that there was "something the matter with him" and proceeded with the examination. Physical examination: Eyes, both pupils reacted to light and accommodation, left rather sluggishly and pupil somewhat irregular; no corneal anesthesia. Both fundi showed normal retina, margins of disc normal, no pallor, slight perivasculitis. Vision normal. Sense of smell normal, ocular muscles normal; taste normal, teeth carious, but gums healthy. Hearing: ticking of watch not heard on the left side, but faintly on the right. No bone conduction on either side, both drums normal. Other cranial nerves normal. Slight tremor of hands, no Romberg, no ataxia, no adiadochocinesis. Finger to finger and finger to nose tests normal. Motor power good; no atrophies or hypertrophies. Sensation normal except for slight hypesthesia over both external malleoli. Upper abdominal reflexes present, lower abdominals and cremasteric doubtful. Biceps, triceps, wrist, knee, and ankle jerks present and equal; no clonus or Babinski. Skin showed pigmented areas, probably the result of former syphilides. Heart and lungs negative; abdomen, nothing palpable; blood pressure normal; prostate normal to touch. Urine foul, cloudy, alkaline, albumin, pus, no sugar, no casts. Residual urine on catheterization three and one half glasses. I made the diagnosis of specific cystitis and, while I did not tell it to the patient, reserved mentally the opinion that I was dealing with an early tabes. Subsequent cystoscopy by Dr. F. Ackerman revealed a trabeculated bladder, and the diagnosis of tabes was confirmed, with cystitis as a first sign. One injection of mercury salicylate loosened the patient's teeth and gave him a most violent stomatitis which lasted two weeks. I gave him two salvarsan injections, having first obtained a positive Wassermann. The bladder condition did not improve, though daily local irrigation alleviated the symptoms of cystitis to a great extent. Treatment was kept up for six months, with the patient as hale and hearty as ever, and if I had not reminded him of it, he would have ignored even his cystitis. One day I was called to see the patient at his home and found him going into a coma. I sent him to the hospital with the diagnosis of cerebral syphilis—not a very precise diagnosis, I admit. He died within forty-eight hours without having recovered consciousness. Others agreed with the diagnosis, but as no autopsy was allowed, we could not confirm it or shed light upon it. For some reason I did not make a spinal puncture, nor do I know whether any was made in the hospital.

#### COMMENT.

It hardly seems necessary to make any comment.

\*This case was reported in *Journal A. M. A.*

yet it would not be amiss to point out that a salient feature in each case led to the diagnosis, in none of which was it very difficult. Perhaps I ought to apologize for the incompleteness with which each case has been reported; but I must seek refuge in the poor excuse that all history taking, examination, diagnosing, and recording had to be done at the first visit. One is compelled to do this at one time because not infrequently one does not see the patient again. The class of patients from which the above were selected seems to reason that if a medicine helps, there is no need to go back to the doctor, and if it does not, there is no use; in which, though their reasoning is purely economic, they are perhaps right after all. However, I was fortunately able to confirm the diagnoses in the above cases—a state of affairs which, needless to remark, does not always obtain.

103 EAST EIGHTY-FIRST STREET.

## Abstracts and Reviews

### THE COAGULATION OF THE BLOOD.

By PROFESSOR W. H. HOWELL,

Baltimore,

Johns Hopkins University.

The lecturer prefaced his remarks with the statement that the subject of the coagulation of the blood was one of too great an extent to permit of its general discussion. His remarks, therefore, would be largely limited to the discussion of certain phases of the process with which he was most familiar through his own studies. Everyone was acquainted, he said, with the fact that the coagulation of the blood takes place in two stages, the first being the formation of thrombin from its predecessor, prothrombin; the second the reaction between the thrombin and fibrinogen whereby the coagulum was formed through the precipitation of fibrin. Several different theories of the nature of the action of thrombin had been suggested, among the most generally accepted of which was that thrombin acted as an enzyme. But it was his own belief that thrombin did not fulfill the characters of an enzyme or catalytic agent. Passing, then, to a discussion of certain of the specific problems and phases of the subject, he would first speak of the origin of thrombin in the body.

Since thrombin is formed from prothrombin it was rather the origin of this precursor which was sought. Studies had shown that prothrombin was not present in the normal circulating blood, or if so, at most in extremely small and insignificant amounts. But it could be derived from the blood, and investigation showed that it was closely bound up with the blood platelets. By fractional centrifugation the isolation of the platelets was possible, and from them prothrombin could be obtained by appropriate methods. It was known that the platelets were extremely fragile and during the shedding of blood these probably broke down with the liberation of prothrombin.

On the other hand, the precipitation of the platelets and the subsequent liberation from them of prothrombin did not prove that this substance was actually contained within them, since it might merely have been carried down with them by absorption. These observations carried the origin of the prothrombin back to the blood platelets only, but recent experiments in the laboratory had shown that by saline perfusion of the red bone marrow large amounts of prothrombin could be obtained. This tissue was the only one so far found which yielded prothrombin, and it was known that in it the blood platelets were formed.

Passing to the question of the other chief constituent in the formation of a clot, it was found that fibrinogen existed in the blood in relatively small amounts, but that after its exhaustion or reduction it was very rapidly regenerated. This regeneration could be traced to the liver, in which the substance was known to be formed with great rapidity. Fibrinogen had been studied and found to be a protein of the class of the globulins, and it was his belief that it would be found later to play an important specific rôle in the nutritive functions of the body. The essential parts played by thrombin and fibrinogen in the process of clotting of the blood could be proved now that it had become possible to isolate both substances in a state of relative purity.

The nature of the reaction which took place between thrombin and fibrinogen in the formation of a clot was still unknown. There was no evidence of any profound chemical change having occurred in the fibrinogen and the evidence at hand seemed to indicate rather the occurrence of some physicochemical reaction. One positive fact was, however, known, namely, that the reaction led to the deposition of the fibrin in the form of a gel. The old theory postulated the deposition of the fibrin in the form of fibrils which interlaced to form a spongy tissue in the interstices of which the fluid part of the clot was held mechanically. Recently the use of the ultramicroscope and dark field illumination had enabled us to study the process of fibrin deposition more accurately. If a mixture of fibrinogen and thrombin was brought into the field of the ultramicroscope a cone of light was first seen, indicating the formation of extremely minute particles, or amicros. Then the light would begin to shimmer, showing the enlargement of the particles. Next brilliant scintillating points would appear, then fine needles, and finally, these needles would be deposited as an interlaced mass. Thus it was seen that there were two processes: the one leading to the formation of the needles, the other to gelatinization with the binding of the surrounding fluid. The explanation of the latter phenomenon was not known. In the former it was evident that both thrombin and fibrinogen were concerned, for the precipitation of the latter by any other agent than thrombin did not lead to the formation of the crystals described.

The next important question was that of the formation of thrombin from prothrombin. In this there were two factors of great importance. The first was the presence of the calcium ion; the second the presence of another substance, called the zymoplastic substance. In the case of the calcium ions,

\*Summary of a lecture delivered before the Harvey Society at the Academy of Medicine, New York, April 7, 1917.



it was known that their presence was necessary, and it could be shown, further, that their concentration must fall within certain limits. Too little or too much calcium would prevent the formation of the clot, and for the production of a perfect clot there was an optimum concentration of calcium ions. No agreement had yet been reached by workers in this field as to how the calcium acted, and it was not yet known whether thrombin was a calcium compound or not.

The need of the zymoplastic substance was evident from the fact that in plasma, collected under proper precautions, calcium, prothrombin, and fibrinogen were all present, yet clotting did not occur, nor does the plasma clot in the body, although all the elements mentioned are present. If an extract of any of the tissue cells, however, be brought into contact with the liquid plasma, clotting proceeds at once. This extract therefore must contain some substance essential to the initiation of clotting. The substance has been called by a variety of names, but best and most descriptive until recently has been the zymoplastic material. This material can be obtained from any tissue of the body, from which it is extractable by water, alcohol, or ether. It is thermostable and resists boiling.

The nature of this material has been the subject of study, with the result that we now know it to belong to the group of phosphatids. By study of its constituents it has been shown to be a kephalin, and it is now properly known as kephalin. In all probability it exists in the tissues in conjunction with the proteins, which accounts for the fact that it can be isolated from the tissues by a variety of solvents. We have therefore two essentials to the formation of thrombin—the calcium ion and kephalin—but the nature of the action which takes place between these two is not yet known, although it is generally conceded that the two cooperate. He thought that there was some inhibiting substance normally present which prevented calcium from acting on prothrombin, an antithrombin, and that the kephalin neutralized this inhibiting material. It seemed, also, that there was another inhibiting substance in the tissues which acted to prevent the formation of prothrombin.

The practical use of kephalin was a matter of some importance and, while the substance was remarkably active when fresh, it had the great disadvantage of instability, losing its physiological activity, although apparently retaining its chemical characteristics. When injected intravenously kephalin gave very variable results, owing to the action of compensatory mechanisms. Thus the coagulation time might be reduced at first and later become increased. Its intravenous use seemed undesirable on this account and also because in animals severe or dangerous reactions were sometimes produced. In external hemorrhage, on the other hand, kephalin could be used with considerable success, but it still remained for us to work out both the best form of its application and a method of securing a stable preparation. From some preliminary observations it seemed that its oral administration might prove of value. It had been possible by this method to reduce the clotting time to one third in as short a time

as one hour after administration in dogs and it had also been given thus to some hemophiliacs with some indications of favorable results. The observations, however, were still too few and too little controlled to warrant any definite statements.

Returning to the study of the clotting of the blood, there were two very important factors still to be mentioned. The first of these was the existence and rôle of antithrombin. Professor Howell passed over this briefly with the statement that such a substance was known to exist and to act upon thrombin in some way to prevent its precipitation of fibrinogen. This substance was normally present in the blood and could be greatly increased in amount by the intravascular injection of such substances as peptone, thus rendering the blood incoagulable for considerable periods of time. The nature of this material was undetermined.

The second important factor was the existence of a substance or of substances which acted upon prothrombin to prevent the formation of thrombin. Substances of this class had recently been isolated in the laboratory and were found to correspond with the phosphatides previously isolated from the heart muscle and liver by others. These substances were soluble in water, saline, ether, and chloroform. Only preliminary chemical analyses had yet been made of them, but they showed that the material obtained from the heart muscle was a monaminodiphosphatide, while that from the liver showed the nitrogen and phosphorus to be present in the reversed proportions. Both had been tested by intravenous injection into animals and were found to render the blood incoagulable when given in doses of 0.1 gram per kilogram of body weight. *In vitro* they prevented clotting in the dilution of one to 500 per cent. Their mode of action was not understood, but they seemed to prevent the activation of prothrombin by calcium. This antiprothrombin might be normally present in the blood and it was found to be the substance commonly described as antithrombin. It could be shown that there existed between this and kephalin an antagonism closely analogous to that between atropine and pilocarpine; or a reversible antagonism. The injection of the substance into animals produced a picture identical with that of hemophilia in man, and it was thought that in such conditions antiprothrombin might subsequently be found to be present in relative excess.

In closing it was pointed out that the knowledge gained by the observations reviewed offered a rational basis for the control of the coagulation of the blood in either direction. Such knowledge was of great use to physiologists and it might subsequently become of some value in the realm of therapeutics.

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**The Presence of a Third Testicle.**—Max Fischer (*Münchener Medizinische Wochenschrift*, December 26, 1916) reports a case of a man who had a swelling in the region of the right external ring. The tumor was of the exact size of the two testicles in the scrotum and could be moved freely without interfering with the right testicle, with which it was in no way connected. On pressure it gave the typical testicular pain.



# Our Readers' Monthly Prize Discussions

## Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CLXXXI.—How do you treat thumb sucking and nail biting in children and adults? (Closed.)

CLXXXII.—How do you prevent infantile diarrhea? (Answers due not later than May 15, 1917.)

CLXXXIII.—How do you treat excessive menstruation in the unmarried? (Answers due not later than June 15th.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

*The prize of \$25 for the best answer to Question CLXXX has been awarded to Dr. Charles Wolf, of New York, whose paper appears below.*

### PRIZE QUESTION NO. CLXXX. TREATMENT OF RINGWORM.

By CHARLES WOLF, M. D.,  
New York.

Ringworm, a generic term for a group of diseases, which may affect any part of the skin and its appendages, the scalp, and nails, is classified as follows: 1, tinea circinata, or ringworm of the body; 2, tinea capitis, or ringworm of the head; 3, tinea cruris et axillæ, or ringworm of the groin or axillæ; 4, tinea barbæ, or ringworm of the bearded region; 5, tinea unguium, or ringworm of the nails. There are many synonyms for each of these varieties, but it is unnecessary to enumerate them here. Suffice it to say that they are all caused by a fungus, the trichophyton, and that Sabouraud in his classic work on *The Tineas* has differentiated forty varieties of the trichophyton.

In this short exposition, I shall endeavor to give the best and latest treatment for each of the several varieties.

*Tinea circinata*.—The treatment is simple and effective for this variety. Any of the recognized parasiticides will effect a cure in a week or two. The scales of the patches are removed by the use of soft soap and water. The patches are then painted daily for three or four days with tincture of iodine; in children, the iodine is diluted one to three with alcohol. Other drugs used are a solution of sodium hyposulphite, six grams to thirty c. c. of water, applied on lint and covered with oil silk; and a five to ten per cent. sulphur or white precipitate ointment applied twice a day. A very good parasiticide is the following:

R Acidi salicylici, ..... 1.5;  
Acidi benzoici, ..... 2.5;  
Adipis (anserinus), ad..... .50.

*Tinea capitis*.—I firmly believe that the only way to effect a prompt cure is by the use of the x ray. All other methods which entail the use of ointments, lotions, and vaccines should be discarded, as they are tedious and uncertain.

The technic of the application of the x ray will be briefly described. The scalp is divided into five areas, three central and two lateral fields. The distance from the anterior to the posterior hair lines is measured at midpoint of the scalp. This is divided

into three equal fields and the limits of each marked off with a strip of adhesive plaster placed on the hair. The other two fields are the right and left temporal fields.

The x ray tube is focused in the centre of each field, twenty centimetres from the scalp to the anti-cathode; an epilating dose is given to each field which is measured by a Holzkecht or Hampson radiometer. The entire treatment requires fifteen to twenty minutes. The hair falls out from three to six weeks after exposure. It is advisable to have the patient use a ten per cent. sulphur or fifteen per cent. oleum rusci ointment to prevent reinfection. The hair is restored almost completely in six months after exposure.

*Tinea cruris*.—An eczematous condition of the skin due to moisture, warmth, and friction of opposing surfaces may be present. This must be treated with soothing lotions, as calamine and zinc lotion or boric acid solution. Then any of the following may be used, applied twice a day; a fifteen per cent. solution sodium hyposulphite; one half per cent. solution of bichloride of mercury; one to three per cent. resorcin solution, or a fifteen per cent. white precipitate ointment. In obstinate cases, a five to ten per cent. chrysarobin ointment rubbed in once a day is very efficacious. This should not be used for more than two or three days at a time, since a dermatitis may occur if used for longer periods. The same treatment may be used for tinea of the axillæ.

*Tinea barbæ*.—The most effective modern treatment is the epilation of the bearded region by the x ray and the subsequent application of a ten per cent. sulphur ointment once a day.

*Tinea unguium*.—Tinea of the nails is very difficult to cure by local medication. The x ray is the most effective instrument there is for curing it.

In the case of a young child who will not remain quietly in position, the x ray cannot be employed, and the older methods must be resorted to.

*Cyrus W. Culver, of Lowville, N. Y., writes:*

In the treatment of most cases of ringworm of the scalp epilation is necessary, and in this, radiotherapy has the advantage over other methods of treatment. The rays bring about a cure not so much by killing the fungus as by bringing about

epilation and thus bringing away the parasite with the diseased hair. There is apprehension on the part of some in applying radiotherapy, but the only cases where one should be especially careful is in children where the anterior fontanelle has not yet closed. After x ray treatment the defluvium of the hair begins on the fifteenth day, the head is bald by the twenty-first day and cured of ringworm, and the hair begins to grow again the eleventh week from the x ray application.

Some do not consider it wise to do epilation in children, but merely cut the hair so that it is about one half an inch long all over the head. It is advisable in most cases to mark the diseased spots as well as the commencing areas with an aniline pencil. Tincture of iodine with three volumes of ninety per cent. alcohol as well as carbolyzed glycerin and vaselin makes a good preparation to apply to the healthy surface of the scalp. In recent cases the application of a blister or clear iodine often serve the purpose of removing large numbers of the fungi. This should not be done too often for fear of the thickened condition resulting from repeated inflammation.

The next step after epilation is to clear a way into the interior of the follicles. Hence the parts should be washed with spirit of ether lotion so as to dissolve the fatty substances and dehydrate the tissues. Since water furnishes nutrition for the fungus, ringworm sites should never be washed with it. A desirable mild antiseptic lotion is salicylic acid dissolved in chloroform or ether five to twenty grains to an ounce. This dissolves fat, dehydrates, loosens the hair, and attacks the fungus. If applied early salicylic acid alone may cure.

In the more severe forms it is necessary to set up a dermatitis. For this purpose chrysarobin twenty grains to the ounce is best adapted. Sulphur in the following form works well with children.

℞ Sulphuris, .....	dr. i;
Acidici carbolic, .....	dr. ss;
Lanolin c. oleo, .....	oz. i.

Sulphur may be combined with mercury or salicylic acid as an ointment with a lanolin base. The perchloride, biniodide, oleate, nitrate and red oxide of mercury are efficacious in some cases, but must be used with caution in children or persons with delicate skin. The following preparation of iodine is often useful.

℞ Iodine, .....	dr. ii;
Light oil of wood or tar, .....	dr. i.

However, in most cases, the tincture of iodine does very well. Tar thymol and menthol are also useful in some cases.

In chronic cases a good plan to follow is: First cleanse the parts with alcohol and carbolic acid or perchloride of mercury. After drying rub in chrysarobin for ten minutes, taking care not to get any into the eyes. It should be reapplied every day until there is marked redness around the affection. It should then be discontinued and some milder ointment as boric acid or zinc oxide used. In some cases this treatment is not severe enough, so croton oil is used. The following ointment is recommended:

℞ Croton oil, .....	dr. i;
Lanolin, .....	oz. i.

This is rubbed in daily until diseased stumps have fallen out or have been removed.

Some attempt to destroy the fungus by depriving it of air. This is accomplished by rubbing the head with essence of turpentine and then having the affected parts painted with tincture of iodine after having the hair clipped. The head is then smeared with vaselin containing either iodine or boric acid, and an airtight cap of gutta percha is applied and held in place by a bandage. The dressing is renewed night and morning after the parts are thoroughly washed and dried.

One cannot say that ringworm of the scalp is cured until it has been left untreated for one month. If, at the end of that time, the stubs are all gone and there is no scaliness and there is new hair enough to cover the affected part, then the case may be considered cured.

The remedial treatment for ringworm of the face must be carried out on the same line as that of ringworm of the scalp. In the early stages the hairs should be cut close and iodine applied day after day until desquamation takes place. In some of the milder cases ammoniated mercury unguent, fifteen grains, and petrolatum one ounce is very satisfactory while in the more refractory a fly blister will bring about gratifying results. The x ray should not be used while there is any suppuration. In cases where x ray treatment is not feasible, epilation with forceps is advised. I have hastened several severe cases toward a cure by the use of the high frequency electrode. Beside the germicides already mentioned, chrysarobin, sulphur, and oleate of copper are also useful. The same caution must be exercised here after treatment is suspended before one can definitely state that the case is cured.

In ringworm of the body the best method to follow is to use iodine or some other blistering fluid to remove the superficial layers of the epidermis. If this does not suffice to kill all of the fungi and some are left in the skin, ammoniated mercury unguent, oleate of copper, some sulphur ointment, or the following are highly recommended:

℞ Chrysarobin, .....	5 parts;
Salicylic acid, .....	2 parts;
Ichthyol, .....	5 parts;
Ung. simplex, .....	100 parts.

For children a milder ointment should be used.

In ringworm of the nail it is necessary to remove the affected nail under anesthesia. It usually suffices to scrape the nail thin after having softened it with potash soap and then the following is applied for fifteen minutes: Liquor potassæ and distilled water of each four drams and iodide of potassium one half gram. This is removed and the following applied for twenty-four hours: perchloride of mercury grams four, spirits of wine and distilled water of each four drams. The nail is then scraped again and the applications are repeated as often as necessary.

*Prophylaxis.*—Ringworm could be stamped out if cases were isolated and if physicians were more careful in passing their opinion as to when a case

was cured. All children should be examined, after each vacation of any length, before again entering school. It was suggested by one authority that, especially in large towns, all children suffering from obstinate forms of ringworm should be, by compulsory methods, put into special schools, as has been done for several years in Paris.

*Dr. Samuel Robbinovitz, of Brooklyn, N. Y., states:*

A very simple method of procedure in ringworm of the scalp is to wash the scalp with hard green soap and dry thoroughly, and then apply collodion in which has been dissolved pyrogallic acid in the proportion of fifteen grains to the ounce. The entire scalp is painted with tincture of iodine and then carefully dried. Thus each diseased patch, stained a darker brown than the healthy skin, enables one to detect places affected by the ringworm which are otherwise invisible. A circle is now drawn with a blue pencil around each ring, and the hair epilated for one centimetre outside of it, the rest of the hair being cut short. The patches are painted every day with the iodine until a certain degree of irritation of the skin is set up. The treatment is then suspended until the skin has regained its natural appearance, and the hair begins to grow. This treatment is especially available in the more common variety of tinea caused by small pores.

In the treatment of tinea tonsurans of children the hair should be cut as closely as possible once a week. Every third day the head should be washed with soap and warm water. Morning and evening the scalp should be massaged, trituration the diseased areas vigorously, then prolonged friction should be applied with the following application:

R OL ricini, .....	3j;
Tr. cantharidis, .....	3j;
Sp. camphor, .....	3iv.

Misce.

Sig.: To be applied locally to the scalp.

R Hydrarg. ammoniat., .....	gr. vj;
Hydrarg. oxidi rubri, .....	gr. vi;
Adipis lanæ hydroxi, .....	3j.

Misce.

Sig.: Use after epilation and washing.

In cases of adults I find as very useful the following formulæ:

R Sodii biberatis, .....	3j;
Aceti destillat., .....	3ij.

Fiat lotio.

Sig.: Apply to scalp locally, 2 i d.

or,

R Iodi, .....	3ij;
Adipis lanæ hydroxi, .....	3ij.

Misce.

Sig.: Apply once daily.

I believe that ringworm of the beard is acquired in the majority of cases at barber shops.

As local applications I would advise the following prescription:

R Sulphur. precipitat., .....	3ss-iss;
Ichthyol, .....	3j-iss;
Petrolati, .....	q. s., ad. 3j.

Misce.

or,

R Resorcini, .....	3j;
Glycerini, .....	3ij;
Ung. aq. rosæ, .....	q. s., ad. 3j.

Misce.

Sig.: Apply several times daily, after the crusts have been softened with oil.

For internal administration:

R Liq. arsenici et hydrarg. iodidi, .....	3ij;
Syrupi zingiberis, .....	3j;
Aq. destillatæ, .....	q. s., ad. 3iij.

Misce.

Sig.: 5j t. i. d., p. c.

Wherever it is not possible to shave closely, it is absolutely necessary to epilate all the hairs from the areas involved, to prevent the spread of infection into the deeper layers.

In ringworm of the body practically the same principle applies here as in the former two cases. If there is any hair it must be epilated, cleanliness is absolutely essential, and is accomplished by means of saponis viridis or ordinary Castile soap and warm water, and then apply tincture of iodine with a camel's hair brush once or twice daily.

*Dr. Frank Irving Disbrow, of New Rochelle, N. Y., contributes:*

Some writers assert that ringworm is a parasitical skin disease due to an ectozoic parasite, and others that it is entirely a disease of the blood due to an organism not yet identified. It is very well known, however, that it is a most highly contagious affection, and is carried from one to another through ignorance and lack of hygienic precautions. The differential diagnosis of ringworm is sometimes difficult. It may simulate the lesions of or occur in conjunction with eczema, erysipelas, syphilis in some stages, burns, scalds, sting by insects, and poisoning from vegetable poisons. It is particularly important to verify a diagnosis of ringworm in the presence of an epidemic, as measles and smallpox. If the lesion is treated promptly and is confined, prognosis is always good, the trouble lasting usually ten to fourteen days.

The most direct and satisfactory treatment is local.

The first and most important indications are cleanliness and sepsis, and isolation is absolutely necessary if the patient is one of several children, or if he works in a factory, store, or school, or handles tools and utensils in close association with others. Cleanse the part thoroughly. If the ringworm is on the scalp, cleanse the spot with as much care as possible and sterilize the hands and all instruments, after application of any one of the following:

R Chrysarobin, .....	gr. 80;
Ichthyol, .....	fl. dr. 2;
Salicylic acid, .....	gr. 30;
Vaseline, .....	3i;
Lanolin, .....	3ii.

Apply locally two or three times daily.

R Ammon. mercury, .....	gr. 30;
Ichthyol, .....	fl. 3i;
Lanolin, .....	3iv.
Cerate, .....	3iv.

Apply freely night and morning.

R Iodine, .....	3i;
Potassium iodide, .....	gr. 30;
Alcohol, .....	fl. 3iij;
Water, ad, .....	fl. 3i.

Paint two to three times daily.

R Red mercury iodide, .....	gr. 6;
Sodium iodide, .....	gr. 30;
Spts. chloroform, .....	fl. 3iij;
Water, ad, .....	fl. 3i.

Soak well into diseased part of scalp morning and night; use only on small surfaces.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
Philadelphia Medical Journal  
and The Medical News  
*A Weekly Review of Medicine*

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Address all communications to  
A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

Subscription Price:  
Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MAY 5, 1917.

## THE CRUSADE AGAINST VENEREAL DISEASE.

During the past one hundred years many glorious fights have been waged against the common enemies of mankind, and in all of them the medical profession has been in the front of the battle. Tuberculosis, prostitution, alcohol, ignorance, crime—these and many others have been combated with all the means at our command. In some cases the victory is nearly won, in some the tide of the battle is turning in our favor, and in some the struggle has just begun. And now that we have cast our glove into the world arena, now that we are stripping off the hampering garments of luxury and ridding ourselves of the soft muscled sloth of years of ease so that we may come to grips with the enemy, let us see if there are not other ways of increasing our efficiency.

One of the first problems which should engage our attention, judging by the experiences of the nations now at war, is that of venereal prophylaxis. Wherever large bodies of men are gathered together as in armies, this problem will arise. All the warring nations have struggled with it and some, as Germany, have accepted it in a matter of fact way and undertaken the measures to prevent it which

experience has shown to be the most effectual. Others, as England, have temporized with it at first, have refused to see it, have been scandalized by it, and finally have bethought themselves that it was better to deal with it than to ignore it. One and all the nations have come to the conclusion that prevention is the keynote, so let us profit by their experience.

Surely we physicians are not going to be dissuaded by any clamor of prudery from preaching venereal prophylaxis! There have already been some, and there will be more, protests against instituting measures for the prevention of venereal diseases, the chief argument of course being that the assurance of safety leads to free indulgence in vice. Certainly we are not going to be misled by any such cry. In this great national emergency it is our duty to cure and to prevent disease by any means in our power. Let us then investigate the methods already in use and select our weapons.

Venereal prophylaxis has been thoroughly tried out in the Navy. In a recent report Doctor Riggs states that "venereal disease exacts each year a heavy toll from both the health and efficiency of the Army and the Navy" (C. E. Riggs, U. S. Navy: The Prevention of Venereal Disease at the Naval Training Station, Norfolk, Va., *U. S. Naval Bulletin*, January, 1917). He comments on the fact that we are familiar with the three diseases in question, their etiology, treatment, and prevention, and states that the blame for their prevalence "lies hidden in the taboo that has always opposed fighting venereal disease in the open." The artificial prophylaxis in use at the training station at Norfolk, Va., is similar to that used elsewhere, a calomel ointment of about thirty-three per cent., and an injection of silver salt of moderate strength. Records were kept of 3,556 treatments, and it was found that in the first five hours the prevention was remarkably effectual, losing in efficiency from the fifth to the eighth hour, being practically useless in the next three hours and entirely so the eleventh hour and afterward. Riggs concludes that there are many weapons in the fight against venereal disease, of which education is not the least effective, and that prophylactic treatment should be administered during the first or second hour after exposure, the first hour, if possible.

The Navy has long been a leader in this regard. Several years ago Doctor Cottle (I. F. Cottle, P. A. Surgeon, U. S. Navy: Venereal Disease Aboard Ship, *U. S. Naval Bulletin*, 1915) reported his observations on the crew of a ship on a long cruise. He advocated education and artificial prophylaxis,

recommending treatment packets for use ashore, and there have been many articles in similar vein published by both Army and Navy surgeons since that time. In discussing this question as it has arisen in the English army, Lieutenant Colonel Kenwood state that "it is probable that the antiveneral campaign, long since overdue, would have been still further postponed had not the circumstances of the war widely impressed the lesson of this need" (H. R. Kenwood, M. B.: *The Hygienic Lessons of the War*, *Lancet*, December 30, 1916). Kenwood goes on to deplore the prudery and parsimony exhibited in handling this subject, and begs that such a matter of "paramount national importance" should be handled with courage and frankness.

England has indeed established a Royal Commission on Venereal Diseases which has investigated the problem and found it "grave and far-reaching." They have made many recommendations for the dissemination of information about the disease and for the thorough, inexpensive, and confidential treatment of cases. Some of these recommendations, to be sure, have been found impracticable by the British Medical Association, chiefly because of the lack of facilities to carry them out, but undoubtedly the various schemes proposed will gradually be sifted until the correct ones emerge. The first annual meeting of the National Council for Combating Venereal Diseases was held in June, 1916. Thousands of lectures on the subject were given, and it was stated that much work had been done in the army.

The German Preventive Society appointed a committee at its 1915 meeting, which reported the following year, recommending a change in the present system of supervising prostitution, penalties for the knowing transmission of venereal disease, a post-graduate course for physicians, sexual pedagogics in schools and colleges, and penalties for charlatans. In the French army there has also been a great increase in the incidence of venereal disease, so that special regulations have been necessary. Special organizations have been created; these have been divided into urological centres and dermatological and syphilological centres. Chancre cases are sent to one of the centres at the earliest possible moment, and it is expressly forbidden to keep suspicious cases in regimental hospitals until a diagnosis is made. In each region there is a venereological centre, one of the features of which is a dental department for the care of the teeth during intensive mercurialization.

So let us not be kept by prudery or any other consideration from doing whatever lies in our power to conserve the health of the patriots who are giving their life blood that the nation may survive. Let us protect them and future generations against the

triple curse of venery, by education and moral restraint, if possible, but at any rate by all the weapons in our armamentarium.

#### THE DIFFERENTIATION OF SOME ACUTE OCULAR INFLAMMATIONS.

Let us suppose that the physician has been called, perhaps in the early hours of the morning, to see a patient who is suffering from prostration, nausea, vomiting, and an intense pain radiating through one side of the head. He is elderly, and it may be learned that recently he has been unusually fatigued, has undergone great mental anxiety or shock, or has suffered from some other debilitating influence. Gastric trouble, meningitis, migraine, influenza, and other diseases suggest themselves, but does it always occur to the physician to suspect the eye as the seat of trouble? Sometimes the patient complains of his eye as well, but in many cases the pain in his head renders him oblivious to its partial localization there. A serious mistake may be made if this organ is not taken into consideration. Nothing can be easier than the exclusion of ocular trouble in a case like this. A glance at the eyes is all that is necessary. If they appear to be normal the cause of the pain is not there. But if an upper lid is rather swollen and droops a little over a reddened eyeball, there are four possibilities: an attack of acute inflammatory glaucoma, a sudden severe attack of iridocyclitis, a sudden virulent attack of orbital cellulitis, or abscess in the orbit. Any one of these can produce the clinical picture and an intercurrent conjunctivitis that has nothing to do with the acute sickness. The differentiation of these conditions is easy and important.

In the first place, the pupil inspection will show it to be large, small, or normal. If it is large and oval the tips of the examiner's forefingers should be placed on the upper lid just beneath the brow, with the patient looking down, and he should press alternately with each finger as though testing a suspected abscess for fluctuation. If the eyeball cannot be dented and feels as hard as a stone, the diagnosis of acute glaucoma is made. If the physician is not accustomed to testing the tension of eyes and lacks confidence, the tension of the other eye can be tested in the same way, when the difference will be evident, as a simultaneous attack of acute glaucoma in both eyes is very rare. No instrument is needed to estimate the tension in a case like this. A specialist would use one to obtain a definite record before operation; he would not and should not need it for diagnosis.

If the pupil of the inflamed eye is smaller than

that of the other, especially if it is irregular and the iris has not the bright lustre of the other, the patient has iridocyclitis. Other symptoms are present in both of these diseases, but these are diagnostic.

If the pupil is normal it should be observed carefully whether the reddened eyeball projects forward farther than the other. If it does not the condition of the eye is intercurrent and not connected with the acute symptoms. If it does the question arises whether it did so previous to the attack. If the protrusion has never been noticed before there may be a violent suppurative inflammation behind the eyeball, a condition of extreme danger to life if not relieved. The chances are good that inquiry will elicit a history which points to an empyema of one or more of the accessory sinuses, but sometimes such a history is lacking. More than one case is on record in which a child fell the day before on some sharp instrument, a splinter of wood, or a pointed lead pencil, which passed beneath the upper lid into the orbit, broke off, and was unsuspected until found at autopsy a few days later.

It is most important that these possible causes should be borne in mind in the presence of an acute case of prostration, nausea, vomiting, and intense pain in one side of the head.

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#### DIAGNOSTIC VALUE OF PAIN

Pain is a symptom of vast moment to the sufferer no matter what its origin, but to the clinician it is too often of very doubtful importance. The pain from a carious tooth is sometimes more distressing than that from an appendix which is about to rupture, and a sprained sacroiliac joint may be more painful than a malignant growth.

The sense of pain is a very primitive and crude one, but one which in man has been unconsciously made more frequent and important. His development of consciousness heightens the function of pain, his lack of proportion in bodily exercise, and in maintenance of bodily harmony, increases his susceptibility to suffering, and his ways of living have made him more liable to injuries which set up disturbances in these comparatively insensitive receptors of external and internal change. A serious wound received in the thick of a fight may not be noticed until after the battle, and the man or woman with little leisure makes light of bodily disturbances which are all too important to the concentrated imagination of those who have little else to think about. Not only is pain magnified because of the large cerebral regions which, nowadays, an injury is likely to bring into play, but because undue vasomotor and possibly other peripheral changes come to pass from

the concentration of the attention of the sufferer, changes which, in turn, add to the previous centripetal effects.

If pain is often misleading from its abnormal severity it is as often so from its unexpected absence or mildness. In tuberculosis of the lungs there is little local distress, and so in nephritis. Since the loss of a tooth is a real calamity, there should be pain at the beginning of the decay, though it is, at this stage, absent.

Pain, then, is of very uncertain importance to the diagnostician, and in making use of this symptom, as he always should, he must have in mind the mental state of the patient, or what Jean Paul Richter called the "magical condenser of the imagination." The patient's well or ill balanced constitution and his habits must be taken into account, and last, and most important, the physical findings. Also it is to be remembered that the internal organs, like the stomach, heart, and kidneys, are poorly supplied with pain receptors, and that, for this reason, disease of such an organ may go far without such a symptom, while pain on the surface may, on account of the lack of such receptors in the deeper organ, with related innervation, be caused by the disturbance in the latter structure to which no feeling of pain is referred.

If pain is an uncertain sign in diagnosis, it is equally uncertain and troublesome in treatment. Especially is this true in many chronic joint and muscle lesions where pain often delays the use of limbs that ought to be exercised. Here we suspect deeper causes for the pain than are interpretable in terms of arthritis or myositis, and the persistence of pain should be an inciter for probing beyond the physical into the symbolic.

Pain is after all one of the most important of Nature's devices to cause men and communities to perceive that their devices, physical as well as economic, are out of order. It compels attention and is therefore prophylactic. Continuous pain is a challenge to investigation. To relegate it to "imagination" is a confession of bankruptcy of the scientific imagination.

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#### INTRAVENOUS USE OF TARTAR EMETIC.

Nicolle and Mensil seem to have first introduced the use of antimony salts in the treatment of trypanosomiasis. This was followed by some experimental work, which so impressed Manson that he tried the remedy subcutaneously in certain cases. The local reactions, however, proved too severe. Broden and Rodhain on the Congo later used tartar emetic intravenously for sleeping sickness with much clinical improvement in their cases. Leboeuf



independently also made use of this remedy intravenously at about the same time.

Having been thus introduced, the remedy has been gradually extended not only in the treatment of trypanosomiasis, but also to the treatment of ulcerating granuloma and of leishmaniasis. In some cases atoxyl has been given subcutaneously along with the intravenous use of the antimony salt. This combined treatment is now carried out in most cases of trypanosomiasis at the London Tropical School of Medicine, and is recognized as a standard method.

The results obtained by antimony in the three diseases mentioned above are in many ways good, and far in advance of other drugs that have already been employed. At the same time its use has not been uniformly attended with success, and it has not prevented high mortality among Rhodesian and Nyasaland cases of human trypanosomiasis. Likewise it remains to be seen how specific it may prove for all cases of leishmaniasis. Also in ulcerating granuloma there is a small minority of cases which, though improved by its use, are not definitely cured.

This apparent lack of specificity, or better, perhaps, the lack of success in a limited number of cases, does not detract from the recognized importance of this form of therapy. On the contrary, Low, recently reviewing the subject, is convinced not alone of its value in tropical medicine, but suggests a trial of the treatment in malarial and other affections, especially of a protozoal nature (*Transactions of the Society of Tropical Medicine and Hygiene*, December, 1916). Such a suggestion, if borne in mind by medical men, even in the temperate regions may prove productive of important results.

## THE ANNALS OF MEDICAL HISTORY.

An important and unique addition to the medical bibliography has been announced for publication in the near future. The personnel of the editorial staff of the *Annals of Medical History* gives promise of a most important contribution to medical literary research, and it can be called unique in being the first periodical publication devoted to the subject which is conducted independently of any historical society.

The editorial staff is composed of men who represent the rare harmony of literary and scientific attainment, specialists in their respective scientific fields, specialists, also, in the great common field of the literary and philosophical aspects of medicine. Dr. Francis R. Packard, of Philadelphia, is the editor in chief; the associate editors are: Dr. Harvey Cushing, of Boston; Dr. George Dock, of St. Louis; Dr. Mor-

timer Frank, of Chicago; Dr. Fielding H. Garrison, of Washington, D. C.; Dr. Abraham Jacobi, of New York; Dr. Howard A. Kelly, of Baltimore; Dr. Arnold C. Klebs, of Washington, D. C.; Dr. William Osler, of Oxford, England; Dr. Louis S. Pilcher, of Brooklyn, N. Y.; Dr. Stephen Riesman, of Philadelphia; and Dr. Edward C. Streeter, of Boston. The journal is to be published quarterly.

Time, personal effort on the part of the editor and his associates, and money, it is stated, have not been spared in the sincere endeavor to make the *Annals of Medical History* a literary and artistic success. It is intended that the new journal shall constitute an organ in which the historical and literary aspects of medicine will find a wide hearing. The project under such an editorial staff is hailed with great satisfaction and should be cordially welcomed by those professional workers whose time and opportunity are too limited to dig out this valuable material often from obscure sources and by those who have felt the lack of this type of medium for public expression. The NEW YORK MEDICAL JOURNAL awaits with keen interest the first number of the *Annals of Medical History*.

## News Items

**Changes of Address.**—Dr. Joseph Kaufman and Dr. Solomon Ottenberg, to 122 East Thirty-fourth Street, New York.

**A Hay Fever Clinic in Philadelphia.**—The Samaritan Hospital, Philadelphia, has established a clinic for the diagnosis and treatment of hay fever and rose cold, in the department of Dr. William Egbert Robertson. Dr. Claude P. Brown will have charge of the dispensary work.

**Women Physicians to Give a Banquet.**—The Women's Medical Association of New York City is planning a banquet, to be given at the Hotel McAlpin, Wednesday evening, June 6th, in honor of the women physicians who will be in New York at that time to attend the meetings of the American Medical Association. Tickets are \$3.00, and may be obtained from Dr. Mathilda K. Wallin, 616 Madison Avenue, New York.

**Reserve Medical Officers Ordered to Duty.**—In the army orders promulgated on April 28th, nearly three hundred officers of the Medical Reserve Corps were ordered to active duty, with instructions as to the posts at which they were to report. It is understood that these officers will be given a course of special training in the examination of recruits, in order to be ready for the examination of the new recruits under the selective conscription bill which has just become a law.

**National Association for the Study and Prevention of Tuberculosis.**—The thirteenth annual meeting of this association will be held in Cincinnati, Ohio, May 9th, 10th, and 11th, with headquarters at the Hotel Sinton. Dr. E. R. Baldwin, of Saranac Lake, N. Y., is president of the society, and Dr. Henry Barton Jacobs, of Baltimore, is secretary. Dr. Charles J. Hatfield, 105 East Twenty-second Street, New York, is executive secretary, and will be glad to furnish programs to all who are interested. The twelfth spring meeting of the American Sanatorium Association will be held at the Hotel Gibson on Wednesday, May 9th. For further information regarding this meeting address Dr. Edward F. McSweeney, Sea View Hospital, Staten Island, N. Y.

**Medical Intern, St. Elizabeth's Hospital.**—The United States Civil Service Commission announces an examination for medical intern, open to both men and women, to fill a vacancy in St. Elizabeth's Hospital, Washington, D. C., at a salary of \$900 a year, with maintenance. For full information regarding the examination and for the proper application blanks, address the commission at Washington.

**Child Welfare Research.**—The legislature of Iowa has voted \$25,000 a year for the establishment and maintenance of a child welfare research station at Iowa City, where the State university will carry on investigations of prenatal care, of feeding, of the prevention of disease, of social conditions affecting child life, of the part home life has in educating the child and forming its character, and of methods of applying psychology to the development of the child.

**Medical Colleges to Hasten Graduation of Students.**—Cornell University Medical College announces that owing to the national emergency, instruction to the senior class will be continued throughout the summer, so that the class may be graduated in January instead of June. The members of the senior class at the Harvard Medical School will also have the privilege of continuing their work throughout the summer. Instruction will be provided and it will be optional with the students whether they begin their fourth year's work on June 4th or September 24th.

**Fellowship in Obstetrics at Woman's Medical College, Philadelphia.**—A fellowship amounting to \$1,000 has been established by the Woman's Medical College of Philadelphia, to be awarded annually to any medical woman of special ability who, following the undergraduate course, has completed at least one year of hospital service, including work in the maternity wards, and one year of further practice. The amount is to cover twelve months of special work as fellow in obstetrics, with the condition that the holder of the fellowship shall thereafter continue the practice of this specialty.

**Scientific Research Board for the State of Minnesota.**—The War Department has asked six professors of the University of Minnesota to act as a scientific research board for the State of Minnesota. These men are Dr. L. G. Rowntree, head of the department of medicine; Professor John J. Flather, head of the department of mechanical engineering; Dean George B. Frankforter, head of the school of chemistry; Professor R. W. Thatcher, head of the department of agricultural chemistry; Professor L. W. McKeehan, of the department of physics; Professor F. R. McMillan, of the department of structural engineering.

**Medical Society of the State of North Carolina.**—The sixty-fourth annual meeting of this society was held in Asheville, Tuesday, April 17th, under the presidency of Dr. C. O. Laughinghouse, of Greenville. Officers to serve for the ensuing year were elected as follows: President, Dr. I. W. Faison, of Charlotte; first vice-president, Dr. William D. B. McNider, of Chapel Hill; second vice-president, Dr. Joseph B. Green, of Asheville; third vice-president, Dr. Ben F. Royal, of Morehead City. The secretary, Dr. Benjamin K. Hayes, of Oxford, and the treasurer, Dr. W. M. Jones, of Greensboro, will continue in office until the next meeting, which will be at Pinehurst next April.

**A Thousand American Surgeons for the Front.**—After the conference of the medical board of the Council of National Defense with Colonel T. H. Goodwin, of the Royal Army Medical Corps, in Washington, D. C., on April 29th, it was announced that plans had been made to send one thousand American surgeons to Europe for service with the allied armies. This offer came from the American College of Surgeons. The deans of forty-six medical schools met in conference with the general medical board and agreed to continue instruction without shortening the courses so as to furnish new graduates. Both the schools and the hospitals, however, will cut down in the number of men on the staff as much as possible so as to set them free for service in the army.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, May 7th, Academy of Surgery, Clinical Association, Blockley Medical Association; Tuesday, May 8th, Pediatric Society; Wednesday, May 9th, County Medical Society; Thursday, May 10th, Pathological Society; Friday, May 11th, Psychiatric Society, Northern Medical Association, Atlantic County Medical Society.

**Examination of Food Handlers in the Borough of Richmond.**—Arrangements have now been made for the required examination of all food handlers at the Department of Health Clinic at Bay and Baltic streets, on Monday, Wednesday, and Friday afternoons from 2 to 4 o'clock. All food handlers who so prefer may, of course, be examined by their physicians. In this case the physician must fill out a prescribed form obtained on application to the Division of Industrial Hygiene, 139 Centre Street, New York City.

**Dr. W. J. Mayo May Head Hospital Unit.**—The Mayo Foundation of the University of Minnesota has offered the government for foreign service a fully equipped field hospital unit, headed probably by Dr. William J. Mayo, of Rochester, Minn. The organization is known as the University of Minnesota Field Hospital Unit and has 500 tented beds of the latest model, full surgical apparatus and a portable shelter for an operating room. Dr. E. H. Plummer and Dr. Charles Judd have enrolled in the medical staff. Dr. Frank C. Todd, of Minneapolis, the leading eye specialist of the Northwest, has given up a yearly practice of \$80,000 to help save the eyesight of wounded soldiers. Dr. H. Robertson, head of the bacteriological department of the University of Minnesota Medical School, and Dr. S. Marx White, stomach and heart specialist, have enlisted.

**Six Base Hospitals of Red Cross Ordered to Front.**—At the request of the British commission, six base hospitals, organized by the Red Cross for service in the medical department of the United States Army, have been ordered to active duty abroad. The first units are expected to leave within ten days and the last within twenty days. The base hospitals to go will be the Base Hospital No. 2, organized at the Presbyterian Hospital, New York, Dr. George E. Brewer; No. 4, organized at Lakeside Hospital, Cleveland, Dr. George W. Crile; No. 5, organized at the medical school of Harvard University, Dr. Harvey Cushing; No. 10, organized at the Pennsylvania Hospital, Philadelphia, Dr. Richard H. Harte; No. 12, organized at Northwestern University, Evanston, Ill., Dr. Frederick Besley; No. 21, organized at Washington University Hospital, St. Louis, Dr. Frederick T. Murphy.

**Röntgenologists Offer Services.**—At the request of the Council of National Defense a Committee of Preparedness was appointed by the president of the American Röntgen Ray Society. This committee consists of the following members, Dr. Lewis Gregory Cole, Dr. George W. Holmes, Dr. Leopold Jaches, Dr. Willis F. Manges, and Dr. Harvey W. Van Allen, with an auxiliary advisory committee on which the following men have been asked to serve: Dr. Frederick H. Baetjer, Dr. David R. Bowen, Dr. Eugene W. Caldwell, Dr. James T. Case, Dr. William D. Coolidge, Dr. Arthur C. Christie, Dr. H. W. Dachtler, Dr. Kennon Dunham, Dr. Arial W. George, Dr. Alfred L. Gray, Dr. Roland Hammond, Dr. Preston M. Hickey, Dr. Walter C. Hill, Dr. P. W. Huntington, Dr. George C. Johnston, Dr. Frederick Manwaring Law, Dr. Henry K. Pancoast, Dr. George E. Pfahler, Dr. John S. Shearer, Dr. Clarence E. Skinner, Dr. Albert Soiland, and Dr. W. H. Stewart. The work planned by this committee has three divisions: 1, The canvass of the country for a complete list of medical men available for military röntgenology; 2, The establishment of schools in different geographical centres where uniform instruction in military röntgenology may be obtained; 3, preparation of a manual on military röntgenography. Men willing to volunteer will kindly communicate with the Committee on Preparedness of the American Röntgen Ray Society with headquarters at Cornell University Medical College, First Avenue and Twenty-eighth Street, New York.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By LOUIS T. DE M. SAJOUS, B. S., M. D.  
Philadelphia.

(Continued from page 755.)

Among the more commonly used analgesics, salicylic acid and its derivatives, the cost of which greatly increased after the beginning of the war, require special consideration. In the first half of the year 1916, salicylic acid attained a price nearly seven times that of August, 1914, and in the case of some of its derivatives the percentage of increase was even greater. Since that time, however, a recession in these products—except special compounds of a proprietary nature—has taken place, which has continued in the last few months. The prices in March, 1917, were, in fact, lower than those of October, 1914.

Comparing the cost of the pure acid with that of its salts and other allied substances, we find sodium salicylate and the acid practically equal in price, weight for weight, in spite of the fact that the salt contains only about eighty-five per cent. as much of the active salicyl radical as the pure acid. The salt being, however, less irritant when taken internally than the acid, the former is, as a rule, given preference for therapeutical purposes. Strontium salicylate and ammonium salicylate are practically equal to the sodium salt in price, while lithium salicylate, no longer recognized in the U. S. Pharmacopœia, is nearly twice as expensive. The synthetic oil of gaultheria (methyl salicylate) closely follows sodium salicylate, but the natural oil is, as usual, over four times as costly. Salol (rhenyl salicylate) early in 1916 rose to a price nearly thirteen times that prevailing before the war, and has not receded quite as rapidly as the other salicylates, being still about fifty per cent. more expensive, weight for weight, than the sodium salt. Salicin, the glucoside from willow bark, yielding only forty-five per cent. of salicylic acid, was even in 1914 about four times as costly as sodium salicylate and diverging from the synthetic salicylates in general, has since continued to advance, a ratio of fifteen to one having recently been awarded. While salicin has been warmly recommended by some on the ground that it irritates the stomach less than other salicyl products, it is probably not as efficient as the customary salicylates because the conversion of it into salicylic acid by oxidation in the system is frequently only partial. From the standpoint of cost it is disadvantageous. The least expensive and most satisfactory drugs for a pure salicylic effect are thus the salicylates of sodium, strontium, and menthyl.

Comparing the salicylates, if used to relieve pain, with the analgesics already discussed—acetanilid, antipyrine, and acetphenetidin—we find sodium salicylate, weight for weight, about twice as expensive as acetanilid and, considering the difference in the dose, four to six times as expensive. Yet, on the

whole, the present cost of sodium salicylate is not so high as to be burdensome—except where very large quantities are to be purchased—and it would be entirely inadvisable to attempt to substitute the more toxic acetanilid for salicylates, especially in the rheumatic states for which the latter are especially suited. When we compare sodium salicylate with the now exorbitantly expensive antipyrine and acetphenetidin, however, we find it to be only about one fifteenth to one twentieth as costly as these agents, and the expediency is suggested, in cases where the use of acetanilid as an analgesic seems contraindicated because of asthenia, old age, impaired oxygenation, or other unfavorable condition, of briefly trying out the salicylates before turning to the two more costly agents, thus taking into account the possibility that the cause of the pain may be such as can be relieved by salicylates.

Of special interest in connection herewith is the situation of acetylsalicylic acid, which acts more strongly as an analgesic and antipyretic in nonrheumatic states than the ordinary salicylates. This difference, according to Sollmann, may be due to the circumstance that the acetyl compound, while still undecomposed, enters the nerve cells more easily than the salicylates proper. While frequently dispensed in impure form in the past, this drug, made by various reputable manufacturers now that the patent rights on the original product, aspirin, have expired, is available in good quality at a relatively low price. While still eight times as expensive, weight for weight, as acetanilid, and hence, dose for dose, about twenty times as expensive, it is only one third to one fourth as costly, dose for dose, as antipyrine or acetphenetidin, and can often be advantageously substituted for these two drugs, though admittedly inferior to them where the pain to be relieved is severe. In cases in which there is no contraindication to acetanilid, the latter will still, of course, prove much more easily available than acetylsalicylic acid, and, as in the case of antipyrine and acetphenetidin—as explained in a preceding issue—there seems little reason why the inexpensive acetanilid, ordered by the physician himself with proper cautionary directions to the patient, should not be substituted for the other remedies where economy is an object. While undoubtedly a safer drug than acetanilid, acetylsalicylic acid is by no means free of the possibility of occasionally inducing alarming toxic manifestations, even in small doses. It has been found by Hanzlik (1913) to be about one and a half times as toxic in man as sodium salicylate.

The committee on standardization of pharmaceutical preparations, chemicals, and disinfectants, in revising the table of requirements for the Medical Department of the United States Army, recommended that acetphenetidin be eliminated and acetanilid supplied in its stead, a recommendation which was, we understand, adopted by the Medical Department.

(To be continued.)



**Willow Fracture Splints.**—A. E. Robert (*Presse medicale*, March 5, 1917) reports good results from the use of gutter shaped fracture splints made of willow rods. Splints were prepared for various portions of or for entire limbs, flat strips of flexible wood being used to form an external frame for each splint, and a series of willow rods placed parallel between them to form the body of the splint, united and held at definite intervals by flat braids of slender willow twigs. Cushioned with a layer of cotton, these splints are fastened round the limb with one or more tapes and covered with a bandage. Use of such splints for immobilizing fractures of the upper or lower limbs with much loss of bone tissue, after resection of the elbow, as well as in various joint injuries, showed them to be sufficiently rigid longitudinally to hold the parts firmly, while advantageous in the softness and elasticity of their walls. Though immobilization with these splints is not as precise as with plaster apparatus, it is much superior to that obtainable with the various metallic gutters or other splints commonly employed. Their unusual lightness is a matter of great comfort to the wounded, and they are very inexpensive. At the extreme front, near the firing line, they can be made available in large numbers, likewise by reason of their light weight, and in any situation where facilities for applying plaster casts are not at hand, they are superior to all other methods of immobilization so far used. In hospitals they are valuable in affording a firm retentive dressing, with the least inconvenience to the patient, where the plaster or continuous extension methods are not essential.

**Treatment of Gunshot Wounds of the Abdomen.**—A. L. Lockwood, C. M. Kennedy, and others (*British Medical Journal*, March 10, 1917) summarize their results in a series of 500 cases, 356 of which were operated in. They emphasize the fact that the earlier after injury the operation is performed, the better is the prognosis. It also materially improves prognosis if an hour or two is allowed for resuscitation prior to operation, during which saline may be given subcutaneously or by vein, warmth applied, an opiate injected, and camphor in oil given subcutaneously if a stimulant is required. Prior to operation it is well to give omopon and scopolamine. The best anesthetic was found to be warm ether and oxygen. For injuries of the small intestines either pursestring suture or resection should be employed, the former being given preference wherever possible. When resection is required end to end anastomosis seems to give better results than lateral and is more rapid. Intestinal paresis is effectually prevented by milking the intestine from just above the distended area to below the line of suture. Wounds of the solid viscera are usually best if left alone unless they are very much soiled. The diaphragm may be wounded and give a bad prognosis unless repaired at once, when the outlook becomes very good. Extravasated material is best removed by mopping with gauze wrung out of hot saline. Saline should never be used for lavage of the abdominal cavity. In general the abdomen should be closed and drainage tubes should never be inserted down to the site of

the internal injury. Fowler's position combined with pelvic drainage should be employed wherever possible after bad peritoneal soiling. In postoperative management camphor in oil is the best cardiac stimulant; pituitrin intramuscularly in half ampule doses aids peristalsis and eserine is also often of value for this purpose. Two hundred mils of saline, with or without thirty mils of brandy, should be given by rectum every three hours as a routine in all cases and continued for two to three days. Small sips of brandy or champagne, or half a mil of tincture of iodine in four mils of water usually controls hiccoughs. With these measures nearly fifty per cent. of the patients operated upon recovered. J. Fraser and Hamilton Drummond also report their experiences in 300 similar cases, along with the results of some experimental observations on animals, and reach conclusions essentially like those just recorded. They differ strikingly, however, in advocating lateral in preference to end to end intestinal anastomosis.

**Treatment of Septic Wounds with Bismuth Iodoform Paste.**—Louisa Garrett Anderson and Helen Chambers (*Lancet*, March 3, 1917) have secured extremely favorable results from the use of this dressing material in a series of 400 septic wounds. They find that its application maintains a continuous inhibition of bacterial growth with the least disturbance of the tissues and of the patient. The dressing needs to be changed only at intervals varying from one to two weeks. The paste acts as a lymphagogue, washing the wound from within outward; it does not interfere with the escape of discharge; granulations grow freely in its presence; drainage tubes are not needed; septic wounds heal under it nearly as fast as nonseptic ones; and bone union is rapid. Its application materially reduces the length of the febrile period in such severe conditions as infected compound fracture. No cases of tetanus occurred in the series of 400 cases of war wounds, the same was true of gas gangrene, and there was but one case with secondary hemorrhage. Several cases of "blue gums" developed under it and when large amounts were used at first there was one case of mild iodoform poisoning. With the limitation of the amount of the paste used in any case to ten grams or less these occurrences were eliminated. The formula of the paste is:

R Iodoformi, .....	60 g.
Bismuthi subnitrat, .....	30 g.
Liquidi petrolati, .....	q. s.

The paste serves best when made the consistence of soft butter or thick cream. Before its application all loose and dead or necrosed tissues should be cut away under an anesthetic, and the wound thoroughly cleansed, and swabbed with alcohol. Then the paste should be thoroughly rubbed into the tissues and a little left at the bottom of the wound, which is then closed with interrupted stitches and covered with dry gauze. Bacteriological and chemical studies on the action of this paste were made and showed that the bactericidal action was due to the liberation of free iodine and nitric acid. It was found possible to reduce the amount of bismuth used without diminishing the activity of the paste.

**Absorption of Mercury in Inunction Treatment.**

—Udo J. Wile and Joseph A. Elliott (*Journal A. M. A.*, April 7, 1917) review the conflicting evidence as to the mode of absorption of mercury following inunction and record the results of their own carefully conducted experiments. They conclude that in the inunction treatment mercury is absorbed both by volatilization and directly through the skin. The nonvolatile salts are absorbed through the skin only and this is far slower than is that following the use of the volatile preparations. Mercurial ointment is absorbed more rapidly than calomel ointment, but the latter is absorbed in part by volatilization and is a much cleaner preparation and may prove suitable for use in place of the mercurial ointment. Certainly the volatile preparations should be given preference over the nonvolatile ones, as the therapeutical effect of mercury is probably in proportion to the rapidity and degree of its absorption.

**Lumbar Puncture for the Relief of Teething.**

—T. Jackson (*Indian Medical Gazette*, February, 1917) reports the case of a teething child five months old who presented fever with cerebrospinal symptoms which could not be accounted for. Finally lumbar puncture was performed, about four c. c. of cerebrospinal fluid were withdrawn and two c. c. of normal saline injected. Beyond being slightly blood tinged the cerebrospinal fluid appeared to be normal and proved to be sterile and otherwise normal on microscopical and cultural examination. On the following day the temperature became normal and there was no return of fever or convulsions. He thinks it not unreasonable to assume that the trouble was cerebrospinal irritation due to teething, and that the withdrawal of a small amount of cerebrospinal fluid in some way relieved the irritation and consequently the symptoms.

**Suggested Formulas for Paraffin Films.—**

Torald Sollmann (*Journal A. M. A.*, April 7, 1917) studied the physical properties of a series of twenty-eight paraffin mixtures in addition to those of ambrine. He points out that the significant properties of such preparations seem to be their melting points, hardness, fragility, and ductility. It may be advisable to have films of several degrees of hardness for different uses, and such are readily obtainable from appropriate mixtures. Ordinary paraffin with a melting point between 48° and 53° C. has the essential mechanical properties of ambrine. Greater pliability is obtained from a mixture of paraffin with from one to three per cent. of Trinidad or Bermudez asphalt cement or one per cent. of Texas asphalt. Preparations of increasing softness are represented by the following combinations: Paraffin, ten parts; spermaceti, one part; paraffin, ten parts, and oil of theobroma, one part; and similar proportions of paraffin and yellow petrolatum. It is suggested that clinical trials be made with these different formulas to determine their value and that later experiments be made with the addition of such medicinal agents as resorcin, eucalyptus, scarlet red, etc. By such a plan of investigation definite and valuable conclusions can be reached, such as are not to be secured from the use of secret preparations, the unknown composition of which effectually prevents the possibility of modification in making improvements.

**Autocondensation for High Blood Pressure.—**

Noble M. Eberhardt (*Chicago Medical Recorder*, March, 1917) believes that many cases of high blood pressure can be much benefited by the use of the method of autocondensation in which the patient becomes one layer of the condenser for the high frequency current. To obtain successful results a sufficient dose must be given, and this is only possible by employing some method of measuring the dose. For this purpose the author suggests employing as a unit 1,000 volts in one minute at 100 milliamperes. The average dose should be 2,500 units, increased gradually to 5,000 or 7,000 units or more. The commonest cause of failure is the administration of an insufficient dose. The best way of increasing the dose is by lengthening the duration of the treatment. Care should be observed in the treatment not to reduce the systolic pressure so much faster than the diastolic as to lower the pulse pressure to or below twenty mm. of mercury. In the beginning of treatment the patient should receive six exposures weekly and the blood pressures be read at the end of each course of six to determine the need for increasing or decreasing the dose. If very slight reduction is all that can be obtained after adequate treatment the case is one of true arteriosclerosis, whether the peripheral arteries are palpably hardened or not. In such a case some reduction may be secured if the treatment is continued over several months. In any case when the pressures have been reduced to a point normal for the patient the treatments should be given increasingly further apart, but should not be stopped for some time.

**Treatment of the Acute Stage of Poliomyelitis from a Neuroorthopedic Standpoint.—I.**

Strauss and P. W. Nathan (*Medical Record*, April 7, 1917) consider treatment from three aspects: the stage of onset with a focal myelitis, the stage of repair, and lastly the stationary period. In the first stage the most important indication is for absolute rest which is usually obtained without any special measures, as the patients are nearly always somnolent. Tendency to contracture must be counteracted by removable plaster splints or other appliance, while cases without hyperesthesia or spasticity require absolutely no retention. As to the second stage we have absolutely no means of influencing the pathological process in the spinal cord, but as soon as the active stage has subsided and hyperesthesia has disappeared, the individual is carefully examined for signs of returning power and from time to time muscles previously flaccid show weak contractions, whereupon such muscles should be exercised a certain number of times a day. As soon as the child has recovered sufficiently from the general illness and there is not too much loss of power, he should be induced to stand and walk. Properly devised and adjusted braces do not hinder the excitation of the muscles nor immobilize them. Electricity has no effect whatever on the degenerated spinal cord cells and is of service mainly in inducing contractions in muscles in which voluntary contraction is impossible, and the writers are in doubt as to whether any real good is accomplished by it in poliomyelitis. Massage is condemned, as it does more harm than good in the delicate atrophied muscles.



**Treatment of Tabes.**—Ernesto Odriozola (*La Cronica Medica de Lima*, January, 1917) considers that great attention should be paid to the general hygiene and to the complications, pains being frequently benefited by the spraying of ether or ethyl chloride over the vertebral column or the application of the actual cautery. Internally one may give aspirin, pyramidon, phenacetin, or hypnal. In certain cases morphine may be required and the epidural administration of heroine hydrochloride five to ten mgm. may be tried. Santonin one centigram two or three times daily is recommended, taking care to avoid toxic action. The ataxia requires reeducation, genitourinary crises yield to morphine or heroine and hot baths, as do gastric crises. Whether or not one believes in the active luetic nature of tabes it is wise to give the arsenobenzol treatment, success depending upon the use of sufficient doses and prolonged treatment.

**Treatment of Furuncle.**—Douglass W. Montgomery (*Medical Record*, March 31, 1917) in reviewing 161 cases of furuncle found that constipation was very closely connected with the condition and therefore attention should be given to the intestinal tract both in prophylaxis and active treatment. Sugar and starchy foods should be used sparingly, while butter and milk, from their tendency to ferment in the bowel, are liable to cause cutaneous irritation. Vaccines may be of service and when used they should be autogenous and the dose should be large, Sutton advising an initial dose of 500 million increasing every four days up to 1,000 million. Yeast seems to be of value and may get its virtue from a vitamine which is of the pyrimidine group and which is present in the amount of 2.50 grams in one hundred kilos of yeast, or it may be that the laxative action is the main factor.

**Nature and Treatment of Sciatica.**—Cyrus L. Pershing (*Colorado Medicine*, March, 1917) draws attention to the fact that many cases of sciatica are due to some bony lesion or displacement in the region of the sacrum, or to other organic cause, the correction of which is the only means by which cure can be obtained. In the cases of true sciatic neuralgia or neuritis, syphilis or some form of toxemia should be sought as the cause and treatment directed to its cure. In the so called idiopathic cases the patient should be placed at rest in bed with the thigh and knee supported in slight flexion; elimination should be promoted; a light diet prescribed, and salicylates given in large doses. Counterirritation may be applied along the course of the nerve by means of small cantharides blisters or the light use of the cautery. In the event of failure of these means one may try injection of the nerve with a solution of novocaine of the following composition:

R Novocaine, .....	0.1;
Normal saline, .....	100.0.

Sterilize by boiling, and when cool add 0.6 to 1.0 mls. of one to 1,000 solution of epinephrin.

About sixty mils of this solution should be used. If this injection of the nerve trunk fails then one may try the epidural injection of two mils of a one per cent. cocaine. This injection should be made in the midline three inches above the tip of the coccyx so as to enter the sacral canal.

**Mixed Treatment of Malaria with Arsenic and Quinine.**—Ravant and Kerdrel (*Presse medicale*, March 15, 1917), reflecting on facts recently learned with regard to syphilis and amebic dysentery, were led to lay stress on the similarity of the causal parasites in these two affections and in malaria. All are protozoa which become deeply encysted in the organism. The chronic forms of the disease are interrupted from time to time by acute paroxysms due to proliferation and emergence of the causal organisms from the deep foci. In each of the three diseases the treatment requires to be systematically prolonged by successive series of "cures"; with this end in view the combined use of two active drugs greatly augments the efficacy of either one administered alone. The mixed treatment for malaria the writers recommend includes the giving of ten intravenous injections of 0.15 to 0.3 gram of novarsenobenzol every three days. In the intervals between these injections quinine is given intravenously or by mouth. In fifty-three patients the first treatment was uniformly followed by cessation of paroxysms which had been occurring for months and had resisted all other forms of treatment. Good results were also obtained in cases of hematuria and hematemesis of malarial origin. The general condition of the patients was simultaneously much improved, several kilograms of body weight being gained in a few weeks. This combined medication is believed to the most active method of treatment available for rebellious cases.

**Boric Acid in Septic Infections.**—Edward H. Ochsner (*Illinois Medical Journal*, March, 1917) cites experiments and clinical findings which seem to prove that when a saturated solution of boric acid is used as a moist dressing there is an appreciable absorption of the agent into the circulation, but that in the ordinary strength of two per cent. this absorption does not seem to occur. The clinical value of this absorption lies in the demonstrated action of boric acid in the circulation as a factor in lowering the virulence of pathogenic bacteria. Streptococcus pus withdrawn from a patient with a septic infection of an extremity treated with a saturated solution of boric acid showed a greatly diminished toxic power when injected into guineapigs and mice. Boric acid is contraindicated in malignant edema, tuberculosis, and impetigo contagiosa only, and the maximum good is to be derived from its use with the infected limb elevated and with the muscles around the joint in equilibrium, and with due attention to the eliminative functions of the bowels, lungs, skin, and kidneys. Before the incision of a part it is advisable where possible to apply an Esmarch constrictor proximally to the point of incision and after the incision is made to pack with a strip of gauze saturated with tincture of iodine; in this way the Esmarch blocks the veins and lymphatics until the iodine blocks the cut ends of the vessels by the formation of thrombi. It is important also in making an incision to make the cut within the line of demarcation or distal to it. It is usually well to make a culture of the pus at the time in order that a vaccine may be prepared later if necessary. Lymphatic glands should not be excised if merely enlarged and not suppurating.



**Treatment of Chronic Peptic Ulcer.**—A. Henry Dunn (*International Journal of Surgery*, March, 1917) points out that seventy-one per cent. of cancer cases present pathological findings of preceding ulcer. He regards most of the internists' cures as merely alleviation of symptoms, and has observed a number of patients who had been treated by the Sippy method and regarded as cured. At the subsequent gastroenterostomy an active ulcer was demonstrated. According to the Mayos, the percentage of cures in gastric ulcers, following surgical intervention, is very high, about sixty-five per cent., and in duodenal ulcers the percentage is still greater, ninety-eight per cent. In view of the fact that operative interference is followed by such excellent results, he recommends that surgical treatment be resorted to in case two months' treatment does not materially improve the patient's condition. The exact surgical procedure depends on the surgeon. The ulcer may be cauterized and a posterior gastroenterostomy performed, or a pylorotomy may be indicated. Surgical intervention means restoration to health within six weeks and a return to a regular diet in about two weeks. The teeth, gums, tonsils, or other possible sources of infection should receive attention in every case, whether medical or surgical.

**Iodine Chloroform Solution in Military Surgery.**

—A. Chassevant (*Journal de médecine de Paris*, February, 1917) points out that whereas tincture of iodine and Lugol's solution tend to kill the tissues to which they are applied, a solution of iodine in chloroform, preferably one in thirty, can be brought in contact even with the most delicate mucous membranes or open surfaces without causing desquamation or destructive action. While a simple serous exudation alone results when it is applied to wound tissues, the pus corpuscles, degenerating cells, and bacteria all become impregnated with the iodine and are eliminated. The solution has proved useful in the author's hands in the last two years for arresting wound suppuration and accelerating healing. It is not caustic and can be applied to severely inflamed wounds without causing pain; in fact, it often allays burning sensations in wounds. In burns, Chassevant, after opening the blisters and removing dead epidermis, paints the iodine chloroform solution over the burned surface and a one centimetre zone around it, and then covers the area with a melted mixture of spermaceti, white wax, and paraffin in equal parts. Pain is thus immediately allayed and epidermal covering favored. This treatment was used with satisfaction even for large burns, and seemed to prevent subsequent keloid formation and adhesions between adjacent burned fingers. In varicose ulcers, especially if there be no trophic disturbance, rapid healing is induced by the same treatment, as also in decubital ulcers. The solution is believed useful likewise for the prevention of these ulcers. It is well borne by the pharynx and tonsils, into the recesses of which it penetrates owing to the volatility of both constituents. It destroys bacteria in these localities more rapidly than the well known iodine glycerin solution. It is devoid of caustic action because the iodine is ionized in it, as shown by the violet color, and is therefore to be preferred to the brown iodine preparations all of which are caustic.

**Vaccine Treatment of Coryza.**—H. Leland Fifield (*Medical Record*, March 10, 1917) recommends the taking of an x ray plate of the sinuses in the headaches and neuralgia incident to coryza, especially recurrent cases, and the use of autogenous vaccines in treatment. Fifield's rule in vaccine treatment is to begin with three minims of vaccine followed by five minims at the end of forty-eight hours if there is no reaction, and then gradually to increase up to ten minims, avoiding a reaction if possible.

**Vaccine Therapy in Gonorrheal Affections.**

—Mario Copelli (*Giornal Italiano delle Malattie Veneree e della Pelle*, February 12, 1917) reports eighty-four cases of acute and subacute gonorrheal urethritis treated solely by vaccines with sixty-four cures or seventy-six per cent.; thirty-two cases of chronic urethritis with the remarkable record of thirty-one cures; twenty-seven cases of epididymitis with twenty-six cures, and five cases of gonorrheal rheumatism, in all of which cures were effected. Failures Copelli considers to be due to the fact that a vaccine is not a chemical product of stable composition which constantly produces a determined action on the human organism, but that it is a substance which varies in its properties and which requires the cooperation of certain elements furnished by the human system. These elements in turn may vary in different subjects and cannot always be determined or modified. The importance of complete rest in bed is clearly shown by these series of cases, as the results were much more uniformly successful in those patients treated in the wards of the hospital than in those coming to the clinic.

**The Aftercare of Infantile Paralysis.**

—Robert W. Lovett (*Journal A. M. A.*, April 7, 1917) states the problem as being the restoration of the affected muscles to the maximum ultimate efficiency. Treatment to this end should not begin until all tenderness of the affected parts has disappeared and should be guided in general by the determination of the precise degree of involvement of each muscle or muscle group. Fatigue must be sedulously avoided and braces should not be used except for the sake of preventing deformity. Warm saline baths should be given daily and special care taken not to let the affected parts become chilled. Prolonged recumbency or sitting tends to the development of contractures and should not be permitted. The upright position must be encouraged after two or three months and if necessary its maintenance must be aided by light braces, which should, however, be worn only when the patient is standing or walking. In general there is grave risk in permitting walking during the first year, especially in cases with slight involvement. Fixed deformity should be corrected by some suitable method prior to developmental treatment. If properly controlled and skillfully given massage is of some value. Electricity is usually more likely to be harmful than beneficial. The one most effective method of treatment is the practice of muscle training, the degree and duration of the exercises being carefully adjusted to the condition of each muscle. This form of treatment must be given by the physician or by one specially trained

# Miscellany from Home and Foreign Journals

**Pathological Features of Concussion of the Labyrinth.**—Prenant and Castex (*Paris médical*, March 10, 1917), in view of the difficulties attending careful pathological study of the human internal ear after labyrinth concussion due to explosive detonations, undertook experimental observations in rabbits and guineapigs on this question. Deafness in these animals having been produced by close exposure to discharged cannon, the middle ear was found uninjured, as a rule. The Bárány test was negative in ten instances, and dizziness was always produced with greater difficulty than normally. Autopsy showed absence of all effusion in the middle ear or brain. The most frequent and characteristic lesions were dislocations of the cochlea, especially at the first and second spiral turn. The organ of Corti itself was often severely injured, and in several instances recent marked hemorrhage in the vicinity was noted. An apparent atrophy of the cells of the organ of Corti was sometimes noticeable in the first few spiral turns. The cells of the spinal ganglion of Rosenthal presented an unusual shrunken appearance, and in one case there was ascending degeneration of the cochlear nerve. The vestibular organs were always intact. The injuries to the cochlea account for the gravity of war deafness.

## **Intermittent Type of Fever of Syphilitic Origin.**

—A. Netter (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, November 23, 1916) reports the case of a woman of forty years whom he had begun to treat twelve years before for febrile paroxysms occurring daily at the same hour, beginning with a chill and followed by sweating. The spleen was manifestly enlarged, and its lower border descended at the time of each attack. Quinine was used without effect, but though the blood showed no plasmodia, cinchona, methylene blue, and arsenicals were tried in succession without permanent benefit, the attacks continuing and resulting in progressive debilitation and loss of weight. Recently the author was called to see her because of joint pains, especially in the feet and knees. A large, uneven growth on the left clavicle was simultaneously noted, together with irregularities of the tibiae and an enlarged metatarsal. The daily fever still persisted and the spleen was very large. After the second injection of mercury benzoate the fever ceased. Three weeks later the spleen and clavicular gumma had diminished by three fourths. The Wassermann was strongly positive. A second patient, a man of thirty, had been suffering six months from a remittent type of fever with spells of copious sweating, and had been treated by various physicians for typhoid fever, paratyphoid fever, and Malta fever. Some months after the beginning of fever the patient had manifested pain at one of the costochondral junctions and later, pain at the extremity of one of the phalanges. Again the spleen was distinctly enlarged. A Wassermann was finally done, revealing the true nature of the condition, which was promptly improved by antisyphilitic treatment.

**Diagnosis of Syphilis of the Nervous System.**—Edward Livingston Hunt (*Medical Record*, April 7, 1917) describes the thorough diagnosis in these cases as necessitating six things: knowledge of certain facts, a clinical examination, a blood examination, a lumbar puncture, an x ray picture, and common sense. Facts to be remembered are that syphilis is more common than is generally supposed, that tabes and paresis are now recognized to be the direct results of lues, that the treponema has been found in the aorta and the brain of the parietic, that no age is exempt, and that primary manifestations are sometimes absent, while infection of the nervous system may be present immediately after infection. The blood examination consists mainly of the Wassermann test, but if negative it should be done several times close together. Lumbar puncture is essential and the number of cells is more important than the varieties, while the colloidal gold test should be done in every case since it not only is pathognomonic of lues but it also differentiates the different varieties of nervous system infection. X ray examination of the chest may reveal an unsuspected aneurysm or aortitis.

**Puncture Headache.**—Charles L. Dana (*Journal A. M. A.*, April 7, 1917) points out that this symptom is a product of modern diagnostic methods and, while not a serious condition, it is a very common sequence of diagnostic lumbar puncture. The headache may begin directly after the puncture, but it is commoner for it to begin the next day when the patient is allowed to get up. The pain is diffuse and bilateral, worst over the brow or occasionally the occiput. There may be nausea, violent vomiting, giddiness, some mental confusion, and faintness. The symptoms are usually increased by exercise and diminished by lying down. The condition usually lasts remittingly for five to six days, but it may be prolonged to two or three weeks and accompanied with cerebral dysthesia and confusion. The symptom is commonest in those with normal fluids under low pressure, in young adults, in women, in nervous and highstrung persons, and in the anemic. There is little difference made by the amount of fluid removed within the limits of four to ten mils. The removal of fluid probably diminishes the water pad of the brain and permits that organ to rest on the bone with the consequent irritation of the dural fibres of the fifth and occipital nerves. The tapping also probably inhibits the secretory function of the choroid gland. The occurrence of puncture headache may be prevented or the headache may be relieved by removing slowly not more than two mils of fluid and keeping the patient in the horizontal position for three or more days after the puncture. Study of this form of headache throws some light on the possible mechanism of some headaches commonly encountered. Thus the pain of puncture headache is similar to that of the headaches of neurasthenia and of certain toxic and autotoxic states. It may be that some of these headaches are due to defective function of the choroid gland.



**Unusual Blood Crisis in Hemolytic Jaundice.**—W. Allan and R. F. Leinbach (*Journal A. M. A.*, April 7, 1917) report the occurrence, in a man twenty-five years old suffering from hemolytic jaundice, of a blood crisis marked by the features of pernicious anemia combined with those of leucemia. The blood examinations showed the intense reduction of both the hemoglobin and red cells with a color index of nearly three, erythroblasts, normoblasts, and megaloblasts, white cells up to 95,000 with relatively high polymorphonuclear count and a considerable number of neutrophilic myelocytes. During the crisis the patient was in deep stupor and showed very marked jaundice with an increased fragility of his red cells. The crisis lasted less than a week and within a month the blood picture had returned nearly to normal.

**Infectious Jaundice.**—G. V. Bonnini (*Gazzetta degli Ospedali e delle Cliniche*, March 4, 1917) finds that the jaundice encountered in the Italian army in the present war is of an infectious type and is due to the *Spirochæta icterohæmorrhagica* first described by Inada and Ido. This organism belongs to the same group as the spirochete of syphilis, and is found in the liver, the suprarenal capsules, and in the kidneys, but especially in the blood and urine. There may be a grave form with rapid development of symptoms, and in another form there are febrile recrudescences, which latter variety is the more frequent. Arsenical and mercurial preparations are of no avail in treatment, the best results following the administration of the serum of convalescents or of immunized goats. Alkaline solutions of the bicarbonate or sulphate of sodium are of great service in the elimination of waste products and a milk diet is advisable at the onset with the addition of ferments and greens and vegetable purees to prevent the dangers of loss of vitamins from too long an administration of boiled milk.

**Auscultatory Blood Pressure Determination.**—Jerome E. Cook and Albert E. Taussig (*Journal A. M. A.*, April 14, 1917) call attention to a possible source of error in this method of determining the systolic pressure, which may occur in about five per cent. of cases. This is due to the fact that the humming sound of the second phase may be extremely faint or entirely absent in these exceptional cases. This may lead the observer to mistake the sharp tap of the third phase for the first phase. This is especially likely to occur in the usual method of making these auscultatory readings which is to rapidly take note of the changes in sound as the pressure in the cuff is raised until a period of silence is reached. Then the observer allows the pressure to fall slowly and in this way the true first phase may be missed entirely. The error may be avoided by a simple modification of the method of taking the readings. One should first make a rough estimation of the systolic pressure by the palpation of the returning pulse and then apply the stethoscope and raise the pressure above the point thus determined. The error due to the mistaking of the third for the first phase in the absence of the typical sounds of the second phase may be very slight or may in some cases amount to fifty mm. Hg. The precise mechanism

of the period of silence is not certain as yet, but it is suggested as being due to the engorgement of the vessel and the final escape of some of the blood through forcing open the lower end of the vessel. This is borne out by experiments with isolated arteries, by the fact that silence during the second phase is most common in cases of high blood pressure, and by the fact that it can largely be avoided by allowing the pressure in the cuff to fall at a uniform but fairly rapid rate, thus preventing the development of marked engorgement.

**Influence of Drugs on Skin Reactions.**—Kolmer, Immerman, Matsunami, and Montgomery (*Journal of Laboratory and Clinical Medicine*, March, 1917) call attention to the fact that physicians have not realized as a rule that the oral administration of certain drugs may influence skin reactions to the extent of increasing their degree and severity of producing well marked papular or pustular reactions in the skin of persons who did not react to the injections in preliminary tests. As a result of their investigations they found that iodides, particularly potassium iodide, influenced the luetin intracutaneous tests to a marked degree. Normal, nonsyphilitic persons, reacting negatively to the luetin test, may show marked reactions when tested after the oral administration of sixty or more grains of potassium iodide. It was noted, however, that the cutaneous tests are not as readily influenced as the intracutaneous. The use of potassium iodide also increased the tuberculin reactions in persons shown to be sensitive. The authors believe that this action of the iodides is responsible for the discrepancies in the results that have been reported concerning the luetin reaction.

**Cultivation of a Micrococcus from the Blood in Measles.**—Ruth Tunnelliff (*Journal A. M. A.*, April 7, 1917) cites the finding of a virus in the blood of measles patients by Hektoen and by Anderson and Goldberger, although these observers did not succeed in isolating an organism. The author made large series of aerobic and anaerobic cultures from the blood in a series of fifty patients in the preeruptive and eruptive stages of measles and in five cases when the rash was fading. In the anaerobic cultures from forty-two of the early cases a small micrococcus was found. The numbers of this organism varied with the stage at which the cultures were taken, thus in the very earliest cases, a few hours after the first appearance of Koplik's spots, there were but few organisms; shortly before the appearance of the exanthem the colonies were numerous; their numbers then began to fall rapidly and they disappeared from the blood when the rash began to fade. Some of the strains isolated became aerobic in subcultures, others remaining strictly anaerobic. Similar organisms were isolated from the throats of all the patients examined; as well as from the noses and eyes, and from the discharge from the ear in one case. The cultural and morphological characteristics of the organism were carefully studied and the organism was found to pass through a Berkefeld N filter. It proved resistant to cold and to glycerin, but less so to drying and heat of moderate degree.



**Provocation of the Luetin Reaction in Nonsyphilitic Patients.**—H. N. Cole and H. V. Paryzek (*Journal A. M. A.*, April 14, 1917) review the literature relating to the occurrence of skin reactions indistinguishable from the luetin reaction in cases of old syphilites after the injection of a variety of foreign substances including the luetin "control." They then present the results of their own series of observations on nonsyphilitic persons tested with luetin. Two normal persons gave pustular reactions with the control test; sixteen persons gave positive luetin reactions out of a total of eighteen taking potassium iodide, the most marked reactions in these occurring in patients who had taken from 200 to 600 grains of the iodide. Other salts than potassium iodide were also found to provoke the reaction in nonsyphilitics; thus sodium bromide gave positive reactions in all three cases tested, potassium nitrate in six out of eight cases, and calcium bromide and sodium iodide in each of the cases receiving these salts.

**Renal Insufficiency and Gastrointestinal Disturbances in Military Practice.**—C. Mattei (*Paris médicale*, March 17, 1917) discusses a number of cases with symptoms of severe acute gastroenteritis due in particular to renal insufficiency, encountered in a French military hospital. The illness in this type of case comes on either suddenly or gradually, the initial symptoms being mild diarrhea, nausea, headache, and backache, without fever. In the more rapid cases copious vomiting appears, with grayish or yellowish serous stools, severe cramps, violent headache, oliguria, and marked prostration. Slight cyanosis is noted on admission, the extremities are cold, the pulse cannot be counted, and the patient hardly answers when spoken to. The abdomen shows no special areas of tenderness, the liver dullness is usually diminished in size, and the catheter may yield only 100 c.c. in twenty-four hours. A few of these patients die within one or two days. In the majority, the earlier violent symptoms subside under rest, restriction to water, isotonic lactose solution, and heart tonics, but the patient's fate depends on whether the kidneys can recuperate and regain a salutary diuresis, or are unable to do so. In the desperate cases, hematemesis, melena, and coma are noted. In a slower form of the affection the initial manifestations are followed by incomplete paroxysms of diuresis alternating with diarrhea. The pulse is of high tension and arrhythmic, the patient is constantly somnolent, bleeds at the nose, and exhibits an inveterate anorexia, followed after some weeks by coma and death in spite of treatment. Other cases of the same type take a sudden turn for the better and recover. Laboratory tests showed that the condition in all these cases varies with the urea content of the blood. Blood, stool, and bile cultures were negative, excluding all infection in the bowel. Milder cases of the same type were likewise encountered, with a high blood urea content but sometimes complete absence of albuminuria. In the etiology Mattei believes most stress should be laid on severe infections earlier in life causing a latent renal insufficiency, with physical overwork as the immediate exciting factor. Exposure to cold is not believed an important cause, the cases met with having occurred in summer time.

**Rapid Examination of Occult Blood by the Benzidine Test.**—W. T. Vaughn (*Journal of Laboratory and Clinical Medicine*, March, 1917) draws comparisons between the guaiac and the benzidine tests and concludes that the latter is more easily made and is reliable. It does not seem too delicate a test, as meat fibres, pus, and the usual drugs and foods ingested do not interfere with the reaction. No reaction was obtained when tried after the ordinary hospital meat diet.

**A Metabolism Study of a Case of Leucemia during Radium Treatment.**—Arthur Knudson and Theodore Erdos (*Boston Medical and Surgical Journal*, April 5, 1917) find that the excretions of total nitrogen, urea, ammonia, and phosphates are enormously increased immediately after the action of radium in leucemia. The uric acid output is increased only slightly compared to the other nitrogenous constituents. Surface applications of radium over the spleen accelerates the disintegration of nuclein tissue, resulting in the above increases. The uric acid which would be expected to be formed by disintegration of nuclein is probably broken up further, so that it is not increased. The phosphates show the most remarkable results, increasing as high as four hundred per cent. at times, over the excretions at the beginning of treatment.

**Antitoxic Role of the Thyroid in Uremia.**—Rémond and Minvielle (*Bulletin de l'Académie de médecine*, March 6, 1917) report various types of experimental research conducted to elucidate this question. Rabbits subjected to bilateral nephrectomy showed a marked congestive reaction in the thyroid, adrenals, and liver, and in one instance hemorrhagic extravasations in the external parathyroids. In the thyroid the vesicles were found to occupy nearly the entire gland, with increased amount of colloid material; or the colloid had passed out from the vesicles along the intraalveolar spaces. The longer the period elapsing before death, the more pronounced was the thyroid reaction. Other animals were killed by puncture of the bulb at varying intervals after nephrectomy and uniformly yielded evidences of thyroid hyperfunction; the liver, however, was often congested even earlier than the thyroid. Experiments in which subacute renal inflammation was induced by deep cauterization or fractional doses of sodium cantharide showed hyperfunction of the thyroid and adrenals, together with cellular changes in the liver. Removal of both kidneys and adrenals, followed by death much sooner than after bilateral nephrectomy, caused a short period of activity of the thyroid, which, however, was soon exhausted. Removal of both kidneys and the thyroid afforded further evidence of the activity of the thyroid in antagonizing uremia; in these experiments the adrenals failed to react to the uremic intoxication. Simple removal of the thyroid was followed by histological evidences of lessened adrenal function and also by nephritic lesions. The thyroid apparently destroying the toxic substances in the circulation, the excess of these substances resulting from its removal is believed to have been responsible both for the kidney lesions and the depression of the adrenals. Further researches on the bearing of the parathyroids in connection herewith are in progress.

# Proceedings of Local and National Societies

## THE NEW YORK ACADEMY OF MEDICINE.

### SECTION IN GENITOURINARY SURGERY.

*Stated Meeting, Held December 20, 1916.*

Dr. A. R. STEVENS in the Chair.

**A Case of Extensive Ulceration of the Bladder with a Peculiar Postoperative History.**—This report was presented by Dr. VICTOR C. PEDERSEN and Dr. EDWARD C. TITUS. The history of the case was divisible into three periods, the first being five or six years in duration and extending up to January, 1916. The second stage continued from January to the summer of 1916, when an operation was performed, and the third period began in October when a second operation was performed.

**CASE.**—In the first period the patient, a woman, gave a history of pyelitis on the left side, treated with the usual expectant method and cured. Nevertheless, bladder irritation persisted. For reasons that were not explained, no complete cystoscopy was performed until she came under Doctor Pedersen's observation. The latter part of this first period was characterized by hemorrhage, tenesmus, and pain, accompanied with loss of weight and cachexia, although this latter was not of the cancerous type. Cystoscopic examination revealed an extensive ulceration of the bladder, running along the left ureter also. The bladder was contracted and held two and a half ounces. The rest of the mucosa was in a profound cystitis. Attempts were made to clear up the condition by irrigations and instillations of argyrol. After a while the cystitis was somewhat improved, but the hemorrhage continued. It was then decided to try x ray treatment, and the patient was referred to Doctor Titus for this purpose, but the treatment had no influence on the growth, though it was continued up to June. It seemed to stop the bleeding, however.

The patient was then operated upon. Doctor Pedersen cut down upon the bladder and liberated it fairly well from its bed, and found running up from both sides a decided infiltration and a deep involvement of the lymphatics, greater on the left side than on the right. The bladder was opened and Doctor Titus fulgurated it very thoroughly. In addition to the main ulcer other ulcers were scattered over the floor, and these two or three spots tended to verify the diagnosis. After that a cystic condition developed in the anterior wall of the vagina. This was opened, and two or three drams of fluid were withdrawn. This cyst has given no trouble since. Notwithstanding the deep ulceration, after the fulguration the bladder healed, and stayed healed. Doctor Pedersen said that he had never before seen that happen in a cancer. The woman went into the country, and was able to retain urine for two and a half hours at the present time.

Then something went wrong with the kidney, and she began to have attacks of pain. She was x rayed for stone, and it seemed certain that there was obstruction of the left ureter. She was cystoscoped, and a clean white scar in a very satisfactory condition was found at the site of the ulceration. The right ureter seemed to have been made more patent by the cicatrization of the bladder, whereas the left seemed to have retired into a cicatrix and to be double in its outlet. An effort was made to open it, but without success, and the obstruction continued. Thirty-six hours would elapse without pain, and then an attack would occur which would send the patient to bed. She was a hair dresser by occupation and was very anxious to resume her work, and was in no sense a malingerer. After several of these attacks Doctor Pedersen determined to cut down on the kidney itself, as most of the pain was there. He knew that the bladder was so contracted as to be practically misplaced, and that there would be considerable infiltration. It seemed possible that a calculus would be found which the x ray had not shown. The kidney, however, was found to be normal, except for congestion. When the ureter was opened four

or five inches below the pelvis a considerable amount of purulent urine escaped. An attempt was made to pass all known forms of dilators and catheters into the bladder, and at one time it was thought that a filiform had passed, but it had turned on itself and had come out in the ureteral wound. It was finally decided not to cut the ureter across and not to transplant it into the bowel, but an opening was left as a sinus. The condition cleared up, the fever disappeared, and the opening in the loin closed down to a sinus and so remains until she goes through a mild attack of colic, when it opens itself. The patient has improved and has made a very good recovery from two exceedingly threatening conditions.

Doctor Pedersen said that he would be pleased if anyone would suggest anything better that might have been done, up to the present time. On looking back, perhaps it might have been better instead of opening in the loin if he had gone down to the bladder and transplanted the ureter into the bladder higher up or into the bowel, but as the urine had gotten through he thought he could pass the catheter, or dilator and thus relieve the obstruction in the ureter, and also explore the kidney. Doctor Pedersen said that in January he was going to make another effort to improve her condition.

Doctor BARRINGER asked if the diagnosis was made by microscopic examination.

Doctor PEDERSEN replied that he did not take a specimen from the ulcer itself, for there was so much slough that he did not think it would have any value and the risk of rupturing the bladder was also great. He took a specimen from the neighborhood, and the report was only "infiltrated round cells."

Doctor PEDERSEN replied in the negative to a query as to whether there was any chance of the condition being specific.

Doctor TITUS said that it has been thoroughly established that the x ray, in full doses, possesses a decidedly hemostatic action, whether the malignant condition is in the breast, lungs, ureters, or elsewhere, and that the contractile effect of the ray on all cellular structures, by relieving pressure, obviates the symptom of pain. The case in question illustrated the benefits and limitations of the ray when used on neoplasms of mucous surfaces.

There are three degrees of fulguration: 1, desiccation or dehydration of the tissues, which is practically a coagulation, and which is the degree that should be used in all cavity work; 2, cauterization, and, 3, carbonization, which is used when profound action is desired. By using an arsenic point for the fulguration, it is possible to obtain a field of sterilization beyond the area fulgurized. The penetration of the arsenic ions is proportionate to the length of the spark and the strength of the current, metallic arsenic having been recovered from the tissues at a depth of three millimetres.

**Ureteral Calculus.**—Dr. A. R. STEVENS reported the following case:

**CASE.**—A man, fifty-two years of age, was admitted to Bellevue Hospital with a history of attacks of hematuria for a year. For about four months he had had occasional attacks of severe pain to the left of the umbilicus. There was no pain in the back, but apparently always at one spot in the lower left quadrant, sometimes radiating to the bladder. There was very little pus in the urine; no



tubercle bacilli; no macroscopic blood, but microscopically blood was found on several occasions. X-ray examination showed no calculus. Ureteral examination showed a slight infection of both kidneys, which were of the same functional value as demonstrated by the phthalein test and the urea output. An attempt was made to pass a wax tipped bougie up the left ureter, but the one employed would not go in. Other catheters would advance only four centimetres. At a subsequent examination, after some manipulation a No. 5 bougie tip catheter was passed by the obstruction. Thorium plates were made of the ureter and pelvis of both kidneys. The right side was normal; on the left side there was some dilatation of the kidney pelvis and the ureters down to about four centimetres from the bladder. There was apparently a vacuole in the thorium at the lower end of the dilated ureter, a large round space which allowed the x ray to pass through without a shadow. This was the main reason for the presentation of the case, as it seemed to be an unusual radiographic feature.

The man was operated upon through a Gibson incision, and the stone in the ureter was removed extraperitoneally. An interesting point in the operation was due to the failure to get near enough to the peritoneum, so that some of the transversalis fascia was dissected away with the peritoneum and the external iliac artery was drawn from the pelvic wall, which was rather confusing. Then by going nearer to the peritoneum, the operation proceeded without difficulty. The stone was located, and an attempt was made to "milk" it up the ureter, but as this failed an incision was made over the stone and it was removed. Urine leaked from the wound for a few days. Then a catheter was passed up and left in place for a day, and at the end of two weeks urine had stopped leaking entirely. The stone was examined chemically, and proved to be pure calcium urate; there were no phosphates nor oxalate.

**Renal Calculus with Negative Radiographic Findings.**—Dr. CHARLES GOODMAN presented a calculus composed of uric acid and urates, which he had removed on November 5th from a man in his seventy-second year after no less than six ineffectual attempts had been made to radiograph the stone.

**CASE.**—The patient was a man of moderate habits, the father of a large family, and with the exception of occasional pain in the right lumbar region, which had been treated for intestinal trouble, he had always enjoyed exceptionally good health. Six years ago, however, he had had an attack of colicky pain in the right iliac region, which lasted about two hours, and required two hypodermics for relief. He had had no urinary symptoms. About seven months ago, he had a similar attack, which was followed by hematuria extending over two days. During the succeeding six months these attacks became more frequent, so that shortly before the operation they were of almost daily occurrence. He complained of acute pain in the right iliac region, and had marked tenderness over the right kidney and iliac region. Examination of the urine on several occasions following these attacks of renal colic showed a large deposit of uric acid crystals. The administration of large quantities of alkaline mineral waters and alkalies did not seem to diminish the frequency of the attacks; and inasmuch as the attacks of pain had become more frequent and more intense in character, requiring large doses of morphine to control them, it was decided to operate in spite of the fact that the patient was over seventy and notwithstanding the repeated negative radiographic findings.

Owing to the marked tenderness over the kidney during the attacks and the fact that frequency of urination was not increased, Doctor Goodman was inclined to believe that there was a stone in the pelvis which was acting as a ball valve and bringing on the attacks of pain whenever it became impacted in the upper part of the ureter. After the patient was admitted to the hospital the ureters were catheterized, but no obstruction was found up to the pelvis of the kidneys. This further strengthened the belief that a large kidney stone was the cause of the trouble. A functional test of phenolsulphonephthalein showed that the left kidney was functioning to twice the degree of the right; there was an output of twelve per cent. on the right side

during the first hour, while the left showed twenty-four per cent. This gave assurance that the right kidney was the one involved, and that the pain was not referred from the left, as is sometimes the case in surgical conditions of the kidney.

Under local anesthesia, a lumbar incision was made, exposing the kidney, which was found to be small, with the pedicle and pelvis contracted and adherent to the surrounding structures, so that it was impossible to deliver it. In the pelvis a stone was felt. An incision was made in the anterior wall of the pelvis, and a calculus was dislodged with two tooth like prongs which were firmly embedded in the lower pole of the kidney. Although the pelvis was not incised, it is important to avoid probing the operation unnecessarily, there was practically no leakage from the wound.

Two weeks after the operation a lobar pneumonia with rusty sputum developed, but this was followed by resolution, and the patient was discharged after five weeks' stay in the hospital.

The case was of interest because of the negative radiographic findings in spite of the large calculus present in the kidney; the negligible amount of leakage of urine from the pelvis of the kidney following a large incision, and the age of the patient. The clinical evidence alone, rather than the laboratory findings, prompted the proper course of treatment. Doctor Goodman said that his personal experience coincides with that of many other observers, that there are many cases of nephrolithiasis which, on account of the chemical composition of the stone or for other reasons, do not give positive radiographic findings.

**Renal Tuberculosis.**—Dr. A. R. STEVENS reported the following case:

**CASE.**—The patient, a man fifty-four years old, as far as he was aware, was entirely well up to September 15, 1916. He had had no symptoms, had held his urine easily for six hours, and did not get up at night. Beginning in the middle of September, he had some frequency, and when he entered Bellevue Hospital on the 15th he was voiding every hour, day and night. An x ray taken at that time showed a shadow of the lower pole of the kidney, rather hazy in definition and with a difference in density in the different parts. Cystoscopy gave clear urine from the left kidney. At first it was not possible to pass a catheter in the right ureter. The patient was so much improved by staying in bed for a few days that he left the hospital, but he returned in two weeks with the urinary condition much worse, and was voiding frequently day and night; he also had much pain. Cystoscopy was done under spinal anesthesia, and indigo carmine was given intravenously. A specimen of bladder wall obtained by cystoscopic forceps was lost but it was finally possible to catheterize both ureters; the phthalein test was done later, so there were three functional tests to go by, all of which agreed fairly well, showing that the left kidney was in functional value equal to two and a half times that of the right. The left kidney gave no pus; the right gave pus, and a quantity of tubercle bacilli. The therapeutic indication was then quite clear, and the right kidney was removed.

Apparently there were no symptoms until the tuberculous process broke into the pelvis. The post-operative history was also interesting, as only ten days after operation the patient was able to hold his urine four and five hours.

It cannot be too strongly emphasized how often a tuberculous process can be mistaken for a stone. A shadow was found on several examinations in the lower pole of the kidney and corresponding to that shadow was a denser caseous mass at the lower pole of the kidney.

**Impacted Giant Vesical Calculus.**—Dr. CHARLES GOODMAN said that about a year and a half ago he was summoned by Doctor Robinson to



see a man who had had a most profuse hemorrhage from the urethra after an attempt at catheterization.

CASE.—The patient was fifty-six years of age and had been passing blood intermittently for over two weeks. For several days the attempt to pass water was accompanied by a great deal of pain in the region of the bladder. On this day he had not passed any urine for about twenty-four hours, and his physician attempted to catheterize him, but did not succeed in entering the bladder, and the instrumentation was followed by profuse bleeding from the urethra. When first seen by Doctor Goodman, he was completely prostrated, was in great agony, and was bleeding so profusely that everything about the bed was covered with blood. Doctor Goodman succeeded in passing a catheter and withdrew about thirty ounces of very bloody urine. The pain was considerably relieved, but in view of the continued bleeding the patient was removed to the hospital with the intention of opening the bladder and treating the source of the bleeding. A neoplasm was suspected, for a calculus could hardly be suspected of causing such a loss of blood.

After admission to the hospital the bladder was opened suprapubically under local anesthesia of half per cent. novocaine with suprarenin, and a large calculus was found impacted in the base of the bladder. On order to dislodge it and favor its delivery through the opening which had been made in the bladder, the patient was given nitrous oxide gas and the calculus was delivered with a placental forcep. There was considerable bleeding from a large erosion of the mucous membrane of the bladder where the calculus had been imbedded. This bleeding was controlled by hot irrigation. A drainage tube was then inserted and the upper part of the wound was sutured. The calculus weighed 150 grams, or approximately five and a quarter ounces. It was faceted corresponding to the lobes of the prostate, and had a projection corresponding to the prostatic urethra.

Three weeks after the operation, a prostatic abscess involving the left lobe developed which was drained through the perineal incision, after which the patient made an uneventful recovery.

A radiograph of the kidneys, taken since the operation, was negative. Some time after leaving the hospital, the patient volunteered the information that he had collected sixteen small calculi which he had passed at intervals during the past twelve years.

Doctor STEWART said that he was extremely interested in Doctor Stevens's case of ureteral calculus, though he had not heard all the details. It reminded him of some investigations he himself had recently made on gallstones in which it was found that the visibility of the calculus was entirely dependable on the density of the calculus in contrast to the density of its surrounding soft parts or fluid. At the first demonstration a negative finding was obtained. Then, with the injection of thorium, the calculus was brought out, but in dark shadow, which is contrary to the usual shadow of the calculus. That could only be explained on the ground that the thorium solution surrounding the calculus cast a positive shadow, while the calculus in the centre, being of such light specific gravity, did not cast any shadow at all. The diagnosis must have been made by deduction.

He regretted that Doctor Goodman had not shown his roentgenograms. It is always interesting to examine plates that have negative Röntgen findings with positive surgical results.

Doctor CHETWOOD, referring to Doctor Stevens's case of renal tuberculosis and his postoperative report regarding the return of the retaining capacity of the bladder in so short a time, despite the fact that prior to operation it was impossible to make a

cystoscopic diagnosis, said it illustrated what all had probably noted after operation on a kidney and its removal for tuberculosis, namely, a strikingly beneficial influence upon the distal effect of the tuberculous process, even though it may be believed to have extended down the lower urinary tract. It also drew attention to the fact that, while operators are keen to remove every vestige of the tuberculous process, we have deliberately not removed a ureter that was palpably involved and removed the kidney only, which was followed by a striking illustration of the efficiency of such operation in increased bladder capacity and abatement of the process over a long period.

Doctor KEYES, referring to Doctor Chetwood's remarks on the brilliant return of the bladder function, said that as a rule after nephrectomy for tuberculosis the patient's vesical symptoms were very markedly improved for a brief time; then, after a week or two, the wound broke open and the bladder behaved as badly as before until the sinus healed, at which time considerable improvement occurred.

Doctor PEDERSEN asked if Doctor Stevens's case had had prolonged pyuria. He then told of a case of his own with this condition, in which four or five guineapig tests were made. All were negative for tuberculosis, and then suddenly the bacilli appeared in great numbers "out of a clear sky." The cheesy deposits were at the top and the kidney surface was somewhat more involved. The patient has recovered, his urine is clear, only he has the sinus which many of these patients acquire and which lasts a long time. Doctor Pedersen said that this case had convinced him that when one cannot control pus, it is justifiable to cut down on the kidney without waiting long for bacilli to appear.

Doctor BEER said that in his experience he had rarely seen cases of renal tuberculosis throw clear x ray shadows. His experience also bore out Doctor Keyes's statement that the primary vesical improvement rarely continued, even though the end result was relief of vesical irritability. Referring to Doctor Goodman's first case and the first case of Doctor Stevens, he said that in his service for the past three years all suspicious cases have had ureterograms taken in order to demonstrate the shape of the ureter above a stone which did not cast a shadow. In Doctor Stevens's case a diagnosis might have been made with a wax bougie, though that is not usually so helpful as a ureterogram. Doctor Beer said that in Morris's analyses of kidney stones in the Hunterian Museum the chemical examination of a large number of stones is reported, and twenty-two per cent. of them were uric acid stones. If these are so frequent—one in five—how does it happen that in New York they are so rarely encountered? Doctor Beer said that he had seen three or four in the ureter and kidney, and in the bladder there had been a great many. It would be interesting to have an expression of opinion as to the frequency of uric acid stones in renal surgery in New York material.

Doctor KEYES, responding to Doctor Beer's remarks, asked whether Morris's observations did not bear upon the etiology of the stones. He was looking for uric acid as the cause of stones, and he

searched for them, and stated that they were present in a large number of cases, not to the exclusion of oxalate.

Doctor BEER replied that Morris stated that that type predominated.

Doctor STEVENS, replying to Doctor Pedersen's question as to whether pus was present before the patient had symptoms, said that he could not answer, for he saw the patient for the first time on November 3d, when he first came to the hospital, and then the patient had a large amount of pus with many tubercle bacilli.

Replying to Doctor Beer's question as to how often one finds a shadow in the kidney in tuberculosis, he said that the x ray men could probably answer that better than he. This, however, was the third case he had seen in the urological clinic at Bellevue this year. The shadows have always had an irregular contour and a variation in density, as distinguished from the usual evidence of calculus.

In connection with Doctor Chetwood's and Doctor Keyes' remarks on the rapidity of improvement, Doctor Stevens said that on cystoscopy there was a general congestion, but no localized bladder lesion, and he believed that the tuberculosis of the kidney has only recently broken into the pelvis. The frequency was due to the passage of the tubercle bacilli and their products rather than to any localized bladder tuberculosis; and consequently when this great mass of irritating material was removed by nephrectomy the patient soon regained his control and was able to hold his urine for longer periods.

Doctor GOODMAN expressed his regret that he had not brought the plates of his first case, but Doctor Gottlieb had made a very careful study of the plates and had assured him that there was no suggestion of a shadow, so there seemed to be no necessity for bringing them.

**Opaque Ureteral Bougies and Catheters in Renal and Ureteral Lesions.**—Doctor LEWALD said that he would pass around two stereoscopic roentgenograms illustrating the use of the bougie and catheter, the first one showing the use of the bougie in a redundant and displaced ureter. When first seen the shadow was thought to be due to a calcified body outside of the ureter, and no bougie was inserted. A year later a bougie was inserted and clearly demonstrated a calculus in the ureter, which was removed later. The other case represented a difficult demonstration of what is said to be a rather frequent anomaly, namely, a double ureter, or at least a double pelvis. The injection of thorium was made in a slight Trendelenburg position. If the injection had been given with the patient in a horizontal position, the result might have been different.

In the study of a large series of cases, there is, as a rule, no difficulty in the differentiation of the cases of a suspicious shadow in the ureter. Occasionally it has been found that the shadow, if a very small one, may give trouble. If you do not stereoscope the case you may be absolutely misled; but even if you do stereoscope in the ordinary anteroposterior direction, the calculus may hug the ureter so closely that even with the usual stereoscopic view one may possibly be misled. When in doubt, a lateral stereo-

scopic view in connection with the anteroposterior has disclosed a shadow which in the posterior position appeared to be in juxtaposition with the shadow in the ureter; in the lateral position it was found to be really half an inch away. It was evidently due to a calcified gland.

In differential diagnosis from other conditions, such as an abdominal tumor displacing the ureter, it was seen that the tumor had nothing to do with the kidney at all, simply displacing the ureter. The use of the bougie alone obviates in many cases the necessity of using the opaque injections.

Doctor LEWALD said he was sure that Doctor Braash, who had discussed this matter with him and Doctor Bugbee on different occasions, is more firmly convinced of that fact; he limits the injections to as few cases as possible. If the information can be obtained by the bougie alone, he omits the injection.

**The Ureteral Bougie as an Aid to Diagnosis.**—This paper, by Dr. CHARLES H. CHETWOOD, was published in full in the April 14th issue of the JOURNAL.

Doctor STEWART asked Doctor Chetwood his reasons for preferring the bougie to the injection of the opaque salt. Doctor Stewart said that his own experience had been that while one may be able to demonstrate the stone with the bougie, one was able to obtain far more detail by the injection of thorium or silver salts. In a case of marked kinking with hydronephrosis, the information obtained with the solutions of opaque salts not only demonstrated the actual kinking, but also showed the condition of the renal pelvis. The tendency seems to be to keep away from the injection of silver salts. He believed, however, that if the method is used in a proper way, the injection of opaque salts in the renal pelvis can be done with very little danger. The case presented by Doctor LeWald demonstrated that the catheter had passed beyond the pelvis and lay in one of the calyces of the kidney, and the end of the instrument might have produced some trauma. If we could avoid all this danger, we would be able to accomplish a great deal.

Doctor Chetwood had not spoken of the characteristics of the ureter in the different sexes. The female ureter has a marked tendency to hug to one side rather than to go straight up.

Deviating a little from the discussion of the subject, in order to answer Doctor Goodman's question in reference to the percentage of negative roentgenographic findings in nephrolithiasis, he said that it varied, probably largely due to the locality. Doctor Williams, of the Mayo Clinic, reports forty per cent. of negative findings in positive cases. That high percentage was probably largely due to his tremendous amount of work. He is often compelled to make his readings from wet plates; sometimes he examines as many as sixty patients in one day. Anyone who knows anything about such work knows that no one can give careful attention to that number of cases. Doctor Baetjer, of Johns Hopkins, reports twenty-five per cent. of negative findings in positive cases. This question had been discussed with a number of men, and the consensus was that the number of negative findings was less than five per cent. (To be concluded.)



## Letters to the Editors

### ALKALINE BEVERAGES IN PNEUMONIA.

SYRACUSE, N. Y., April 24, 1917.

#### To the Editors:

I note with interest an article by Dr. Samuel Stern, A Successful Treatment of Pneumonia, in the NEW YORK MEDICAL JOURNAL, April 21, 1917. Stern states that he gives two drams sodium citrate in eight ounces of water every two hours. This seems to be a modification of the treatment of pneumonia by alkaline beverages which I published in the NEW YORK MEDICAL JOURNAL, May 20, 1905. The success of the use of saline beverages prompted its use in all acute febrile infections, particularly in typhoid fever (NEW YORK MEDICAL JOURNAL, April 14, 1906).

At first I used ten grains sodium chloride, five grains potassium bicarbonate in eight ounces of water, to which a teaspoonful of lemon juice was added.

This dose was given every two hours, until there was a drop in temperature, which generally occurs in twenty-four to thirty-six hours. Of later years I have substituted sodium bicarbonate for potassium. This gives nearly an isotonic solution and is more rapidly absorbed than a solution of greater density. If this is given regularly for twenty-four hours the patient is absorbing ninety-six ounces of saline beverage, which produces profuse diuresis and is of material value in temperature reduction and in the elimination of toxins. Besides, the alkalinity and volume of blood is maintained. I might add that there is one class of cases in which saline beverages are not beneficial; that is in alcoholics, but for that matter I do not know of any form of treatment that is very satisfactory for them.

JOHN B. TODD.

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Food and the Principles of Dietetics.* By ROBERT HUTCHINSON, M.D., Edin., F. R. C. P., Physician to the London Hospital; Physician with Charge of Outpatients to the Hospital for Sick Children, Great Ormond Street. With Plates and Diagrams. Fourth Edition. New York: William Wood & Co., 1917. Pp. xxx-617. (Price \$4.)

This volume should form a part of the stock in trade of every busy physician. The practical suggestions for the choice and use of articles of diet based upon a detailed discussion of the individual merits of the various classes of foods, as well as of a wide range of individual products, makes a helpful guide for physician and nurse alike in the specific problems of the sickroom. The book should make an even more timely appeal to the housewives and consumers who are seriously seeking to find the food that will yield the best return as well as to discover nourishing value where it was not hitherto known to exist.

The style of the book throughout its manifold pages is of such sustaining interest that its material can make its way amid other concerns and moreover grant such a pleasing recognition to our many common articles of food that they obtain a new esthetic flavor which may atone for the threatened depletion of our tables. Even the proprietary foods receive the most kindly evaluation, but as their analysis is set amid the equally precise tabulations of natural products, the reader is allowed perfect freedom of choice in regard to their use.

The book has the distinction of presenting a carefully compiled scientific treatise dealing with essentially material things, in delightfully readable form. The author himself, it would seem, scarcely recognizes how closely he brings the food problem where it actually and historically belongs, directly within the larger psychical life of a people or of the individual. Had he realized this he would not have so decidedly relegated to the inexplicable idiosyncrasies which defy all the exact conclusions of food values and digestive studies. He would have scented a

potent factor at work in the slowly changing attitudes of various nations when he quotes, concerning the early antagonism to the acceptance of cane sugar as an article of diet, that a certain traveler ascribed the blackness of Queen Elizabeth's teeth to the habit the British nation was forming of sugar indulgence. Further evidence might also have been added to the pages which extol from an appreciative British point of view the material value of American maize, and have surrounded it with a new romance and value in our own eyes which would increase its direct appeal to present industrial need. The book is well worth general perusal, embodying as it does such practical information and suggestions in so charming a form.

*What Is Psychoanalysis?* By ISADOR H. CORIAT, M.D., First Assistant Visiting Physician for Diseases of the Nervous System, Boston City Hospital. New York: Moffat, Yard and Company, 1917. Pp. 127. (Price, \$7.5.)

This question has been so often asked by the laity, by teachers, lawyers, ministers, and even physicians, that Coriat's little volume of questions and answers will undoubtedly find an appreciative audience. Beginning with the definition and the history, the reader is carried by degrees through explanations of transference, complexes, the unconscious resistance, repression, libido, and many other terms which have been given special applications by this new science. The hostility to it, its benefits, dangers, and limitations, are all set forth by the author, who has produced a book which is in reality a compendium of the subject and which should be in every general practitioner's library. The book is of a size to fit the overcoat pocket, is neatly bound, and printed in large, clear type.

*The Relief of Pain by Mental Suggestion.* A Study of the Moral and Religious Forces in Healing. By LORING W. BATTEN, A. B., Ph.D., S. T. D. New York: Moffat, Yard & Co., 1917. Pp. 157. (Price \$1.25.)

Whatever artillery of arguments the opponents of psychanalysis may unlimber against it, they must admit that it has served to bring into prominence a less materialistic view of disease. Witness the present book. It is of course an exposition of the Emmanuel principles. Much space is given to the healings of Christ with an effort to show that the faith of the sick people was in reality the active principle. The tendency of the medical profession toward materialism is to be deplored, perhaps justly, but to us the tendency seems the other way after comparing mediæval medicine with our own. Many examples are given of physical effects produced by psychic causes, all familiar ground of course to the physician. Psychanalysis is given only superficial attention and the author, like many other persons, appears unaware that Freud discarded long ago the doctrine of the actual sexual trauma.

*Handbook of Suggestive Therapeutics.* Applied Hypnotism, Psychic Science. A Manual of Practical Psychotherapy, Designed Especially for the Practitioner of Medicine, Surgery, and Dentistry. By HENRY S. MUNRO, M.D., Omaha, Neb. Fourth edition, revised and enlarged. St. Louis: C. V. Mosby Company, 1917. Pp. 481. (Price \$5.)

That this work has reached its fourth edition is in itself proof that it fills a need somewhere. Its audience is admittedly the general practitioner who has only a scant knowledge of neurology and psychiatry and wishes to practise psychotherapy. The great weapon of Doctor Munro is hypnotism, or rather the production of a hypnoidal state, which he calls a condition of voluntary receptivity. The author justly deplores the indifference of many practitioners to the psychic features of disease which has proved such a rich field for the charlatan and the pseudo-sciences, as Holmes calls them. Freud's methods he considers of small value as compared with his own, referring to them indeed as a "fascinating mirage." Some of the chapters, on personality, selfmastery, etc., remind us somewhat of the doctrine set forth by the uplift books advertised in the popular magazines. In a great deal of chaff, however, there is some real value, and if the book turns any physicians away from a too crassly materialistic view of disease it has done a real service to mankind.



## After Office Hours

*Current Opinion* for April devotes half a page to psych-analysis, the article evidently being inspired by Pfister's book. Unfortunately, only a superficial and misleading view of the subject is taken. Psychanalysis is depicted merely as a confessional without religion.

The *Ladies' Home Journal* for May contains the interesting information that Oliver Wendell Holmes added the word "anesthetic" to the language. But his fame doesn't rest on that! A page is given in the same number to pictures of the standard Red Cross hospital supplies, so that amateur helpers need not go astray.

The American Ambulance Hospital in France has become better known to the medical profession than many an older and more famous one in America. A French artist, Parvis, has drawn a series of cartoons during his stay there, which are reproduced in *Scribner's* for May; they illustrate admirably the poilu's light heartedness and sense of humor.

It is seldom that the *Literary Digest* overlooks an important contribution to medical science, although often it is a long time after its discovery when an account appears in the pages of that magazine. In the April 21st issue, for example, space is given to Carrel and his wound treatment. This is particularly timely, in view of Doctor Carrel's visit to this country.

The editors of the *Literary Digest* are ever on the *qui vive* for progress in preventive and other medicine which may interest, entertain, or instruct their readers. Thus in the April 14th number some recent work done on the bacteriology of coryza is well abstracted under the somewhat colloquial heading, "Team Work in Germland." The warning against the infectious nature of this malady is well timed, however.

Doctor Osler's name probably will be forever associated in the minds of the public with his alleged assertion about the economic loss inflicted by the aged—at least every mention of the notable deed of an old person seems to be prefaced by quoting his name. *Munsey's* for May has an article on nonagenarians which is no exception. Dr. Stephen Smith, of New York, has an honored place on the list. Young by his side is Doctor Jacobi, whose hobby is healthy babies. There is also Dr. James M. Peebles, who studied medicine at fifty-seven and is now ninety-five. In the May issue of *Forest and Stream* there is also an account of its founder, Charles Hallock, who is now eighty-three.

## Meetings of Local Medical Societies

**MONDAY, May 7th**—Clinical Society of New York Throat, Nose and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association; Niagara Falls Academy of Medicine (annual); Brooklyn Hospital Club; Horrell Medical and Surgical Association; Clinical Society of the New York Polytechnic Medical School and Hospital; West Side Physicians' Economic League.

**TUESDAY, May 8th**—New York Academy of Medicine (Section in Neurology and Psychiatry); Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); Newburgh Bay Medical Society; New York Obstetrical Society (annual); Onondaga Medical Society; Medical Society of the County of Chautauqua.

**WEDNESDAY, May 9th**—New York Pathological Society; New York Surgical Society; Alumni Association of Norwien Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of The Bronx; Richmond County, N. Y., Medical Society; Rochester Academy of Medicine; Brooklyn Medical Association.

**THURSDAY, May 10th**—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers (annual); Buffalo Ophthalmological Club; Jamestown Medical Society; Society of the Physicians of Village of Canandaigua; Cayuga County Medical Society.

**FRIDAY, May 11th**—New York Academy of Medicine (Section in Otolaryngology); Society of Externes of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York; Clinical Society of the German Hospital and Dispensary; Manhattan Dermatological Society.

## Births, Marriages, and Deaths

### Born.

**WHITMARSH.**—In Providence, R. I., on Monday, April 16th, to Dr. Robert H. Whitmarsh and Mrs. Whitmarsh, a daughter.

### Married.

**BOOTH-GARRETSON.**—In Elmhurst, N. Y., on Saturday, April 28th, Dr. Franklin H. Booth and Miss Sara S. Garretson.

**GRIFFITH-DUNBAR.**—In Baltimore, Md., on Friday, April 20th, Dr. Lewie Muller Griffith, of Asheville, N. C., and Miss Emilie Dunbar.

**PATTERSON-GIBNEY.**—In New York, on Saturday, April 28th, Dr. Daniel C. Patterson, of Bridgeport, Conn., and Miss Marion P. Gibney, daughter of Dr. and Mrs. Virgil P. Gibney.

### Died.

**ALLEN.**—In La Fayette, N. J., on Tuesday, April 17th, Dr. Edgar Allen, aged fifty-six years.

**ASH.**—In Bradford, Pa., on Saturday, April 21st, Dr. Dunham E. Ash, aged sixty-five years.

**BETTS.**—In Pulaski, N. Y., on Wednesday, April 18th, Dr. George William Betts, aged fifty-nine years.

**BUCKLEY.**—In Missoula, Mont., on Saturday, April 14th, Dr. John J. Buckley, aged sixty-four years.

**CLAPP.**—In Morris, Ill., on Friday, April 13th, Dr. Elmer F. Clapp, of Iowa City, Ia., aged seventy-five years.

**CLARKE.**—In Douglastown, N. Y., on Wednesday, April 25th, Dr. Powhatan Clarke, aged eighty-one years.

**COLQUITT.**—In Riovista, Tex., on Thursday, April 19th, Dr. Langdon A. Colquitt.

**CRAFT.**—In Stone Ridge, N. Y., on Saturday, April 21st, Dr. Herman Craft, aged eighty-one years.

**CUTTER.**—In West Falmouth, Mass., on Wednesday, April 25th, Dr. Enhrain Cutter, aged eighty-five years.

**DEWEY.**—In Tacoma, Wash., on Thursday, April 12th, Dr. Henry Wells Dewey, aged fifty-seven years.

**DODDS.**—In Pittsburgh, Pa., on Wednesday, April 18th, Dr. Joseph S. Dodds, aged seventy years.

**DOUGLAS.**—In Middletown, N. Y., on Friday, April 20th, Dr. William E. Douglas, aged sixty-three years.

**FARRINGTON.**—In Binghamton, N. Y., on Wednesday, April 18th, Dr. John M. Farrington, aged eighty-four years.

**HOLLOWAY.**—In Louisville, Ky., on Thursday, April 19th, Dr. Samuel W. Holloway, aged fifty years.

**KINDER.**—In Rockford, Ill., on Thursday, April 19th, Dr. Roscoe G. W. Kinder, aged thirty-six years.

**LEWIS.**—In Port Angeles, Wash., on Sunday, April 15th, Dr. Freeborn S. Lewis, aged sixty-seven years.

**MCINTOSH.**—In Cambridge, Mass., on Tuesday, April 24th, Dr. Herbert B. McIntosh, aged sixty years.

**MEALS.**—In Harrisburg, Pa., on Wednesday, April 18th, Dr. Ezra S. Meals, aged sixty-five years.

**O'CONNOR.**—In Biddeford, Me., on Friday, April 20th, Dr. Joseph M. O'Connor, aged thirty-eight years.

**POLLARD.**—In Los Angeles, Cal., on Saturday, April 14th, Dr. John W. Pollard, aged fifty-six years.

**WHITAKER.**—In San Antonio, Tex., on Monday, April 16th, Dr. Lyman L. Whitaker, aged eighty-two years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and  
the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 19

NEW YORK, SATURDAY, MAY 12, 1917.

WHOLE No. 2006.

## Original Communications

### THEORIES CONCERNING PREGNANCY, LABOR, AND THE PLACENTAL GLAND.\*

By SAMUEL WYLLIS BANDLER, A. B., M. D.,  
New York,

Professor of Gynecology, New York Postgraduate Medical School;  
Attending Gynecologist, Beth-Israel Hospital; Attending  
Gynecologist, Park Hospital.

In individuals growing normally and developing properly the ovaries come to maturity and develop properly if they are sustained and nourished by a proper secretory relation on the part of the thyroid, the adrenals, and the hypophysis. Before puberty an inhibiting action on the sex organs by the pineal gland and the thymus gland is removed and, with all these conditions fulfilled, normally developed internal and external genitalia are present and menstruation begins at the proper time and recurs regularly without any marked annoying phenomena, provided that the infectious diseases of childhood have not affected the ovaries.

A disturbance in the nutritional functions of the thyroid, the hypophysis, and adrenals of especial magnitude interferes with the proper development of the genitalia and the ovaries. Unusually prolonged or permanent inhibition by the pineal gland or the thymus results in failure of proper action on the part of the ovaries. On the other hand, in a certain number of cases, a too early removal of the inhibitory action of the thymus and pineal gland or a marked stimulation by the other three glands results in an early maturation of the ovaries and very early activity. It is an old saying that normal menstruation implies ovaries capable of producing ripe ova. I think in the light of modern medicine that this opinion must be modified considerably. A woman may menstruate and menstruate early and yet the ovaries and the Fallopian tubes may not be functioning normally. The ciliated epithelium of the Fallopian tubes is under the trophic influence of the ovaries and probably the thyroid and hypophysis. If the cilia do not function, no tube can send an ovum into the uterus. I believe that in many instances there are ovaries which for various reasons do not expel ova; that is, they do not liberate the ova from the ovary. A Graafian follicle approaches the surface but something is lacking which normally breaks the follicle and expels the ovum. Normally there must be something in the ovum, in the follicle, and in the cells lining the

follicle whose ferment action dissolves the outer covering of the ovary and thus liberates the liquor folliculi with the enclosed egg. Beside cases where this ferment action is not present there may be cases where the tunica albuginea is unusually thick and unusually resistant. If we believe in the relation of the ovary to the other internal secretory glands, if we believe in their trophic care of the ovaries and genitalia, if we believe in the inhibiting action of some of these secretions on the ovary, we must conclude logically that there are many cases where the ovaries do not liberate the ovum. In other words, ovulation in the strictest sense does not occur. We then have in these ovaries retained follicles, the so called atresic follicles. Numerous cases show these atresic follicles in excessive number. Trophic support by the pituitary posterior lobe is lacking.

One function of the true corpus luteum cells is to inhibit the maturation and breaking of follicles during the period of pregnancy. With atresic follicles, with unbroken follicles, with corpus luteum cysts, and with unabsorbed corpus luteum centres of smaller or larger size, there is exerted on the follicles an inhibitory action and this may likewise be one of the very frequent causes for the failure of ovulation to take place in the nonpregnant.

I believe the hypophysis has much to do with this inhibitory action on the ovary; inhibitory not in the active sense, but most probably inhibitory in that the proper stimulation is not given. Dystrophia adiposogenitalis is the extreme type. So I believe that it may be concluded that a large proportion of cases of sterility in which spermatozoa are present in the male, in which no inflammatory changes are present in the cervix, uterus, or tubes, and in which obstruction of a positive type is not present, are to be considered as due to failure of ovulation. I mention these facts in this paper in order to show how intimately connected are the other glands of the body to those glands which are specially related to the nutrition of the uterus and the decidua and to the function of menstruation and ovulation.

The development of the secondary sex characteristics depends upon the ovaries through the co-operation of the other glands and by action of the other glands themselves. The development of the mammary glands is especially under the action of the ovary. No matter how well the other glands function, if the ovaries are removed in the early years a failure of development of the internal

\*Read before the Eastern Medical Society, April 13, 1917.

genitalia, the mammae, and the secondary sex characteristics occurs; and if this occurs after puberty then atrophy of these various organs takes place, most particularly, however, in the sphere of the genital tract. Our attention is thus fixed on the value of the secretion developed by the ovary, by the interstitial structure, by the follicles themselves, and by that substance known as the true corpus luteum which develops excessively before menstruation and continues only, under normal conditions, when pregnancy exists.

Now the ovaries are responsible for menstruation through the action of the vegetative nervous system and more so through direct action of the secretions on the tubes, uterus, and its lining through the medium of their circulation. That the corpus luteum plays an important part is not to be doubted, but it is also a secretion produced by the ovary. We know in a general way the action of these various secretory glands and we know more and more each day of their interactivity, and how a failure in the way of overaction or underaction on the part of one influences the whole cycle. Now, into this realm of interglandular activity there enters a new phase in pregnancy. When an impregnated ovum comes into the uterus and imbeds itself in the overgrown decidua by enzyme action inherent in itself, menstruation fails to take place. Menstruation is preceded by a tremendous hyperemia of the lining of the uterus, increase in size and thickness of the endometrium, and a dilatation of the capillaries. The secretion of the corpus luteum tends to diminish the coagulability of the blood, and the glands of the decidua secrete a substance which probably has the same action. Through the action of ovarian secretion aided by pituitary secretion capillaries break through rhexis and there is a diapedesis of red blood cells and contractions of the uterus. Only blood is thrown off; the decidua remains behind after menstruation like a wet sponge from which the water has been expressed. These processes are inhibited when a fecundated ovum is in the decidua. We know that cells given off from the outer layer of an impregnated ovum are thrown into the circulation as soon as it is imbedded. Slight as this amount must be in the early days of pregnancy it is sufficient through the medium of the circulation, thence reaching the ovary and the uterine lining and continuing to circulate in the blood, to inhibit menstruation, though hyperemia and congestion present in the uterine mucosa continue, but rhexis and diapedesis are inhibited. The trophoblast cells of an impregnated ovum are responsible for this.

The next change produced by the trophoblast cells is in the reaction produced in the corpus luteum. This body does not regress as it does when pregnancy does not take place; it simply continues its growth for a period of many months. This continued growth and function of a corpus luteum is undoubtedly a reaction produced by the trophoblast cells. This corpus luteum is important. It continues its nutritional effect upon the uterus and particularly upon the decidua, aids the continued attachment of the ovum and probably exerts a protective influence in preventing too great an encroachment into the decidua and later into the uterus of the trophoblast and syncytial cells.

The nutritional action of the true corpus luteum is of far greater importance in the first months of pregnancy than it is later on. Later on the ovum has developed to a considerable size, a placenta has formed, the entire ovum fills out the cavity of the uterus, and the periphery of the ovum is agglutinated to the entire interior of the uterine cavity. The uterus in these early months grows rapidly, more rapidly than would be expected by the simple stretching effect of the ovum. The ovum hangs by a pedicle in the early weeks and does not by any means fill out the cavity of the uterus. Yet the uterus grows. It does so even in cases of ectopic gestation. Here we see the continued action of the ovarian secretion and of the corpus luteum secretion, trophic in their nature, and the uterus and the decidua well supplied with blood. The blood contains the secretion of the ovary which would have been expelled and lost had menstruation taken place. Thus the placental secretion plays an important part in stimulating the growth of the uterus.

The next process is the effect of the trophoblast secretion upon the hypophysis gland. The anterior lobe hyperfunctions and the change in its cells is a permanent one. We know what the anterior lobe does in the process of growth, bone enlargement, and sexual development; and we must consider this as a protective or trophic secretion designed to help the patient herself, probably designed to help the ovum, the uterus, and the decidua in these early months with probably a greater effect on the patient and embryo in the later months.

The painless contractions of Braxton Hicks are probably due to corpus luteum, but much more to the posterior lobe of the hypophysis, and are a continuation of the automassage ever present in the normal uterus. The increased activity and size of the thyroid, too, and the changes going on in the adrenals and other glands, may be viewed in the light of an increased trophic effect on the genitalia, probably giving off to the patient certain protective substances. The patient in pregnancy needs protective substances because the trophoblast and later placental secretion are entirely new elements and the body must react to it through the medium of the other secretory glands and through the production in the blood of other protective substances as in fevers and other diseases.

The earliest evidences of the irritating effects of the trophoblast and later placental secretion are to be found in the nausea and vomiting of pregnancy. This new substance is an irritant. It irritates the cerebral centres possibly having an irritating action on the gastric mucosa and the liver. Whether the premenstrual hyperemia and congestion which take place in every part of the body and which are associated with dilatation of the cerebral vessels, heightened by the continuous action of the corpus luteum, play a part in this process can only be surmised. At any rate we are justified in considering that the secretion produced by the outer cells of the ovum and later by the placenta is the irritating substance which is responsible for the nausea and vomiting. In whatever degree the body reacts to this and produces the protective substances,



in that degree is the nausea and vomiting either stopped or continued. If we consider that the corpus luteum of pregnancy is continued as a reaction to this secretion, we ought to look upon the corpus luteum as an aid in stopping the nausea. Many observations in this direction have been made and it has been claimed that the injections of corpus luteum extract into these patients stops the nausea and vomiting. Theoretically the idea is splendid and rational; in practice opinions vary. Many are enthusiastic over it. I have not yet had striking success with this procedure, but corpus luteum by mouth and injections of corpus luteum are of value. At any rate, in the vast majority of cases these annoyances in the way of nausea leave permanently at the time that life is felt. In many cases this condition may be excessive, taxing our resources to the utmost, and in some cases pregnancy must be interrupted to avoid permanent or fatal harm to the patient. In these cases the protective substances that are produced by the ovary, the liver, the hypophysis, the thyroid, or the system in general, are not produced in sufficient amounts or proper character, and a condition of pernicious nausea and vomiting or early toxemia is present. The transient albuminuria present in some cases in the early months is probably due to the irritating effect of this placental secretion.

Many patients in pregnancy show quite a growth of the body, a growth sufficiently noticeable to attract attention. The tonic effect is remarkable. Many show at various periods an acromegalic hyperplasia. A transitory thickening of the skin of the face and a suggestion of edema are also decidedly suggestive of a hypophysis change allied to acromegaly. Here we are confronted with the stimulative changes in the anterior lobe of the hypophysis, a reaction undoubtedly produced by the action of the placental secretion.

We next come to the transient glycosuria present in many cases during the various months of pregnancy. It is found intermittently in many cases where routine examinations of the urine are made. This draws attention to the pancreas, to the liver, and to the hypophysis, and possibly to the mammary gland (lactosuria). A transient or even a marked involvement of the pancreas function may occur and there may be a disturbed relation between the thyroid and the pancreas. There may be the liver type of glycosuria. Possibly the mammary gland may have an effect. For the most part we must look to the hypophysis as responsible for this condition. So far, it is known that a more or less marked glycosuria may appear with transient hyperfunction of the hypophysis particularly of the posterior lobe. This factor plus the changes occurring in the anterior lobe speaks for the excessive or increased action of the hypophysis, at least part of it, a reaction probably due directly or indirectly to the placental secretion. That true diabetes is most unfavorably affected by pregnancy, and that it is a most serious condition, is known to everyone.

The mammary gland is also stimulated in pregnancy. It often reacts to the premenstrual stimulus of the corpus luteum. It increases in size after labor and its secretory functions are finally estab-

lished after a preliminary hyperemia. Injections of various substances increase the function of the mammary gland. Fetal extract used experimentally stimulates this gland. So does corpus luteum. Placental extract will accomplish the same result. The most that may be said is that the mammary gland is acted on during pregnancy probably by the corpus luteum, possibly by the fetus, but most probably by the placental secretion. After labor, when these stimulating factors, though apparently inhibitory, are no longer present and a degenerating or decomposing process occurs, milk is secreted instead of colostrum. Whether the hypophysis has anything to do with this before or after labor is not known, but some consider the hypophysis secretion a remarkable galactagogue. It is safe to say that no one known substance will positively produce a well functioning breast. Thyroid extract has been used, pituitary extract has been used, placental extract has been used, corpus luteum has been used. I have tried each one of them and am as yet unable to say that any one or a combination of them will, with any degree of certainty, produce milk in every breast. My experience has been that breasts either secrete readily or not, and no régime of food, diet, or tonic treatment will do more than add a stimulus. My experience has been that a very small percentage of women are able without such aid to nurse their children sufficiently for several months.

It must be kept in mind that the ovum and the placenta are a parasite. The nourishment of the fetus taxes the resources of the mother, but this burden in the majority of cases is not an excessive one, if the heart and kidneys are normal. I formerly believed that cardiac diseases could with great care bear the burden of a pregnancy. With increasing experience I am very loath to allow a patient with marked cardiac lesion to be endangered for nine months by pregnancy and labor. It is not the tax on the general system alone. There is something in the ovum and in the placenta which exerts a markedly injurious action on the heart muscles, on valvular lesions, and on the cardiac centres which encourage and control the rhythm and the force of the beat. In these changes and alterations lie the danger of pregnancy with marked cardiac lesion.

If the Barnes or Champetier de Ribes bag be introduced into the cervix, this dilatation of the cervix causes uterine contractions at first painless. These are not felt by the patient as pains. There is a feeling of discomfort and a sense of pressure in the back. After hours, sometimes after many hours, labor pains come on. Not infrequently a second or a third bag must be introduced before the uterus goes into rhythmical contractions. If, however, after the introduction of a Barnes or a Champetier de Ribes bag, pituitrin in small doses is given regularly, rhythmical labor pains come on and many hours of waiting are saved. It is almost never necessary to introduce a second bag.

If the membranes rupture before labor sets in, it takes from six or eight hours to three days before labor pains come on spontaneously. If after the membranes have ruptured even days or weeks before labor is expected, pituitrin is administered in small doses at regular intervals, it will bring on rhythmical

contractions and the patient goes into labor within a very short time. Removal of the liquor amnii causes some contraction of the uterus and possibly some stimulation or secretion of the decidua, and dilatation of the cervix by a Barnes bag causes contractions of the uterus with possibly some effect upon the decidua. The uterus is sensitized, the pituitary gland is stimulated, and for that reason the administration of pituitrin is effective.

It has long been known that the administration of castor oil at or about full term has a certain effect in bringing on labor pains. We all know the value of quinine in increasing the force of labor pains. It may be taken for granted that each of these substances sensitizes the uterus and makes it more susceptible to the action of the pituitary posterior lobe.

Acting on this theory, I tried the following procedure to avoid the use of the Barnes bag: At 7 a. m. an ounce and a half of castor oil was administered, and three hours later at half hour intervals ten grains of quinine. One or two hours after the last dose of quinine, two to five minims of pituitrin were given every half hour for several hours. This method was effectual in many instances in bringing on regular rhythmical labor pains and sending the patient into a normal labor. I found this procedure perfectly reliable in over eighty per cent. of multigravidae when tried within a week or ten days of the expected labor period. In fifty per cent. of primigravidae it is effectual at or about the time at which labor is expected. If this method is tried from two to three weeks before the expected time, the effect is by no means so good and in many cases has no result at all.

The ovary nourishes the uterus making it grow, but causes regular bleeding. The placenta nourishes the uterus making it grow, but stops bleeding. If the corpus luteum acts on the hypophysis posterior lobe, and makes it overact at menstruation, we often observe menstrual pain simulating that of labor and called dysmenorrhea. Corpus luteum and the posterior pituitary lobe act together in menstruation. The placental secretion inhibits the posterior lobe as well as the corpus luteum and no menstruation takes place, only painless contractions.

With an ovum full of atresic follicles and corpus luteum rests ovulation is often inhibited, but the stimulation to the posterior lobe is present, coagulation takes place slowly or quickly and diminished or excessive menstruation occurs but no ovulation.

It would be wise to try the effect of placental secretion on dysmenorrhea, because of this theoretical inhibition by its action on posterior hypophysis either directly or through the corpus luteum. If placental extract stimulates the anterior lobe of the hypophysis it might be advisable to use this extract in cases where it is desired to stimulate growth in children, with the administration of hypophysis extract also.

If placental extract stimulates the corpus luteum to add growth and if the corpus luteum is of such nutritional advantage to the uterus and its lining, placental extract might be given to stimulate the ovaries to added function. Then we might give placental extract plus corpus luteum extract

in cases of infantile uterus to aid in its development. If the corpus luteum rouses the posterior lobe of the hypophysis, causing menstrual pain, then corpus luteum is not indicated in all dysmenorrheas.

But if placental extract inhibits the posterior lobe of the hypophysis and holds its contractile powers in abeyance for months, then it might be wise to give placental extract for dysmenorrhea. If corpus luteum stimulates the uterus and its lining causing diapedesis and rhexis, and if placental extract results in growth of the uterus but overcomes diapedesis and rhexis, then we should give placental extract in cases where excessive menstruation is due to hyperovarianism. We may thus dissociate the function of the ovary and pituitary as nutritional factors of the uterus, from their function in causing menstrual bleeding. And we must think of the placenta as an organ which directly or through its effect on corpus luteum nourishes the uterus and its lining but which overcomes its tendency to bleed.

Therefore even if ovarin is contraindicated in menorrhagia, this may be overcome by placental extract. If the decidua stimulates the corpus luteum and this stimulation is lost by menstruation then placental extract by inhibiting menstruation, allows the retained decidual secretion to continue its stimulation of the corpus luteum. If we knew just what elements of the decidua or the ovary or the corpus luteum or the pituitary were responsible for the capillary dilatation and increased tension resulting in rhexis and diapedesis, we would find them antagonized by some placental ferment or hormones.

To conclude these theoretical considerations, some of which are being proved true, it may be stated that labor represents a crisis in the relation among the glands of internal secretion, particularly the ovary, the placenta, and the hypophysis. On the two hundred and eightieth day a magnified menstruation takes place. Placental inhibition is overcome, the ovaries, so to speak, come into their own, and the posterior pituitary gland exhibits an action whose character is exemplified by and intensified by the pituitary extract which we use in obstetrics. If placental hormones antagonize or inhibit the menstrual action of corpus luteum and pituitary, it is probable that in many cases this inhibition is ineffectual. If this be so this lack of power in the placental hormones may explain repeated abortions (Wassermann negative) occurring at menstrual intervals. This explains the well known liability to abortion at periods four, eight, twelve, etc., weeks after the first skipped menstruation. It also explains the tendency to go ten or more days "over the period" with a then ensuing menstruation. These occasional occurrences in a few of my patients must and may be viewed as early expulsions of an imbedded ovum whose trophoblast secretion has not inhibited the menstrual stimulus of decidua, ovary, and pituitary.

Pituitrin causes rhythmical contractions of the uterus. The effect wears off quickly lasting only from half an hour to an hour. This drug is probably excreted quickly in view of its well known



action on the kidneys. The amount that can be given by mouth and by injection even daily is decidedly evanescent in effect. This explains my incomplete results on continuing its use even daily by hypodermic use in cases of menorrhagia or metrorrhagia unless this administration is preceded by a thorough curetting, which temporarily inhibits ovarian function. It compares in no way so far as prolonged contraction is concerned with the effect of ergotol or ergot. And this explains the value of ergotol or ernutin by mouth or by hypodermic injection in the post partum stage. If pituitrin is given before labor is completed, it causes powerful contractions of the uterus; it also causes excessive relaxation. This accounts for the rare bleeding effects post partum. Hence ernutin, or aseptic ergot by needle or ergotol by mouth are the best drugs in the post partum stage, and this may explain why with its use post partum hemorrhage is rarely noticed.

From these considerations we pass on very readily to the theory of eclampsia. Logically we must conclude that placental secretion is the important factor. It does not produce this annoyance in a large proportion of instances because some protective substances are secreted or formed anew. They come from the ovary and corpus luteum, from the thyroid and adrenals, from the hypophysis gland, from the liver, and from other structures in the body not yet recognized as taking part in this protective function. Then come a certain number of cases in which this function is not properly carried out with the result that placental secretion exerts a decidedly irritating influence. Placental secretion is a substance which follows the course of the blood into all the organs of the body producing changes of a marked character, particularly in certain instances in the liver with marked alterations of metabolism. These changes are of a necrotic nature and of a hemorrhagic type showing the irritating nature of this secretion. If the usual protective substances are lacking, this secretion takes on an irritative, destructive nature. The changes are produced typically in the brain, microscopic in nature, associated occasionally with hemorrhages of a graver type and with edema more or less diffuse and often quite marked and not rarely associated with increased pressure in the spinal canal. Hence in persistent convulsions and especially in coma, spinal puncture should be tried in all cases.

The kidney annoyances of eclampsia are mainly those due to the excretion through these organs of the irritating placental and altered metabolic substances which irritate the epithelium and produce the albumin and the other changes which are in this type of case an evidence of the toxemic secretion in the blood.

What the acidosis and the diacetic acid are due to we need not discuss at present, but in this metabolic change the liver, in all probability due to its lesions, takes an important part. The pancreas must likewise be considered.

What is the reason for this possible explanation of eclampsia? Let me refer for a moment to hydatid mole and to chorioepithelioma. In the hydatid mole we have an abnormal myxomatous develop-

ment of the chorionic villi with an unusual penetration of them into the uterus and an unusual penetration of those cells of the outer layer of the chorion.

The fact that the cells in their growth and invasion are normally held in check is evident. As soon as the trophoblast cells invade the capillaries and maternal blood is poured out, these cells change to the so called syncytium cells. These syncytium cells then form the outer covering of the villi, acting as a sort of endothelium, and through them and the cells underneath them the exchange between maternal blood on the one hand and the capillaries in the villi on the other hand takes place. Therefore in the blood there are substances which inhibit excessive penetrative action of these cells and define the degree to which they may extend. If, then, the protective substances are lacking one would naturally expect an unusual development of the chorionic villi in size and number, and also an unusually deep penetration of the syncytial and Langerhans cells, a condition which actually takes place. This need not be surprising, because during all the months of pregnancy the syncytial cells and fragments of chorionic villi are thrown off into the circulation and have been found in the various structures of the body. They naturally are absorbed, forming a secretion.

Now in chorionic epithelioma the same thing is carried to a greater degree. We have no dilatation of the chorionic villi, no excessive growth of them, but we find, several weeks or several months or even two years after a labor or an abortion, certain cells of the chorionic villi, chorionic syncytial cells which have been left behind undergoing independent growth, developing into a tumor, spreading through the blood into the neighboring structures and into other parts of the body. Here it is evident that the chorionic cells have persisted through various periods of time, not alone have persisted and remained alive, but have taken on a sudden growth which nothing in the maternal blood can hold in check. In other words, the protective influence has been lost.

So far we know only about the ovarian lutein cell changes in this condition, and I know of no experiment or post mortem examination made upon the hypophysis gland or other gland structures in cases of this type. As far as the placenta is concerned we may certainly say that the ovum is a parasite, that the trophoblast cells, syncytial cells, and the placenta are at all times held in check in normal cases by certain substances in the blood. When these protective substances are not present in sufficient quantity in the early months, the expected nausea and vomiting occurs. When they are not held in check in the later months either a yellow atrophy or the toxemia of pregnancy of the liver or kidney type occurs, and in other instances the hydatid mole and the chorioepithelioma.

Whether the parathyroids are in any degree concerned in eclampsia is not certain. It is possible that mild attacks may simulate the type of tetany. We know the effect of calcium metabolism on the general nervous system. We know that a normal amount of calcium is necessary to preserve a sedate, stable reaction of the nerve cells. A diminished amount of calcium renders them extremely suscepti-



ble to irritation. The ovaries, the thymus, the parathyroids, and the thyroid are intimately concerned with calcium metabolism, and during pregnancy the functions of these various glands may be so altered, the calcium content of the body and nerve structures may be so diminished by parathyroid insufficiency, that we have in this state, generally unrecognized, an increased susceptibility to irritating substances.

It is the preeclamptic stage to which especial attention should be called. We find, on the one hand, cases with marked involvement of the renal function as evidenced by albumin, casts, and occasionally more or less general edema. We find, on the other hand, cases with digestive disturbances and headache, dizziness, excessive irritability, or the contrary type of mental apathy and dullness. High blood pressure is a most important danger signal. No man should fail to pay attention to conditions where the urine is abnormal, especially if acetone and diacetic acid are found. Greater and greater significance should be given to the symptoms of nausea and vomiting, liver tenderness, headaches, alteration of vision, dizziness, high blood pressure, and allied suggestive symptoms.

Wellbeing is a sign, as a rule, of absence of toxic condition. Whenever a woman in the latter weeks of pregnancy does not feel well, whatever the nature of the symptoms, a preeclamptic condition constantly should be considered and considered until absolutely excluded by a decided change for the better in the patient's general condition.

I consider a great amount of rest in the latter months of pregnancy a most important factor. I do not believe in the theory of excessive exercise for patients who are pregnant. Plenty of fresh air and normal function on the part of the kidneys with care in the diet are important in every case. One of the greatest improvements in the field of obstetrics is the use of the Murphy drip. I feel that the Murphy drip containing ten per cent. glucose and two per cent. sodium bicarbonate the very best treatment for the cases of early toxemia of pregnancy and especially valuable in cases showing preeclamptic symptoms. In eclampsia I consider it one of the most important methods under our control. I think the acidosis of eclampsia or in the eclamptic or the preeclamptic stage of great importance as a dangerous symptom and condition. This condition should be combated constantly and most actively. Personally, I consider pituitrin contraindicated in cases of high blood tension and in cases showing preeclamptic symptoms, and assuredly in eclampsia occurring during labor. It causes powerful uterine contractions, forces placental contents into the circulation, and, if the placenta is the important element in this toxemia, puts added burden on the liver and other glands already unable to overcome the toxins in the blood.

Cæsarean section is to my mind the treatment for severe toxemia and eclampsia, unless the patient can be delivered by forceps without great effort in a very short period of time.

In eclampsia the uterus should be emptied if it is held that the placenta bears an important relation to the development of the toxemia. The next step is to diminish the convulsions. The third step is to aid

energetically in the elimination of the toxic products and in overcoming the acidosis. It is generally agreed that the uterus should be emptied quickly, if it is to be emptied at all, and emptied in a manner which affects the patient's resistance in the least degree. A manual dilatation of the rigid cervix of a primigravida and the application of forceps or the practice of version are measures which take time and have a decided effect upon the patient's resistance and vitality. They likewise, jeopardize the welfare of the fetus. These babies are affected by the toxemia of the mother and many of them have the same lesions as the mother, many of them have convulsions, and many of them die. Any mode of delivery which makes it hard and difficult for the baby jeopardizes its existence. A slow method of dilatation with a bag or allowing Nature to proceed by her own method, a delivery going along several hours, even if uterine contractions are not excessive or are controlled by morphine, is certainly a great disadvantage to a woman in convulsions. Powerful uterine contractions with expression of placental secretion into the blood and liver have a most injurious effect on the toxemia. Of course, the head may be in the midplane, the cervix may be soft and readily and quickly dilated. Then extraction may be done readily within a short period of time with uterine contractions excluded by morphine and the anesthesia. Here the indications are fair for delivery by the natural route.

Contrast with this method, however, in any but such favorable cases, the operation of Cæsarean section. To make a comparison, I believe that if Cæsarean section was performed in a hundred routine cases in any hospital and the results were compared with a hundred vaginal operative deliveries—the average run of cases with high or low forceps, version, etc.—we would find everything in favor of Cæsarean section. Practically all the children would be delivered alive, if alive at the time of operation. The patient takes nitrous oxide and slight ether anesthesia, the operation lasts only from twenty to thirty minutes, no more blood is lost than in normal delivery, the intestines are scarcely touched, and convalescence is normal.

On the other hand, in a hundred routine cases of heads not firmly engaged in the brim of primigravida at full term where forceps are often used or where version must be done, injuries are produced in the cervix, tears and lacerations of the perineum occur, and a goodly proportion of the patients have to have an operation subsequently for relaxation of the bladder, rectum, and the pelvic floor.

In preeclamptic toxemia and in eclampsia the same principles hold good. The anesthesia affects the patient slightly; the operation is done quickly; the child is saved without any manipulation or any injury to it, and if it has any chance to live at all, it certainly has a vastly increased chance if delivered by Cæsarean section. Contrast the four per cent. mortality for the fetus, mentioned by Peterson with the Cæsarean section for eclampsia, with the thirty to forty per cent. mortality when delivered by the normal route, and no further discussion of this phase of the question is needed. Even in a normal patient with a

fair degree of difference in the pelvic measurements or in the size of the head, we do a Cesarean section in a primigravida to make certain of a living child. This holds good in a double degree in cases of severe toxemia or in eclampsia. To summarize, the advantages of Cesarean section are rapid delivery and the removal of the placenta with a minimum of shock to the baby and the mother, the delivery of a child with everything in favor of its remaining alive and well, and absence of injury to the pelvic structures. Surely these advantages are sufficient to point to Cesarean section as the more advisable routine method. Most important of all we avoid the uterine contractions of labor. Even if a certain proportion of cases of eclampsia are not of a severe type, one can never tell after the first few convulsions, whether coma will intervene. Many of the patients have a profound involvement of the kidney, as evidenced by albumin, casts, red blood cells, etc. A decided acidosis may develop. These cases probably are of both the renal and the liver type, and even if one may argue that patients would have survived with normal route delivery from below, surely their welfare is in no sense jeopardized by Cesarean section. And many of these patients do manifest the severest form of convulsions, often with coma. Toxemia patients, the so called pre-eclampsics, may have convulsions by labor induced or coming on without help. And when we come to the more severe type, the so called liver type, rapid emptying of the uterus is necessary, for it is not alone the emptying of the uterus that will cure the patient, it is the subsequent treatment which is necessary and that is certainly possible only with an empty uterus.

Convulsions must be diminished by every possible means. A convulsive attack of a severe nature repeated at frequent intervals is a tremendous strain on the patient and is a tremendous strain on the heart. Many of these patients die of edema of the lungs. Each successive attack with a convulsion, the rise in tension, the strain on the heart, and the interference with respiration, affects the degree of resistance profoundly and certainly often causes an edema of the lungs and brain and disturbance of the spinal structures. This edema of the brain is undoubtedly responsible in many cases for the coma of a profound type.

I find morphine the best drug for convulsions. Even if it does in a slight degree interfere with elimination by the kidneys, this disadvantage is not great. In addition, we know of no better treatment for threatened edema of the lungs than the use of morphine. In some of these cases of profound coma, it has been found that a spinal puncture is a lifesaving measure; and it should be attempted in every case, and if an increase of fluid under great pressure is found, it should be repeated whenever the indication demands it. If the fluid-extract of *veratrum viride*, given repeatedly in small doses, diminishes the blood pressure, the pulse rate, and the convulsions, well and good. In my hands I have found morphine when indicated the more reliable drug for this last purpose.

The next step demands the elimination of the toxic products and the combating of the acidosis,

which is of utmost importance. High colonic irrigations are necessary. It is wise to use an alkaline fluid, either bicarbonate of soda or acetate of potash, very warm. Gallons should be used, not quarts. Irrigations should last a half an hour and from ten to fifteen gallons should be used. This should be repeated two or three times in twenty-four hours. If the colon is tolerant between these irrigations a continuous Murphy drip of ten per cent. glucose and a two per cent. bicarbonate of soda should be administered. The purpose of the colon is particularly to absorb fluid as well as to excrete, as far as we know at least. Hence high colonic irrigations with an alkaline medium probably will help in absorbing into the body a fluid of an alkaline nature which not alone neutralizes the acidosis but dilutes the toxins and promotes diuresis.

Venesection is highly praised by some men, and with a high blood pressure and a full pulse it may be indicated, 300 to 500 c. c. being taken. Whether it is advisable to substitute this by the injection into the blood of any fluid or human blood is a question. I rather fear a saline infusion afterward if the blood pressure remains high, for, having drawn off the blood, the labor of the heart is diminished, and if a large amount of saline is injected in place of the removed blood, we may promote an edema, which is the one thing which must be avoided.

The overcoming of the acidosis is of the utmost importance no matter what the condition of the kidneys may be, and no matter how little they may be secreting with or without decided amounts of albumin and casts. The acidosis is of the utmost danger. Hence I repeat that the high colonic irrigation should be of an alkaline nature and the Murphy drip should contain glucose and an alkali. In the acidosis a deficiency of carbohydrates is concerned, and if we supply to the body sugar by absorption through the colon, and at the same time use either bicarbonate of soda or acetate of potash, we are doing all that we know to overcome this destructive process.

The feeding of a patient, if coma lasts, is of greatest importance, not alone to sustain the existence of the patient, but to aid in overcoming the acidosis, for the starvation certainly adds to this state. Hence patients should be fed at regular intervals by the stomach tube if in coma, peptonized milk being of the very best aid. Bicarbonate of soda may be added to this.

I wish to mention an interesting case:

CASE.—The patient went into coma forty-eight hours after the first convulsion, which occurred six hours after her delivery. Labor was induced because of the pre-eclamptic symptoms associated with a marked nephritic stage. Chloral and bromides by rectum and morphine, however, controlled the convulsions. On the fifth day she manifested a decided interference with her respirations, showing a Cheyne-Stokes type. A spinal puncture was done and the fluid shot out under great pressure and large amounts were withdrawn. Within five minutes her breathing became perfectly normal. The spinal puncture was repeated on two successive occasions.

I believe this patient's life was saved by the spinal punctures. This has taught me to view every case of coma following toxemia or eclampsia as possibly due to cerebrospinal pressure. Spinal puncture should be done if only for diagnosis. There is certainly no difficulty and no danger to the patient, and there is a hope that it may save life.



Reviewing the questions discussed in this paper, I can only emphasize my opinion that, based on logic, theory, and the statistics of Peterson, abdominal Cæsarean section at or near full term is the method for eclampsia and for toxemia of severe type. I feel that much can be done in a proper study of patients during the last four or five weeks of pregnancy. Attention must be paid to the blood pressure, examination for acidosis, examination for albumin and casts, subjective symptoms such as headache, dizziness, nausea, vomiting, mental dullness, a change in disposition, all of which should be looked for in every case, and when present should be considered preeclamptic and signs of excessive danger. High blood pressure is of grave significance. If the child is viable, safe delivery should be the procedure. If delivery can be rapidly followed out by the normal route without labor pains, well and good; if not, Cæsarean section should be done.

Delivery by the normal route in normal labor is often aided tremendously by the administration of pituitary extract. The introduction of a bag into the cervix, followed after a few hours by the administration of pituitrin, given in small doses repeated every half hour, will effect delivery in almost any case within a day. However, I am sceptical as to the advisability of using pituitrin in preeclamptic cases and in eclampsia. Personally, I feel sure that it is contraindicated and ought not to be used. Therefore in a primigravida with a firm cervix with preeclamptic symptoms of a threatening nature in whom we have to look forward to the introduction of one, two, or three bags, and a labor threatening to last many hours, I believe that a Cæsarean section should be done. After all, these patients, especially primigravidae, are desirous of saving the baby. Of course, we are bound to pursue the method least injurious to the mother. Cæsarean section in many preeclamptic cases, as well as the cases in eclampsia, saves the child. Of that there can be no doubt. That Cæsarean section does less injury to the mother and is a safer procedure, especially in a primigravida, than high forceps preceded by manual dilatation or a long labor induced by bags, is my firm conviction.

134 WEST EIGHTY-SEVENTH STREET.

### UTERINE FIBROIDS.\*

#### *A Consideration of Three Hundred and Thirty-four Hysterectomies,*

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and Hospital.

At the present day while radium and x ray treatment are being lauded as curative means in certain varieties of tumors in this class, the surgeon is excused for reporting a series of over 330 hysterectomies with two deaths—a proportion of less than 0.06 per cent. The fallacy or danger in the use of x ray or radium has recently been well established, the chief argument in its disfavor being the great danger of overlooking a malignancy which will continue

to grow until its recognition is easy and to such an extent as to predicate the futility of an operative cure. That malignancies with fibroids are frequent is evident when we review our own statistics and have to record eight or ten cases in which a malignancy existed with the innocent tumor. Granted that x ray had been used to cure all the recorded cases, there would have been an absolute mortality from overlooked malignancies of eight to ten cases, or three per cent. as compared to the surgical one of less than 0.06 per cent. Again, x ray or radium treatment with its uncertainty extends over a long period of weeks or months, whereas in the operative procedure the duration is from two to five weeks. The blood changes are slow if improving at all in the x ray or radium treatment, while they are exceptionally rapid after operation. As to sterility, no one questions this in radium or x ray work.

It has been my rule to advise operation only on those patients in whom: 1, the tumor is of exceptional size; 2, the tumor while under observation is growing rapidly; 3, bleeding is excessive in single instances or as continuous menstrual performance; 4, there is marked anemia attributable to neither of the above causes but probably to a slow dripping or spotting; 5, there are pressure symptoms, as pain in the back, thighs, bladder zone, etc.; swelling of the thighs, legs, etc.; dysuria or frequency with or without noctinuria; digestive disturbances, as fullness after eating, constipation to obstipation, etc.; respiratory difficulty from abdominal involvement; 6, there are recurring attacks of abdominal pain with slight temperature, simulating a peritonitis, possibly frictional in origin; and 7, it is necessary to prevent cardiac muscle changes. This subject need not be enlarged upon as the cardiac muscle fibre changes are more than evident in many of these subjects, a pronounced change for the better occurring within a few days to weeks after operation in practically all instances.

After all pressure and degenerative changes have been considered and in their absence the degenerations of the tumor, mucoid, myxomata, etc., the possibility of irritative malignancy changes in the vicinity of the tumor or tumors must be given full weight. Finally I advise operation when the tumor, although not noxious in any sense except from the cosmetic viewpoint, becomes of such size as to reflect upon the innocent bearer.

When for any good reason myomectomy can be done in a patient of childbearing age, this operation receives precedence. Nevertheless, one experience in saving a uterus by doing a myomectomy has made me most radical in the consideration of my subsequent patients.

CASE.—A young woman, aged twenty-three years, married several years, sister of a physician, had never been pregnant, and all relatives were anxious for an heir. There was a fibroid on the posterior wall of the uterus. I did a myomectomy and the patient recovered promptly. The removed tumor and tissues were examined microscopically and reported benign. About sixteen or eighteen months afterward she complained of pelvic pain and upon examination a mass was found in about the same position in the fundus but extending laterally to both broad ligaments. A second abdominal section revealed a growth clinically "positive malignancy" and microscopically adenocarcinoma.

\*Read before the Harlem Medical Society, November 1, 1916, and the Montclair Medical Society, November 27, 1916.



Very true, this does not obtain in many instances, but when the tumor involves the mucosa of the uterine cavity to any degree it is now my custom to do the radical operation.

Vaginal hysterectomy was done ten times in this series and always for the same reason or reasons. It is done in fat women with relaxed outlet or procidentia or with fibroids sufficiently small to allow of easy vaginal removal. If there is any suspicion of associated annexal disease existing, then the vaginal route is not accepted. Abdominal hysterectomy, either subtotal or total, was done on 324 of these patients. Of this number 131 were complete as to removal of the uterus and 193 subtotal. Complete hysterectomy was done in the majority of instances because the condition of the patient permitted more extensive work and because many were multiparæ with torn cervixes. This latter condition today demands careful consideration. It is well known that over two per cent. of retained cervixes undergo malignancy, and although this is a small proportion, nevertheless, it is a large factor in subsequent morbidity. Again, many patients with retained cervixes have a foul and excessive leucorrhea left after the subtotal operation.

Subtotal operation is more frequently done because of the rapidity and the lesser danger from ureteral contact. It is advisable for patients with profound anemia who would not bear even the slight added loss in blood when the cervix is enucleated. In the subtotal operation the retention of the cervix for anchorage of the round and broad ligaments is followed by better pelvic support than anchorage of the same structures to the vagina in the complete operation. This is proved by a proportion of patients after hysterectomy having either a mild or exaggerated cystocele and possibly proctoceles.

At present I am doing more complete hysterectomies than subtotal chiefly as a result of the secondary malignancy percentage and the foul leucorrhea.

*Ovary retention in patients under forty-five years of age.*—I am inclined to save one or both ovaries if they are healthy, removing the Fallopian tubes with the uterine mass. I am convinced that this procedure has saved many patients from a hazardous and abrupt menopause, etc. In this series of operations my records show both ovaries retained in nine patients; the right ovary saved in twenty-seven; the left in twenty-three, and the balance, I regret to say, are not recorded in my file.

During the operation of hysterectomy as here recorded the appendix has been removed 234 times; in the other 100 no file records. I am quite sure that the appendix was removed fully 315 or 320 times, as it is exceptionally rare for me not to remove this appendage when opening the abdomen.

During the past five or six years I have always examined the gallbladder and have been surprised to find a large percentage of involvements. In these 334 operations the gallbladder is recorded as being involved with operation in twenty-six cases—eighteen cholecystectomies and eight cholecystostomies—while numbers of instances are on record of gallbladders containing stones where no operation was allowed or done. I am inclined to believe that fully

fifteen to twenty-five per cent. of fibroid patients have cholelithiasis.

*Deaths.*—My deaths were two in number, both embolic—one in a patient on whom we had been forced to operate as a *dernier ressort*, dying on the tenth day while calling for a drink of water; the other toppling over while sitting on the edge of the bed in the close of the second week.

60 WEST FIFTY-SECOND STREET.

## INTRASPINOUS INJECTIONS OF NEOSALVARSANIZED SERUM IN NERVOUS AND MENTAL DISEASES.\*

By ALFRED GORDON, M. D.,  
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After several years of experience with the Wassermann reaction in cases of syphilitic involvement of the nervous system the following statements, I believe, may be considered as incontrovertible:

1. The reaction is not positive in every case. It may safely be said that in about sixty to seventy per cent. it is positive in the blood serum.
2. It is more frequently positive in paresis, less frequently in cerebrospinal syphilis, and still less frequently in tabes.
3. The spinal fluid gives a positive Wassermann more frequently than the serum.
4. The examination of the spinal fluid is of greater value in syphilis of the nervous system than that of the blood serum.
5. A negative Wassermann does not exclude absolutely a syphilitic involvement of the central nervous system.
6. Energetic treatment with salvarsanized serum may render the Wassermann reaction negative and still the clinical symptoms may remain unaltered or but slightly improved.
7. The proper treatment may improve greatly the clinical manifestations and still the Wassermann reaction may remain positive for a long time.
8. The degree of intensity of Wassermann reaction does not always bear a direct relationship to the number or intensity of the clinical symptoms.

These few observations have been verified repeatedly by the majority of careful students of the subject of syphilis. In view of the contradiction existing between the laboratory reactions and the clinical manifestations, a contradiction which I can fully corroborate, at least from my present study, I will refrain from giving detailed data concerning the biological state of the serum and of the spinal fluid before and after the treatment and will confine myself almost exclusively to the clinical results. I must say, however, that in every case without exception of this special study a Wassermann test as well as a cytological examination of the spinal fluid were carefully performed.

The entire series of 212 cases comprises the following groups: Seventy-five cases of cerebrospinal syphilis, thirty-five cases of tabes, forty cases of headache, twenty-two cases of paresis, seventeen cases of neuroses, and twenty-three cases of psychoses.

The most satisfactory results were obtained in the

\*Read before the Section of Medicine of the College of Physicians, February 26, 1917.

first group, viz., in cerebrospinal syphilis. Next in order were those of the headache cases. The tabetic cases follow, then the neuroses, then the paretic cases, and finally the psychoses. The treatment was uniform in all the cases as far as the preparation of the serum is concerned. In accordance with Swift and Ellis's directions the full 0.9 gram dose at first, or 0.6 gram of neosalvarsan in some cases, was injected intravenously. The withdrawing of the blood, centrifugation, inactivation, dilution with normal salt solution, lumbar puncture, and injection of the serum—all these procedures are now classical. With few modifications, each procedure was carried out as the originators recommended.

*Group I.*—The seventy-five cases of cerebrospinal syphilis presented more cerebral than spinal symptoms. Amelioration was obtained invariably after the first injection of neosalvarsanized serum. The mental hebetude which was present in a few cases totally disappeared. The condition of the cranial nerves, particularly in the domain of the third and sixth nerves, responded promptly to the treatment. The hemiplegias of very recent origin rapidly improved. Aphasia was frequently associated with a monoplegia of the right arm. The sooner after the onset the treatment was administered, the better the results that were obtained. It was noticed that the arm improved much more rapidly than the leg. The reflexes also participated in the improvement, so that the increase of the knee jerk was very slight and the extension of the toe became also very slight. In three out of seven hemiplegic cases the toe phenomenon disappeared entirely and the plantar reflex became normal. In some hemiplegics the improvement was so marked that the condition could be considered normal. This occurred only in the cases in which the treatment was instituted a few days after the apoplectic insult and in cases with a very mild hemiplegia; also in cases in which at least three injections of the serum were made. In all these hemiplegics there was no loss of consciousness and the attack consisted of sudden paresthesia on one side of the body, which soon was followed by a paresis. In the cases with loss of consciousness and a more pronounced paralytic state of a half of the body, also in the cases of longer standing, the results of the treatment were less pronounced and improvement was perceptible only after the fourth injection. It was evident from this experience that cases with thrombotic occlusion of cerebral bloodvessels are more favorable for the effect of salvarsanized serum than cases with presumable hemorrhages in the cerebrum. Very satisfactory results have been obtained in cases with a condition known as spasmodic closing of bloodvessels, cases in which are observed repeated attacks of mild hemiplegic or monoplegic states. It occurs in individuals with a degenerative state of the bloodvessel walls either of syphilitic or senile origin (1). Here as soon as the condition was recognized, the above treatment was promptly instituted and from one to two intraspinal injections were sufficient to greatly improve the condition. In two cases for twelve and seventeen months respectively no attack occurred.

In five cases there were cerebellar manifestations.

Asynergia, titubation, unequal reflexes, the position of the head, a more or less marked edema of the papilla, severe headache—all or some of these symptoms were present and suggested a cerebellar involvement. Fortunately in every one of them the Wassermann test was positive—four in the spinal fluid and one in both serum and spinal fluid. The treatment removed the above mentioned symptoms after one to four intraspinal injections. In one case the most brilliant result was rapidly obtained from one single treatment.

In the patients with symptoms showing involvement of the spinal cord the intraspinal method has proved to be equally satisfactory, especially in the recent cases. In several cases of myelitis the paraplegia and the subjective sensory disturbances—pain, tingling, burning, etc.—became greatly ameliorated. Special mention should be made in such cases regarding the condition of the sphincters, as the first and most marked improvement occurred here. I have noticed it in the function of the bladder and after the first injection. In cases of old standing while the improvement was evident, nevertheless it was obtained only after several injections and it was not as conspicuous as in the early cases. Sexual function was recovered in one case of a man of thirty-eight who had a syphilitic myelitis of several years' standing, but whose impotence existed for eighteen months.

One patient of the cerebrospinal group presented symptoms of multiple sclerosis, viz., optic neuritis in one eye, nystagmiform movements of both eyes, intention tremor, plus knee jerks and Babinski on both sides. The case was of old standing. After the third injection the intention tremor became exceedingly slight and the patient's general condition improved, but the other symptoms remained unaltered.

The following case presented the most striking results from the treatment.

*CASE I.*—A young man of thirty years, whose spinal fluid gave a strongly positive Wassermann reaction, presented at the first examination almost complete paralysis of the lower extremities, exaggerated knee jerks, double ankle clonus, and double Babinski. The legs were not spastic, but there was no undue flaccidity. There was retention of the urine and obstinate constipation. The upper extremities were markedly atrophied, especially the small muscles of the hands; the latter were claw like. The muscles of the thorax and the scapular muscles were also atrophied. One eye presented optic neuritis. There was also external strabismus in the left eye. The patient suffered excruciating pain in the arms and legs, so that he could not sleep. He was promptly given an intraspinal injection. The pain began to subside rapidly. Soon the leg gained some motion. The arms, which were extremely weak, one more than the other, gradually gained power. In three weeks the patient was given another treatment. Further improvement became very noticeable. He was able to move his legs and sit up. The pain had totally disappeared. The hands and arms gained power. The bladder functioned normally. He received three more intraspinal injections at three, six, and eight weeks' intervals. The patient commenced to walk with crutches, which he could discard at the end of the following six weeks. At present he is able to do some work as a collector. There is no difficulty in walking, the knee jerks are still increased, Babinski is present on one side, ankle clonus has disappeared. The upper extremities have gained greatly in power and in muscular tissue; the atrophy of the hands is very much less marked, and the grip of both hands is fairly good. The bladder is normal. The



unilateral optic neuritis remains unaltered, but there is no strabismus. The result is highly satisfactory.

*Group II.*—The thirty-five cases of tabes present many interesting therapeutical features. First of all, every one of the patients, without exception, was benefited to a greater or lesser degree. In the younger patients in whom the symptoms were not pronounced the favorable results were striking even after two injections. In the cases of earlier date the results were less beneficial and the patients required a larger number of injections than those having tabes of a more recent date. The number of injections also varied greatly.

*CASE II.*—This patient, a locomotive engineer, presented at the time of the examination lancinating pain in the lower limbs, slight ataxia, loss of tendon reflexes, and occasional retention of urine. He received but one intraspinal injection and in four weeks he returned to his work totally free from the pain and the ataxia; the bladder disorder has also disappeared. He refused to have other injections and for the last two years has been able to do his work. While his knee jerks are still absent, the other manifestations have not returned.

*CASE III.*—Another patient, a leader of an orchestra and a violinist, found himself unable to make a livelihood because of paresthesia in both hands and an inability to feel properly the various strings of his instrument. Examination revealed ataxia, Romberg sign, loss of knee jerks, and of tendon of Achilles reflex, some ataxia of the upper extremities, and retention of urine. He received but one intraspinal injection. In three weeks the paresthesia of the fingers had totally disappeared. He regained the sensation in his fingers, the ataxia and the bladder symptoms improved greatly. At present, twenty-five months after the treatment, he is again at his work, perfectly able to control his fingers; the ataxia and the bladder symptoms have disappeared.

What is especially interesting here is the return of the knee jerks. The tendon of Achilles reflex, however, is still absent. The patient refuses further injections. The return of the patellar tendon reflex occurred in another case of my series, also in tabes of recent date in which the symptoms had not yet reached their fullest development. The number of injections required to obtain beneficial results were small in the majority of the cases of tabes of recent date, but there was no parallelism. In some patients rapid improvement was obtained from one injection, in others similarly affected two or three injections were necessary before similar improvement was obtained. This irregularity in results was equally observable in cases of tabes of older date in which a larger number of intraspinal injections were given before favorable results could be observed.

*Group III.*—There were forty cases of headache. Serologically only thirty-one patients gave positive Wassermanns either in the blood (eleven) or spinal fluid (twenty). The other nine patients presented histories which were highly suggestive of syphilitic infection. Thus I traced several miscarriages, suspicious scars over the body, a history of the hair falling out at early age, repeated ulcerations in the pharynx, etc. The results in all the cases, except one, were highly satisfactory. In the cases of recent as well as early date the favorable effect from the treatment was invariably uniform. The number of injections varied, but it was small in the majority of the cases. Usually one or two injections were required to obtain improvement. In five cases of many months' standing only one injection was given,

with the most brilliant results. Recurrences of headache took place in the majority of cases, but repeated injections promptly removed the disorder. Similar results were obtained in the nine cases with the negative Wassermanns, and they required as many injections as some of the other cases. In none of these forty cases was there in evidence somatic manifestations such as observed in the first group, but in all of them the patellar tendon reflex was increased and no other abnormal reflex was observed. They were manifestly cases of cerebral syphilis in which the only conspicuous symptom was headache, probably due to a diffuse meningeal involvement. The cytological examination showed in all the forty cases a lymphocytosis, the number of cells ranging between eight and eighteen to a cubic millimetre. A detailed record of the patient mentioned above who did not respond to the intraspinal treatment has already been published (2). Although he presented some spinal symptoms and belonged to the first group of cases, nevertheless he was included in Group III because of the unusually severe and extraordinarily persistent headache. In this case, while the intraspinal treatment removed the spinal symptoms, nevertheless it failed to relieve the headache. Recovery followed an injection of neosalvarsanized serum into the cerebral subdural space.

*Group IV.*—This embraced twenty-two cases of paresis. There were twelve cases of early paresis and ten advanced cases. In the latter subgroup the treatment either made no impression at all or produced some slight improvement in the mentality which did not last long. This was observed after each injection. Even ten injections failed to bring on a prolonged improvement. The condition, however, was greatly different in the early cases of paresis. Here not only amelioration of the symptoms was in evidence soon after the first two injections, but also the duration of the improved period was decidedly greater than in the advanced cases. Moreover the improvement was so apparent to the relatives of the patients that they frequently declined, for this reason, to have the patients subjected to repeated injections. As to the improvement itself, it occurred mostly in the mental manifestations. The memory, the power of realization of their infirmity, also the power of selfcriticism, which is so frequently involved in paretics, showed a certain degree of improvement. In two cases the last was so pronounced that not only the patients' relatives, but also the attending physicians, questioned the correctness of the diagnosis and it was seriously doubted, for a long time, until recurrences took place. As to the somatic symptoms, with the exception of the speech, all others remained uninfluenced by the treatment. In order to maintain the improved condition a large number of injections was necessary in the recent as well as in the advanced cases. In three of the early cases from thirteen to twenty-two injections were given. Improvement and even considerable improvement was obtained within a period of two years, but it is far from being considered a recovery. Such patients will have to continue the treatment until they reach the point of intolerance, and when the latter arrives, the injections



will have to be totally abandoned, and this will lead inevitably to a return of the former mental disorder, which will mean a final progressive deterioration.

*Group V.*—The seventeen cases of neuroses include neurasthenics and psychasthenics. Among the latter there are cases with various forms of obsessions, cases with anxiety neuroses, with *abulia*, *folie de doute*, and *hypochondriasis*. As their humors gave positive Wassermann reactions, they were submitted to the same treatment as the other groups. Improvement was observed in every case without a single exception. Not many injections were required. The largest number was four. In ten out of seventeen marked improvement was noticeable after the first treatment. In two cases only one injection was administered, and the improvement was so marked that at the end of eight months it was considered, by the family, a recovery, although the Wassermann reaction was still feebly positive. To ascribe the improved mental condition and the disappearance of obsessions in some cases exclusively to the effect of the salvarsanized serum would not be rigidly accurate, as one must bear in mind that psychoneuroses sometimes improve and even disappear under the influence of various methods of treatment, such as suggestion, persuasion, and psychoanalysis with the finding of the psychogenetic elements. Parallel with the intraspinal antisyphilitic treatment all these methods have been employed. Whether the latter were the deciding factor in the striking improvement of some cases, it is not possible to say positively in view of the fact that all patients were treated by the above mentioned procedures long before salvarsan was employed here, and some of the patients showed no improvement at all until the intraspinal injections were used. In connection herewith it is important to mention the absence of parallelism between the improvement of the psychical manifestations and the Wassermann reaction, as the latter remained positive in spite of the disappearance of psychoneurotic phenomena. The cellular elements of the spinal fluid also considerably diminished alongside the persistent positive complement fixation test.

*Group VI.*—The twenty-three cases of psychoses embrace all varieties except parietic dementia. In twenty cases the Wassermann reaction proved to be positive in one or the other, or in both humors. In three cases the reaction was negative, but the histories pointed to a syphilitic infection. Several miscarriages, cachectic appearance, headache, eruptions in early age all indicated a possibility of infection. Like the other twenty cases these three were also submitted to the intraspinal treatment. The relation of syphilis to the psychoses is of the utmost importance and forms the subject of a special study to be continued by me elsewhere. Manic depressive psychosis, dementia *præcox*, involutional melancholia, and Korsakoff's psychosis were all represented in Group VI. While all the patients improved in their mental manifestations probably because of their syphilis, nevertheless the clinical pictures, the course of the diseases, and the subsequent events did not authorize me to draw a precisely direct relationship between their potential syphilis and

the typical forms of the psychoses. In the other contribution already alluded to, facts will be brought forward for such a contention. It will be shown that it is difficult to admit that syphilis, many years after the initial infection, is capable *per se* to create such distinctly classical forms of psychoses. What is possible to assert is that syphilis of old standing is apt to bring on modifications in psychoses which would have developed irrespective of the presence of syphilis. If improvement from antisyphilitic treatment was obtained, the effective influence was manifested precisely in those modifying elements, which being added, have altered the usual manifestations and course of the mental phenomena. For example, hallucinations which occurred in the manic depressive psychosis and which were coincident with a high cellular count in the spinal fluid, improved greatly and even disappeared after the treatment. Improvement was obtained in the majority of the cases. The number of injections varied from case to case. While recurrences did take place, nevertheless the degree and rapidity with which the amelioration in the mental status of the patient took place are sufficient reasons to justify the above treatment in every form of the psychoses in which a complement fixation test is positive; also in cases in which the history and the antecedents present sufficient ground for presumption of syphilis. The salvarsanized serum not only removes the above mentioned modifying elements, but also has a favorable influence on the course of the psychoses; remissions set in early and in some cases they are prolonged.

*Conclusions.*—The results obtained in the 212 cases are bound to create a spirit of optimism in the management of cases with evidences of syphilis. In some cases the expectations are greater than in others, as for example in early cases. In some cases the amelioration of the nervous and mental manifestations are short of being considered brilliant and indeed it is apt to render one highly enthusiastic. But a calmer consideration of the actual facts, especially when the cases are followed up for a sufficiently long time, does not permit me to be over sanguine in spite of the favorable results obtained in the majority of my cases. There were sufficient recurrences to warrant a conclusion that the last word in the treatment of nervous and mental diseases of syphilitic origin is far from having been spoken. On the other hand, a mere comparison of the results obtained from the old methods of treatment with those from the newer procedures must convince an impartial observer that the latter are much superior to the former. The largest number of my cases, except the psychoses, had been treated with mercurials and iodides for a considerable time prior to coming under my observation with slight or no success at all. The cases in which some success had been obtained with those remedies cannot stand comparison with the cases to which the intraspinal treatment has been applied. In the latter the results have been at times so strikingly satisfactory that for the present at least it appears to be the only procedure in which hope can be placed for checking syphilitic diseases of the nervous system. A procedure that enables us to bring spirocheticidal reagents into

direct contact with the cerebrospinal system, intraspinally and intracerebrally, seems to be the most logical one. The fact itself of giving satisfactory results in most serious affections is most encouraging and promising. It points the way in which our efforts should be directed. The future success lies in the perfection of this method.

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1812 SPRUCE STREET.

## FACTORS WHICH AFFECT RESULTS IN THE TREATMENT OF PROSTATIC OBSTRUCTION.\*

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## CLASSIFICATION.

Prostatic obstruction may be due to any one of a number of pathological conditions of the prostate gland. In most cases, however, the so called obstruction is not due to an enlargement of the gland proper, but rather to an adenomatous growth of the prostate, a condition which causes perhaps more than eighty per cent. of all cases of prostatic obstruction. Malignant conditions of the prostate nearly always produce obstruction, malignancy having been present in about twenty per cent. of my own series of prostatectomies; and the hard, fibrous condition produced by a fibrous degeneration of the prostate, while it does not result in enlargement of the gland, may nevertheless cause obstruction. Obstructive symptoms may be produced also by tuberculosis of the prostate and by prostatitis or prostatic abscess. Obstruction from these causes, however, requires quite a different line of treatment from that indicated in the type of cases above mentioned. Other conditions at the vesical outlet, e. g., the sub-cervical tubules so well described and studied by Lowsley, may, and often do, produce similar symptoms.

The most common form of prostatic obstruction, that caused by an adenomatous hypertrophy, almost always occurs after the age of fifty. Statistics show that about forty per cent. of all men past fifty-five years of age have some symptoms of prostatic obstruction and that in about twelve per cent. of this number, serious trouble results. For this reason, the subject of prostatic hypertrophy becomes of double interest to the profession.

## ETIOLOGY.

Extensive embryological, histological, and gross studies by urologists thus far have produced no satisfactory explanation of the tendency of this sexual organ to hypertrophy rather than to diminish in size as sexual life wanes. In our clinic under the direction of my associate, Dr. T. P. Shupe, a comparative study was made of the genitalia of many of the carnivora and herbivora. Detailed descriptions of our findings cannot be given here, but in our histological and gross studies of these prostates, we found no reason to conclude that the adenomatous hyper-

trophy of the gland might be due to any structural condition. In fact, in reviewing the literature on the etiology of prostatic hypertrophy, one cannot but be impressed by the number of theories which have been advanced, their very number being in itself an indication that the real cause of this condition has yet to be discovered. Three theories, in particular, have many followers: 1, that of Chiechanowski, who believes that prostatic hypertrophy is the result of chronic infection of the urethra—yet I know that a considerable number of my own patients have never had any chronic urethral infection; 2, the theory of Guyon, that prostatic hypertrophy is a local manifestation of general arteriosclerosis, a theory which I have found likewise untenable; 3, the theory of Metchnikoff, who considered that this condition is one of nature's disharmonies—a theory we may as well accept until the exact cause of the condition is discovered.

## DIAGNOSIS.

The diagnosis of prostatic obstruction is not difficult, although a great many mistakes have been made from a failure to appreciate properly certain conditions which may produce similar symptoms. Because a man past fifty-five years of age has some bladder trouble, it does not of necessity follow that his symptoms are due to prostatic enlargement. One frequent cause of incontinence, a cause which is often overlooked, is beginning tabes. It is always well, therefore, to examine the patient very carefully with this possibility in mind, in particular to discover whether or not his reflexes are present. In case of doubt, a Wassermann test of the blood and of the spinal fluid will probably establish the diagnosis. Sometimes, also, stricture of the urethra simulates the obstruction due to an enlarged prostate. Growths of the bladder, if situated near the urethral outlet, present symptoms similar to those of prostatic hypertrophy. The so called median bar, which is occasionally so elevated and firm that it prevents the free flow of urine, may also be mistaken for enlargement of the prostate. A diverticulum of the bladder also may produce symptoms which simulate those of prostatic obstruction, although this condition is a secondary complication of some urinary obstruction and therefore may be itself an indication of prostatic hypertrophy.

Rectal palpation with the patient bent well over will generally demonstrate whether or not the prostate is the probable cause of urinary obstruction. In cases of doubt, however, final diagnosis demands the use of the cystoscope, which often discloses the presence of a so called middle lobe which the finger cannot palpate. The cystoscope determines also whether or not there exists a tumor, stone, or diverticulum in the bladder. When prostatic obstruction occurs in a man between the ages of forty-five and fifty-five years, the possibility of malignancy must be kept in mind.

## TREATMENT.

Of course, prophylactic treatment would be ideal if the cause of prostatic obstruction could be demonstrated. As it is, however, all our efforts must be directed to the relief of an existing condition. It is not necessary to describe in detail the various

\*Read before the Scranton Academy of Medicine, February 15, 1917.



methods that have been devised for the relief of this condition. They resolve themselves into two lines of treatment: 1, the judicious use of the catheter, and, 2, surgical treatment, which nearly always implies the complete removal of the gland.

*Catheter.*—The use of the catheter in these cases carries with it a low mortality rate in the beginning, but a much increased remote mortality, for it is impossible to employ the catheter for any length of time without danger of infection, this danger increasing with the length of time the catheter is used. Occasionally, a patient who repeatedly employs an unsterilized catheter and uses his own sputum as a lubricant will have sufficient vitality to resist the dangers of these procedures. In most cases, however, a man cannot survive this treatment for any length of time, to say nothing of the constant annoyance of having to find suitable places and surroundings for emptying his bladder.

*Surgical Removal.*—On the other hand, the radical removal of the prostate not only completely relieves the urinary obstruction, but the operation has become well standardized and modern surgical methods have made it so safe a procedure in experienced hands that its mortality rate is comparatively low.

The successful surgical treatment of prostatic obstruction involves three prime factors: 1, preoperative care; 2, operative technic, and 3, postoperative care. The preoperative care is of utmost importance. We never perform an immediate operation in a prostatic case merely as a means of relief from retention. Immediate relief can always be secured for these patients by catheterization or by suprapubic puncture. Every patient who comes under our observation is first submitted to a careful examination which includes a determination of his kidney function. We first of all try to accommodate the patient to his new surroundings and environment, and to set his mind at ease. Many of these patients come from the rural districts. Ordinarily they are put to bed, and nightshirts slit up the back are substituted for the flannel shirts which they are accustomed to wear day and night. The diet, as well as the bed dress, is different from that to which they have been accustomed, and it follows naturally that for the first few days, they are worried, nervous, and homesick. Since this mental condition produces pronounced physical effects, it is our rule with prostatic cases to keep each patient under conditions as nearly as possible like those to which he has been accustomed. If a man wishes to wear flannel next his skin, he is permitted to do so. He is not kept too near an open window with a draft, for, as a rule, he is accustomed to sleep with his windows tightly closed. His usual diet is approximated as closely as possible. In every way his whole condition, and not merely the local lesion, is considered.

In cases of prostatic obstruction, and in fact in any surgical case, my belief is that it is not wise to operate if the patient has a very strong conviction that he is not going to survive the operation. To what extent the psychological condition of the patient can affect the outcome is of course uncertain, but it has been our experience that patients who had made up their minds that they were going to die, who had put all their affairs in entirely too good

order, who apparently were absolutely determined not to get well, who, in short, had no fight in them and were not willing to "play the game," generally do die, their exit usually being unaccompanied by any surgical complications sufficient to account for the outcome. If a patient says he cannot survive and is determine to die, I will not accommodate him by assisting him to his end by means of an operation. My plan, rather, is to delay surgical procedures until I can secure his cooperation and assure his playing the sporting game. Prostatectomy is never an emergency operation, and the surgeon should proceed only when conditions indicate a favorable outcome.

After we have thus treated the man psychically, so that he is no longer losing ground, we test his kidneys. Of all the tests thus far advanced, none is infallible, but the best results are secured by the phenolsulphonaphthalein test. For safety, the phenolsulphonaphthalein test should be thirty per cent. or above if possible, although occasionally we operate when it is only twenty per cent. However, these patients always make a slow convalescence, for they are poor risks and we generally find it best to wait.

The technic of the operation itself should be so planned as to produce the least possible reaction and the least possible drain upon the patient's reserve. A chronic prostatic case is always handicapped; his reserve vitality is small and even in only one eighth or one fourth of it is used up by the operation, just that much less is left wherewith to meet any later complications which may arise. I prefer the suprapubic operation, because it affords the maximum number of operative possibilities and is followed by the minimum number of postoperative complications. By using the suprapubic route, the prostate is removed entirely and generally in one piece, hemorrhage is controlled, and a good bladder picture is secured. If properly done, this method of removing the gland is not followed by such unfortunate sequelæ as postoperative fistula and incontinence.

By the technic which has been developed in our clinic in which the principle of anociation is carried out in every detail, we have found that a minimum degree of reaction results. About one hour before operation, the patient is given a hypodermic injection of from one eighth to one sixth of a grain of morphine, the size of the dose depending upon his age and physical condition. The general inhalation anesthetic is nitrous oxide and oxygen. With a one to 400 solution of novocaine, we thoroughly infiltrate the local areas, including not only the skin, but the fascia, the bladder wall, and the mucous areas over and about the prostate, and in addition make deep infiltration about the capsule.

Then, without putting the finger in the rectum, the prostate is carefully enucleated. It is not our aim to see how quickly, but how carefully and gently, the gland may be removed. Rectal palpation offers little if any aid in the enucleation of the gland, and instead of protecting the rectum, may endanger it by pressing it too closely to the prostatic capsule. Furthermore, rectal palpation excites one of the strongest reflexes, so strong that it is often employed as a method of resuscitation, the rapid,



noisy respiration following the introduction of the finger into the rectum being familiar to all.

If there is much hemorrhage after the prostate is removed, gauze and often warm tapes are packed into the cavity and kept there for a few minutes until the bleeding has ceased. Then around the catheter, which is allowed to remain in the urethra and on top of the mucous membrane, not in the cavity, gauze is packed so as to bring the raw surfaces of the so called capsule together all the way around. One suture is taken through the fascia on one side, then through the bladder and the fascia on the other side, to anchor the bladder so that if repacking is necessary, there will be no danger of pushing the bladder out of place. The gauze is left in for twenty-four hours, after which period no more packing is necessary.

The outcome of a prostatectomy is often determined by the postoperative care, especially during the first forty-eight hours. A case worth operation is worth saving and in order to conserve some of these handicapped men, who are necessarily very poor surgical risks, nothing must be left undone. Every man upon whom I perform a prostatectomy is provided with a special nurse. If he can afford it he has two, but no patient is so poor as to be deprived of this special attention. Even the ward patient, who is unable to pay for his bed and his operation, has a special nurse for at least the first few days after operation. A special fund is provided for this extra nursing service for patients who are too poor to provide such care themselves.

The most immediate danger is possible hemorrhage, which, although it occurs very rarely, must be met at once, for, unless someone is at hand to recognize it, a patient may in a short time lose so much blood that nothing can save him. Prostatic patients are always given saline solution by subcutaneous infusion, by rectal tap, or by both. The nurse must watch to see that the patient is sufficiently protected from becoming wet and soiled, that the catheter does not become obstructed, that the patient receives the proper kind and amount of nourishment, that he is turned from side to side and put in a semireclining position to prevent hypostatic pneumonia, and that everything is done to make the man absolutely comfortable and free from worry. These old patients are easily discouraged and very soon give up the struggle unless they are helped. The blood pressure is taken every two or three hours. If the patient has myocarditis, digitalis is given to strengthen the heart action. At the end of twenty-four hours the gauze is removed, under analgesia or nitrous oxide if the patient is extremely nervous. I do not advocate getting the patient out of bed until he can be made comfortable sitting up, and we do not have any hard and fast rule that every patient must sit up in forty-eight hours. As soon as it is possible, however, the patient is helped up into a chair, or, if sitting up is an effort, he is sometimes kept for a time in a comfortable semireclining position.

In many of these cases, the suprapubic wound heals within ten days or two weeks; in others, it persists for a longer time. If convalescence drags on over a period of three or four weeks or more, and the patient begins to show the effect of the con-

finement by loss of appetite and discouragement, it is best to send him home with a nurse, for a great improvement is nearly always manifested by this change. When we consider the age and general condition of many of these patients with prostatic obstruction, it is most gratifying to find how much can be done for them by carrying out the line of treatment we have described. That is, in these handicapped cases, not only must the obstruction be relieved, but the patient must be considered as a whole if the best result is to be secured.

1021 PROSPECT AVENUE, S. E.

## THE MODERN DIAGNOSIS AND TREATMENT OF SYPHILIS.\*

*An Analysis of 557 Cases.*

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During the past few years much has been written upon this subject, and yet we see patients daily who are permitted to pass into the secondary stages of syphilis before a correct diagnosis is made or proper treatment instituted. Because of this we present this paper covering our personal experience with 557 cases of syphilis collected from private and hospital practice. Some of these patients received their first injections of salvarsan six years ago and while they have presented negative Wassermann reactions and have been free from any manifestation of the disease during that time, we do not feel free to assert that they may not still harbor the disease. It is therefore necessary to tell patients the facts in the case and impress them with the importance of continued blood tests every year or two during their entire life, even after the initial two years of frequent observations. Generations must pass before we dare assert that our present conception of treatment is the most effective, and that it with proper management in the primary and secondary stages of the disease, apparently indicates indefinite if not permanent cure.

*Early diagnosis.*—Not many years ago, syphilographers taught their students, if in doubt as to the etiology of a suspicious venereal sore, to wait until the appearance of secondaries before instituting antisyphilitic treatment. Today such teaching in the light of our present knowledge is most reprehensible and utterly inexcusable. Today, with the dark field illuminator, we can demonstrate the *Treponema pallidum* in the sore and are not obliged to wait for the secondaries to appear. It therefore becomes necessary for every practitioner undertaking to treat genitourinary diseases, particularly venereal sores of any kind, to provide himself with a dark field microscope, for in many instances early diagnosis is possible only by this means, and it is a fact

\*Read before the Philadelphia Genitourinary Society of the American Urological Association.

that only by early diagnosis, even before the Wassermann reaction becomes positive, can we hope to eradicate the disease with one or two injections of arsenobenzol. We have made it a routine in each patient, male or female, presenting a venereal sore, regardless of its general characteristics, to examine the lesion with the dark field illuminator for *Treponemata pallida*, which if negative is followed by a Wassermann at the same time. If the *treponemata* are not found and the sore appears suspicious, it is examined daily until either we find the *treponemata* or the Wassermann reaction reveals the true character of the lesion. As soon as the diagnosis of chancre is assured the patient is strongly urged to have an injection of salvarsan or one of its substitutes at once, since each day's delay means that the *treponemata* are permitted to intrench themselves deeper and deeper into the tissues. Thus the importance of the early administration of salvarsan is paralleled only by the urgency and necessity of the early injection of antitoxin in diphtheria.

Actual statistics in our work show that the dark field illuminator resulted positively in eighty-one per cent. of chancres on the first or second examination. In a series of sixty-five chancres we were able to demonstrate the *Treponemata pallida* in fifty before the Wassermann became positive; while in fifteen chancres negative with the dark field illuminator—a number of cases examined but once—the Wassermann reaction revealed the true nature of the infection.

*Wassermann reactions.*—We have been able to obtain a positive reaction as early as the third day of the chancre; this occurred in 8.5 per cent. of cases; three per cent. were observed to be positive on the fourth day; six per cent. on the seventh day; 12.5 per cent. in the second week; sixteen per cent. in the third week; thirty-two per cent. in the fourth week, while twenty-two per cent. resulted negatively. It will be observed that the last or negative results refer to and include those cases of chancre where the *treponemata* were found early before the advent of a positive Wassermann, and where by virtue of early treatment a negative serological result persisted.

In untreated and tertiary syphilis exhibiting active lesions, we were able to obtain a positive Wassermann in 100 per cent. of cases. In a number of latent cases it has been necessary to resort to the provocative test in order to obtain a positive Wassermann. To the best of our knowledge and belief, we have never obtained a positive Wassermann reaction in a definitely known nonsyphilitic patient.

*Chancres.*—In a majority of the cases two or three doses of salvarsan, neosalvarsan, or a combination of both were sufficient to eradicate the disease clinically and serologically; that is, produce a negative Wassermann from one month to a period extending over three years. If each patient with a chancre is treated with either salvarsan or neosalvarsan until a negative Wassermann is obtained, it will remain so for an indefinite period, extending from one month to over five years, even without any other treatment, thus demonstrating the efficiency of these drugs by intensive treatment and the urgency of early diagnosis. One dose of salvarsan

may be sufficient to cure a case of early syphilis, that is, in the early days of the chancre before the Wassermann becomes positive, but we have been unable to record sufficient cases to prove this, owing to the fact that we have not felt morally justified in limiting the patient to a single dose of either salvarsan or neosalvarsan.

*Secondary and latent syphilis—Mercury excluded from treatment.*—In this stage of the disease twenty-one traceable cases were treated with salvarsan, neosalvarsan, or a combination. It will be observed that we were able to obtain negative Wassermann reactions in each case, except one, extending from periods immediately after the last injection until three years. The one case in which a negative Wassermann was not obtainable showed a weakly positive result after the fifth dose of neosalvarsan, the patient disappearing from observation thereafter. It is possible to interpret this result on the basis of the comparative therapeutic inferiority of neosalvarsan as compared with salvarsan, but the case may simply be one of those exhibiting a weakly positive serological reaction immediately after treatment to be followed indefinitely thereafter by negative reactions.

*Secondary and latent syphilis—Mercury before and after salvarsan and neosalvarsan.*—In the group sixteen cases were carefully studied and followed up to the present. The results were not so good as in the preceding group. Four patients after two doses of arsenobenzol still had strongly positive Wassermanns. It has been a common observation, however, that there would be no appreciable change from a strongly positive Wassermann after the first or second injection, because strongly positive may mean anything in excess of one unit. Hence quantitative nomenclature is necessary to portray the exact result, that is the reduction of the serological reaction from, say, plus four units to two or one, or the weak and medium degrees of a single unit. Thus in only one case, or 6.25 per cent., did we fail to obtain a negative Wassermann and we believe from our experience that had this patient continued under observation, his Wassermann would have finally become negative without any further treatment. In the event that the Wassermann in such cases are reported weakly positive twice, that is immediately after the injection and three weeks later, it is our opinion that further treatment is indicated until a negative Wassermann can be obtained. It will therefore be seen that if a patient with secondary syphilis takes a sufficient number of doses either of salvarsan or neosalvarsan the Wassermann will become negative and so remain indefinitely, even though no mercury is used.

Our results showed that without exception, every syphilitic not only in the primary, but also in the secondary stage of syphilis, over sixty per cent. of whom show a strongly positive Wassermann, and who had been treated with salvarsan or neosalvarsan until the Wassermann became negative, continued to demonstrate negative reactions in periods ranging from three months to three and one half years after the suspension of all treatment. It should be stated in connection with this that our



Wassermann results are based on the technic employing the so called single unit of complement and the alcoholic extract of syphilitic liver antigen. It is not improbable that with the use of the cholesterinized extract antigen or the Hecht-Weinberg modification some of our negative results might have appeared weakly positive. As a matter of fact with few exceptions there has been a remarkable agreement between the results with the alcoholic syphilitic liver extract and the cholesterinized extract antigens, as far as the late tabulated Wassermann results are concerned. Moreover, there is no absolute assurance with a cholesterinized antigen any more than with the alcoholic syphilitic liver extract antigen that in a given patient the Wassermann blood test will continue forever negative, after having been so rendered by treatment. As stated before it will require a generation or more before we are able to assert that any of these patients are cured by the treatment they have received and are receiving today. These observations, therefore, must be regarded as a preliminary report, and in future as patients return for observation and further blood tests we shall supplement this report. Regardless of the remote results, it is clear that if any reliance can be placed upon our Wassermann tests extending over three years, mercury need play no important rôle in the treatment of secondary syphilis, provided contraindications to the intensive administration of salvarsan or neosalvarsan do not arise.

*Tertiary syphilis.*—Most of our fourteen patients with tertiary syphilis who were treated intensively with salvarsan or neosalvarsan received mercury before and a few after the administration of 606 or 914. When compared with the serological results in the primary and secondary stages of the disease the prognosis as to cure of syphilis in the tertiary stage is not encouraging. Of the fourteen patients studied, nine exhibited negative Wassermans, while five failed to do so, even after eight injections of salvarsan or neosalvarsan and two years of mercurial treatment. It will also be noted that in all active tertiary cases a positive Wassermann was obtained, even though a vast majority of the patients received treatment by mercury prior to our examination of the blood.

*Substitutes for salvarsan.*—In the latter part of 1915 when salvarsan and neosalvarsan were no longer on the market and obtainable for dispensary patients, we sought for a substitute for the German preparations. Sodium cacodylate, because of its high arsenical content, thirty-eight per cent., and lack of toxicity, appealed to us as a plausible alternative. Although months before we had administered this drug in five grain doses intravenously twice weekly with spurious benefit, in view of its alleged value intramuscularly in the cure of chancres, we decided to test it further. We increased the dose and accordingly gave as high as thirty grains twice weekly, intravenously, without the slightest sign of toxicity, and likewise with very slight effect upon the syphilitic lesions and absolutely none upon the Wassermann reaction. Another drug to which we accorded a thorough trial a few years ago was the arylarsonate "soamin," with results little better than with sodium cacodylate. Doctors Schamberg, Rai-

ziss, and Kolmer, of the Dermatological Research Laboratories of the Philadelphia Polyclinic Hospital, after a year of animal experimentation and standardization, placed in the hands of the medical profession the American preparation of arsenobenzol, asserted to be similar to salvarsan chemically and therapeutically. We naturally welcomed the opportunity to study comparatively the effects clinically and serologically of this in the different stages of syphilis. The drug, which when first placed upon the market was very difficult of solution, has been improved considerably in this respect. The technic of administration differs in no material way from that of salvarsan. As far as reactions are concerned, they have been practically negative, the preparation in this respect resembling neosalvarsan, associated therefore with a minimum toxicity. Clinically, as far as its immediate apparent effect upon the lesions of syphilis is concerned, it is equal to the German or any similar preparation now on the market. The real efficiency test, however, it seems to us, with this as with the other preparations of arsenobenzol, must be the Wassermann serological control, extending over many years in the future. Our results with arsenobenzol, Polyclinic and French and the Canadian diarsenol compared with salvarsan and neosalvarsan were as follows:

We feel that the number of patients has been too small and the periods of observation too brief to warrant a final statement as to the true value of either the Polyclinic, French or Canadian preparations of arsenobenzol, although the immediate clinical effects appear to be good. Certainly the reactions following the administration of both the French and Canadian products have been more frequent and marked than with the Polyclinic preparation.

In chancre cases we obtained more negative Wassermann reactions with salvarsan and neosalvarsan than with Polyclinic arsenobenzol, and more with the latter than with the French product, although subsequent examinations showed negative Wassermann reactions in some cases with all of the products. In secondary and latent syphilis with mercury excluded from the treatment the best results were obtained with salvarsan, next with neosalvarsan, and then with Polyclinic arsenobenzol. Of three cases treated with French arsenobenzol two negative Wassermann reactions were obtained. The Canadian diarsenol used in two cases gave no negative reactions. In the cases of tertiary syphilis with mercury used before and after the injections we secured with salvarsan one negative reaction in twelve cases, and two negative reactions in twelve cases treated with neosalvarsan. With Polyclinic arsenobenzol we obtained one negative and one mildly positive reaction out of five cases, and with the French arsenobenzol one negative and one mildly positive out of three cases treated. Subsequent examinations showed more negative reactions with salvarsan and neosalvarsan than with the other arsenobenzol products, although one negative Wassermann was secured in one of the cases treated with the Polyclinic arsenobenzol. In the secondary and latent cases where mercury was combined with the salvarsan and neosalvarsan eleven negative reactions were



obtained out of sixteen cases. The number of clinical reactions manifested by headache, chills, fever, diarrhea, etc., to the injections of the various products were more numerous with salvarsan than with neosalvarsan, and with the French diarsenobenzol than with the Polyclinic product.

It is our impression that serologically arsenobenzol (Polyclinic) is not so effective as the other preparations, notably the German salvarsan and neosalvarsan.

For our report on clinical reactions, we studied accurately 167 consecutive cases treated with salvarsan. Reactions occurred in 124 cases and no reaction in forty-three cases. Twelve patients were advised to remain at the hospital over night. One patient after the third injection of salvarsan manifested a marked cutaneous eruption, neuritis developed, and after a lingering illness of two months she died. A great deal of blame attaches to the patient herself in this instance, as on the appearance of "puffiness under the eyes" she was strongly urged to enter the hospital, but refused to do so until her condition two weeks later became quite serious.

Sixty-nine of the 119 patients receiving injections of neosalvarsan manifested reactions. All of these were in a mild form, even though the actual percentage is higher than with salvarsan. Only five patients were advised to stay at the hospital all night. A marked skin eruption developed in one patient which, after a three months' sojourn at the hospital, disappeared, and she was discharged relieved of her only complaint, a severe headache, but still exhibiting a strongly positive Wassermann. Thirty-eight injections of arsenobenzol (Polyclinic) were followed by reactions in twenty-two. The reactions were all slight except in one case, a woman, who was given the full dose, 0.6 gram, and who remained at the hospital over night and for two days afterward was troubled with continuous vomiting. Arsenobenzol was followed by twenty-four reactions in twenty-six cases. Twelve patients were advised to stay over night because of the reactions. The toxicity of this drug as manifested in the great number of reactions caused us to exercise unusual precautions and discrimination in the selection of patients, although its therapeutic value may be the equal of the other preparations of arsenobenzol.

*Sociological considerations in the management of syphilis.*—We have studied 557 cases of syphilis, and the analysis is interesting from the sociological standpoint. Of these, ninety-three patients were examined for syphilis and their Wassermann was observed to be positive, but they never returned to learn whether or not they had the disease. One hundred and sixty-one patients returned, were informed of the nature of their infection, but never undertook any treatment. Thus it will be seen that there are 254 persons with syphilis, some of them in the acute or transmissible stage, roaming about indifferently spreading their infections and endangering their own and jeopardizing the lives of others. The question naturally arises, Shall we compel these men and women to undergo treatment, or shall we because of sentimentality permit these people to be a menace to the health and happiness of the innocent

citizens of the community? Is there any real sensible reason why the health laws or regulations governing diphtheria, scarlet fever, or smallpox should not apply to syphilis, especially to those indifferent, irresponsible, and refractory individuals who voluntarily cease or refuse treatment? Is not syphilis today a greater menace than many other better controlled transmissible diseases? We are not in sympathy with the individual registration of syphilitics, by name, number, or in any other way, but we do believe it is feasible, proper, and imperative to advise the public that anyone who is unfortunate enough to acquire syphilis must seek treatment either privately or at a hospital and must continue it until discharged cured. Infraction of this regulation should mean report of the case to the health authorities, and if the patient refuses further treatment, stringent action should be taken, amounting, if need be, to isolation and quarantine. To be successful such regulations must incorporate the co-operation of the social service department of hospitals. Failure on the part of physicians to report such cases should result, as with other transmissible diseases, in fine or imprisonment or both. We do not see, by such a universal enactment, that an injustice can accrue to any particular physician. Any discussion directed to the control of the "social evil" that fails to take into consideration the above, is in our opinion farcical.

We were particularly interested to learn what became of those patients who did not return. Accordingly, we sent letters to 130 patients, pleading that they return, at the same time informing them of the seriousness of their condition. Thirty-five letters were returned for want of correct address, evidencing the necessity for a social service follow up. The remaining ninety-five communications must have reached the patients to whom they were addressed. Of these cases only eighteen returned, and each was asked to state his reason for his lack of interest in his affliction. Two patients refused treatment outright, saying they did not care. Six said that they had no money to pay for treatment. Five stated they were out of town, an unacceptable excuse. These we believe should be classified with the next five patients, who were utterly indifferent as to whether or not they were cured. This, we believe, is a fair illustration of the behavior of dispensary patients, and shows the psychology of these individuals, and represents the experience of many others engaged in the treatment of venereal diseases. One of the most alarming facts elicited was that one third of them could not afford the cost of treatment. We know of one man who, because of a brawl, served time in jail and received during his confinement six doses of salvarsan gratis. Such, however, is not the good fortune of the peaceful citizen who becomes the victim of syphilis regardless of its origin. If he is unable to pay for the best form of treatment, he is either compelled to go without salvarsan or be content with the old line of treatment which as a rule fails to cure.

Thus it will be seen that the city and State should make provision for patients unable to pay for the proper treatment of their afflictions by compelling

all hospitals receiving State aid to treat venereal diseases, necessitating the equipment of a venereal ward for the admission of such patients as in the judgment of the genitourinary surgeon may be necessary for their proper treatment. If the city or State is unwilling to assume its obligation, there is afforded an opportunity for some public spirited citizen to become a real philanthropist by endowing a fund for the free distribution, under efficient control, of salvarsan to hospitals and the needy poor.

Ninety-three patients received only one dose of either salvarsan or neosalvarsan. A few of these we succeeded in interviewing and inquired why they had not returned. The majority stated they concluded that one dose was sufficient, although each had been told at the outset of the treatment that they were to take at least three doses at weekly intervals.<sup>1</sup> Almost without exception in these cases the nature of the disease was such that one dose of the drug could not possibly effect a cure. Fifty-two patients received two doses of the drug and their story differs in no wise from those patients who received but one injection. Seventy-four patients received three or more doses of the drug, but they failed to return after the last injection and we were therefore unable to follow up the cases. Nineteen received only protiodide of mercury or mixed treatment for only a month or two and then disappeared from observation.

Only sixty-five patients, or less than twelve per cent., have undergone the full course of treatment and have continued to report from time to time for observation and blood tests. When we realize that 492 cases are still at large, a great many of them in the infective stage—this the result from one hospital—it can readily be estimated what would be the revelations from all hospitals were the follow up plan adopted. We are sure the results would amaze both professional and laymen and not the least our legislators, and might afford an incentive to activity in order to remedy the existing deplorable state of affairs respecting this scourge of civilized races.

#### CONCLUSIONS.

1. The treatment of syphilis, notwithstanding the promise of salvarsan and its substitutes, judged from the excellent serological results, extending in many instances over several years, remains, in a sense, empirical.

2. The ultimate proof of cure does not rest necessarily upon continuously negative Wassermann reactions for one, two, three, five, ten, twenty, or even forty years, but rather upon complete freedom from symptoms for a generation or more.

3. The Wassermann reaction furnishes the best control of treatment and is the most reliable index of cure subsequent to proper treatment.

4. The sheet anchor in the treatment of syphilis is no longer mercury, but salvarsan, neosalvarsan, or

one of their substitutes. It is of paramount importance, however, that the injections of arsenobenzol in the beginning be administered as early as possible and intensively in full doses commensurate with the physiological tolerance of the patient, not scattered indefinitely over months, interspersed here and there with a Wassermann test. In view of the possibility of immediate cure by this drug properly administered in the primary if not the secondary and latent stages of the disease, the treatment of syphilis, particularly in the chancre period, prior to the advent of a positive Wassermann, becomes an emergency operation, in many instances no less imperative than the administration of antitoxin in diphtheria. Our experience dictates, as a reliable routine, two injections of salvarsan in the early chancre stage; at least three injections in the late primary and throughout the secondary or latent stage of the disease, and during the tertiary and hereditary forms of syphilis not fewer than four to six injections, supplemented by mercury and the iodides. If, after such treatment, the Wassermann still appears positive, a second series of injections should be administered.

5. Serologically judged on a three month to a five year duration, syphilis, in the chancre stage, if diagnosed early, either clinically or if necessary by either the dark field microscope or the Wassermann reaction, may be cured by two injections of salvarsan or neosalvarsan; indeed, if the diagnosis is made, particularly before the advent of a positive Wassermann, one dose of either of these drugs may be sufficient.

6. Secondary syphilis seems to do just as well without as with mercury, provided enough salvarsan or neosalvarsan is given to produce a negative Wassermann.

7. The serological results in tertiary syphilis treated intensively with salvarsan and its substitutes are not so brilliant as those of the secondary period.

8. The French preparation of arsenobenzol and the Canadian diarsenol are excellent products and may be just as efficient as salvarsan and neosalvarsan, but on account of their greater tendency to toxic phenomena are not destined to supersede the original German products. Likewise arsenobenzol, owing to its lesser potency in the reduction of the Wassermann reaction, must be regarded as inferior to the German products.

9. The arylarsenate "soamin" and sodium cacodylate, both clinically and serologically, have no place in the effective treatment of syphilis.

10. Sociologically, in view of the fact that less than twelve per cent. of our hospital syphilitics return for treatment until discharged cured, a problem is presented which urgently demands the cooperation of our civil authorities and health boards for the necessary control and treatment of this disease, not, however, to be realized until all hospitals receiving State aid are compelled to maintain evening dispensaries with paid attendants for the proper treatment and admission, when necessary, of venereal patients.

116 SOUTH NINETEENTH STREET.  
812 SOUTH FIFTEENTH STREET.

<sup>1</sup>Attention is expressly directed to the fact that throughout this paper the full sized dose, 0.6 gram of salvarsan or its equivalent of neosalvarsan and the other substitute preparations of arsenobenzol, were administered; also that the treatment was carried out as intensively as possible, the patient receiving his injections weekly, unless contraindications arose to prevent this routine. To this so-called intensive method of medication and the consequent early eradication of the Wassermann reaction, the authors attribute the excellent subsequent serological results.



## CARDIAC THERAPY.\*

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Two essentials in the successful treatment of affections of the heart are accurate diagnosis of the character of the trouble and a true and comprehensive understanding of the lesions with which we are dealing. It will not suffice to prescribe empirically for palpitation, valvular insufficiency, or feeble heart action. Too much of this thing is done without relief of the trouble, or even to the detriment of the patient. It is essential to know the true nature of the pathological condition. It is equally essential that there shall be true and accurate knowledge of the physiological action of the drugs exhibited. This knowledge must be based not upon journal articles announcing the conclusions of experimental research as to drug action on guineapigs, mice, *et id omne genus*, but upon careful and accurate clinical observations. It is not uncommon for men, on reading such articles, to try agents and report conclusions, mistaking a *post hoc* for a *propter hoc*.

I shall discuss cardiac therapy under three general heads: reflex and functional cardiac disturbance, valvular lesions, and organic disease of the muscular walls of the heart. I shall give a case history illustrative of each type.

CASE I.—Mr. S., who had been under the care of another physician, was referred to me with the diagnosis of serious heart trouble. He had been told by the physician to exercise great care as he might die at any moment. He was a watchmaker by trade, a German, age fifty-five years. He suffered at times with violent palpitation even on slight exertion, as in climbing a hill or going up stairs. He gave a history of obstinate constipation, fermentation of food, and a large gaseous accumulation in the stomach. Auscultation showed no cardiac lesion. His bowels were freely opened with a mercurial, and advice for accomplishing a free movement daily was given him. A mixture of strychnine, dilute muriatic acid, fluidextract condurango, and elixir gentian was given him, and appropriate diet prescribed. In a week he returned completely relieved of all of his symptoms. Treatment was continued, and he was kept under observation. He was first seen June 24, 1916. On December 8th he had had no return of his cardiac trouble.

This case is typical. The treatment outlined and the results speak for themselves. Another functional type occurs in women at the climacteric with oppressed breathing, sense of weight in the chest, and distressing palpitation. Nature is endeavoring to restore in the system the balance of nervous and vascular forces which during menstrual life have been directed to the pelvic organs and have found a safety valve in the periodical menstrual flow. Furthermore, the menses are an avenue of uric acid elimination. When menstruation stops, this effete material must find some other channel of elimination, and the work of the liver, kidneys, and heart is increased; hence, the indications for a saline purgative two or three times a week, an occasional mercurial stimulation of the kidneys to increased secretion, and nerve tonics, as phosphide of zinc, nuxvomica, arsenic, chloride of gold; and sodium and the valerians. Also systematic exercise and life in

the fresh air should be advised. It is especially important that the patient's fears should be allayed, as any nervous perturbation will affect results in the therapy.

I desire consideration of this part of the subject to cover as wide a field as possible; therefore, I shall consider as briefly as possible heart conditions in acute infections, sepsis, typhoid fever, pneumonia, etc. In the later stages of typhoid fever, when evidences of prostration, thready, rapid pulse, vasomotor paresis, coma vigil, low muttering delirium, the pathology back of which is the injury to the heart muscle from the septic poison of the fever, it is almost a routine practice with me to begin the use of strychnine nitrate as soon as the heart shows signs of letdown, giving it *pro re nata* in doses of grain 1/20, and hypodermically if necessary. In extreme conditions with symptoms above mentioned and distended abdomen and threatened death from heart failure, the weakened heart is primarily responsible for the passive congestion of the brain and consequent malnutrition of the whole nervous system. In such conditions, no remedy is so potent and life-saving as a commanding dose of opium. The gum, tincture, or the deodorized tincture should be used, not an alkaloid, morphine, or any other, as they will not give results. The opium slows heart action and gives increased tension and force, and thus breaks up the passive cerebral congestion. I speak from long clinical experience of many years. I have seen opium thus exhibited snatch the patient, as it were, from the very jaws of death. In other septic conditions it is a valuable agent. In pneumonia with a patient threatened with death from heart failure due to an engorged right heart producing dilatation of the right ventricle, whether due, as I say, to the pumping of blood against a solidified lung and the consequent recoil through bloodvessels, or due, according to the advanced theory, to profound septic infection, I have found no agent so efficient as sparteine, notwithstanding the results and conclusions of laboratory investigators that it is a cardiac depressant. With the clinical history of the exanthems in childhood and diphtheria, rheumatism, and diseased tonsils, we have a picture of conditions with a sequel of valvular lesions. In many of these cases nature comes to the rescue by the development of a compensatory hypertrophy, and the subject has practically a normal circulation, but the time comes sooner or later when, as the result of some intercurrent affection, compensation fails, and it becomes necessary that the heart action be strengthened and supported. An intelligent selection of the best means to accomplish this is of the utmost importance. First I would put rest in the recumbent posture if possible. Good nutrition from an easily digested and assimilable diet should be maintained. Strychnine, sparteine, and caffeine I consider the best drugs. Digitalis through stimulation of the vagus and cardiac motor ganglia and inhibitory centres slows heart action and increases arterial tension, lengthening the diastole and filling the bloodvessels more perfectly, fulfilling, in short, the conditions of normal circulation. Continued use, however, is to be deprecated. It results in increased frequency, diminished tension consequent upon

\*Read to the nineteenth annual meeting of the Tri-State Medical Association of the Carolinas and Virginia, at Durham, N. C., February 21-22, 1917.



overstimulation of the vagus, and exhaustion. Hence I deem digitalis to be an agent of uncertain value, because a secondary depression may result at a time when it would jeopardize the life of the patient. To be more explicit, in mitral regurgitation, where it is conceded to be most useful, in the earlier stages when we desire to sustain heart action until compensation is established by a physiological hypertrophy, I question whether the drug can be limited to the first stage of its action until this is accomplished. In a more advanced stage when compensation fails and the heart is already depressed and exhausted, digitalis is manifestly contraindicated. If it be a myocardial degeneration, forcing a more positive contraction of the heart walls may cause rupture of the heart and sudden death.

CASE II.—Mrs. S. came under my care January 9, 1916. I had attended her in her first labor twenty-seven years before. At that time she had severe post partum hemorrhage, but made a good recovery. She did not reside in Richmond for many years and I could learn of no important clinical incident in her history during her absence. She never had rheumatism nor was there a history of any affection that could predispose to or produce heart disease. I learned on my first visit that she had suffered with her heart for several years. For a year preceding my visit she had been more or less under the care of a heart specialist, and had been taking digitalis in increasing doses until when I saw her she was taking seventy-five drops a day. Her condition was as follows: Confined to bed, unable to make any exertion without distressing breathlessness; face pinched, lips and nose intensely blue; digestion disturbed, bowels constipated; pulse almost imperceptible and counted with great difficulty; pulse tension too low to get any record; double bruit in heart, heart extremely dilated, until the apex struck an inch and a half below and an inch to the right of the ensiform cartilage. She also suffered from insomnia. The digitalis was stopped; a capsule of sparteine, caffeine, and strychnine was given four times a day; diet concentrated, nutritious, and easily digested ordered, and rest in the recumbent position in bed rigidly enjoined. In ten days her color was excellent; breathing normal; pulse fair tone and 65 per minute; pulse tension 120; heart decidedly reduced in size. At the end of three weeks, the heart was so reduced that the apex struck almost in its normal position in the fifth interspace. Her strength improved progressively, and she expressed herself as feeling much better, wondering why she was kept in bed. On February 14th, from some unexplainable cause serious stomach complications developed, and she died two days later.

I would call attention to my remarks above on digitalis and her condition when I first saw her, profoundly poisoned as she was by the drug.

CASE III.—Miss —, eighty-two years old, clinical history negative except that several years before she had an ulcer of the stomach with recurring hemorrhages. Rest in bed, suitable diet, and the administration of nitrate of silver effected a cure, and she has had no return since. She is intensely lithemic, although she is of spare build, has led an active life, and has been guilty of no irregularity or excess in diet or otherwise. I saw her on August 9th. Her conspicuous symptom was digestive disturbance with excessive evolution of gas in the stomach. There was more or less palpitation and she slept badly, bowels moved satisfactorily with a mild laxative. Pulse feeble with a tendency to intermit; pulse tension low; slight daily rise in temperature. No heart murmur, but sounds far away and heart impulse feeble. Myocarditis was plainly the cause of all symptoms. She was put to bed. Symptoms increased in gravity until turning over in bed or moving her from one side of the bed to the other caused an intermission of every other beat of her pulse. The quality of the pulse was jerky. Absolute rest in bed in the recumbent position was insisted on. Sparteine grain one-half, caffeine grain one quarter, was given four times a day, supplemented when necessary by strychnine nitrate grain

1/20. Under this treatment amount of gas diminished, appetite improved, pulse improved in tone and regularity, she slept well, and temperature dropped to normal. After being in bed till December she was allowed to sit up for a short time each day, gradually lengthening the time. She is now allowed to walk about the room. Tone of pulse and heart is satisfactory.

Although at her time of life and with an incurable lesion of the heart, she can never be well, yet with improved nutrition and care her life may be prolonged and comfortable for some time. There is no resource in the treatment of cardiac lesions, especially if myocardial, that I deem so important as absolute rest of mind and body. The patient should be kept absolutely free from everything which could produce perturbation of mind or body. I wish to call especial attention to the intimate relationship between heart lesion, especially when heart action is feeble and depressed, and gastric disturbance. The circulation of the stomach impaired and its nervous force depressed, consequent deficiency in gastric motility results in the evolution of excessive gas, which may be and often is the cause of sudden death by crowding up the diaphragm against the heart and stopping it suddenly as if an air brake had been applied.

To conclude, it is unnecessary to say more about digitalis. Convallaria is similar to digitalis in its action, but it is more strictly limited to the heart; it does not prolong the diastole to the same extent, but slows cardiac action while augmenting ventricular contraction; it is probably free from the danger of cumulative action, so may be given for a longer period of time; it is better borne by the stomach; its diuretic action is not so distinct; it is of value in correcting cardiac rhythm. It must be acknowledged that it is not so strong or reliable as digitalis (1). Sparteine is a true stimulant to the muscular substance of the heart acting through the cardiac ganglia, and in my hands has been valuable when the heart walls are flabby and weak. It has been recommended as a heart stimulant in depression from anesthesia (2). In a number of hospitals it is routine practice to give it following anesthesia for several days after the operation, because of its effect not only on the heart but also in stimulating the secretion of the kidneys. It has the advantage of being slowly eliminated. Strophanthus has never specially appealed to me, so I have had little experience with it. In the threatened heart failure of typhoid fever it may prove a very useful agent in combination with strychnine. Atropine is specially useful in tiding a patient over an emergency because of its stimulation of the cardiac sympathetic, but should be given in combination with strychnine. Caffeine's chief field of usefulness is in functional heart trouble or as an adjuvant in organic lesions. Close clinical observation has constantly increased my confidence in strychnine and demonstrated its reliability for definite results. The fact that it may be pushed for a long time and gives satisfactory and definite results places it at the head of heart tonics. The chief indication for nitroglycerin is in angina pectoris, both true and pseudo; it is in no sense a heart tonic. Its physiologic action is languor, nausea, rapid, weak, dicrotic pulse, and death by general paralysis. Therefore it is contraindicated

cated in every condition of weak and impaired heart. This is too large a subject to be fully treated in the limits of a single paper, but if what has been said proves suggestive and useful, it will have accomplished its mission.

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1103 WEST FRANKLIN STREET.

## FRIGOLABILITY.

*A Feature of the Paretic's Pleocytosis.*

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New York,

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A careful observation of serological phenomena will disclose facts and differences that make it possible to distinguish between the positive serology of tabes and cerebrospinal lues on one side and the serology of general paresis on the other. A few

counted as soon as possible, and also worked up on the line suggested by the work in this communication. It is apparent that not only the biology of the serum and cerebrospinal fluid is different in a paretic, but also the cells show a different behavior from those encountered in the majority of fluids, whether they show a moderate or a marked pleocytosis. It is customary to keep the fluid until counted in the ice chest in order to obviate the possible destruction of cells by autolysis or micotic influences.

When the degree of change was investigated as reported in this paper, it was found that the difference between the highest and lowest cell count was not a constant feature, and that some fluids showed very little numerical change, while others lost all their cells. The small number of cases offered in this preliminary communication prevents me from giving any significance to this feature, but I hope in the future to be able to assign to the total loss some importance. The pleocytic change should logically be greater in the fluids kept for

Div.	Patient.	Date.	Cell count same day.	Cell count next day.	Ice chest next day.	Clinical diagnosis.	Ser. Wass.	C.S. Wass.	F. Glob.	Fehl.	Colloidal Gold
1	M.	March 9, 1917	31	7	30	Amaretic tabes	+	+	+	+	—
3	Sy.	March 16, 1917	23	8	19	Taboparesis and plumbism	+	—	+	+	—
2	Ge.	March 26, 1917	132	30	35	Exudative tabes	+	+	+	+	—
2	Pa.	March 29, 1917	30	20	28	Tabes	+	+	w+	+	—
2	Wt.	April 3, 1917	153	86	112	Exudative tabes	+	—	+	+	—
2	Rn.	April 4, 1917	53	31	45	Tabes	+	+	+	+	—
3	Bn.	February 22, 1917	12	5	5	Tabes	+	+	+	+	—
1	Vd.	March 26, 1917	57	32	40	Cerebrospinal lues	+	+	+	+	—
1	Vd.	March 28, 1917	47	8	11	Cerebrospinal lues	+	+	—	+	—
1	Pr.	March 28, 1917	172	32	55	Cerebrospinal lues	+	—	w+	+	—
1	He.	April 2, 1917	30	6	26	Cerebrospinal lues and alcohol	w+	+	+	+	—
3	Co.	April 5, 1917	68	34	43	Cerebrospinal lues	+	+	+	+	—
2	Oi.	February 5, 1917	27	9	9	Erb's luetic spinal paralysis	w+	+	—	+	—
1	Ca.	February 5, 1917	16	n	n	Cerebellar luetic endarteritis	+	+	—	+	—
2	Wd.	February 8, 1917	33	10	11	Cerebrospinal lues	w+	w+	+	+	—
1	Ed.	February 20, 1917	28	13	13	Cerebrospinal lues	w+	w+	w+	+	—
1	Scs.	February 22, 1917	51	26	10	Cerebral lues	+	+	+	+	—
2	We.	March 3, 1917	160	52	65	Cerebrospinal lues	+	+	+	+	—
3	Ne.	March 8, 1917	16	6	9	Hereditary lues gummatous	+	+	+	+	—
1	Ms.	March 23, 1917	36	34	20	General paresis	+	+	+	+	5,553,332,111
1	Sz.	April 3, 1917	12	8	3	General paresis	+	+	+	+	5,310,000,000
3	Mm.	April 9, 1917	35	35	33	General paresis	+	+	+	+	5,555,542,000
1	Fr.	February 20, 1917	18	14	10	General paresis	+	+	+	+	+
2	Sd.	February 21, 1917	80	50	48	Early general paresis	+	+	w+	+	+
1	Gl.	March 1, 1917	27	26	10	General paresis	+	+	+	+	+
3	Kd.	March 18, 1917	533	103	154	Streptococcus hemolyticus; meningitis	+	+	+	+	+
3	Hr.	March 19, 1917	21	3	0	Cord tumor	—	—	+	+	—
3	Kr.	April 4, 1917	88	29	86	Epidemic meningitis	—	—	+	+	—
3	Kz.	February 19, 1917	23	16	23	Cerebellar tumor	w+	—	+	+	—
1	Kr.	February 26, 1917	57	28	16	Hydrocephalus	—	—	+	+	—

cursory facts are well known. For instance, a positive Wassermann result is obtainable with less serum if it comes from a paretic than from other patients with syphilis of the nervous system. The cell count is exceptionally over sixty per c. mm. and the "step ladder" curve is characteristic of the paretic's fluid when the colloidal gold test is made use of. I began originally to establish the differences, if any, between the cell count obtained in the spinal fluid immediately and the count next day. In the course of the work it was found advisable to keep one specimen at room temperature and another in the ice chest. The advisability of counting the cells preferably within one hour cannot be denied, regardless of the observation that many pleocytic values do not change even in twenty-four hours. It will be seen, however, that the change in some fluids as far as their cell count is concerned, if kept in the ice chest, is a very useful phenomena, and it is chiefly for this reason that fluids ought to be

twenty-four hours at room temperature, while the fluids kept in the ice chest are partly protected from autolytic and bacterial influences by the cold. Such is the logical expectation. It did turn out to be correct, but not with cerebrospinal fluids from patients with general paresis. Here the cell count was less with the tube kept in the ice chest as compared with the one kept at room temperature. This feature I designate as "frigolabile" and believe it to be another mark added to the others that make up the serological evidence of general paresis.

I do not assert that there will not be other diseases that will show this peculiarity, for the table will show that some other pathological states possess cells displaying the frigolability, but I do maintain that in view of the fact that all spinal fluids from general paretics under consideration in this paper showed this behavior, that at least the great majority of fluids from such patients will display a frigolabile pleocytosis when a large num-



ber of cases are carefully studied. It is unnecessary to emphasize that all the cases of general paresis were authentic from the clinical point of view.

A table showing the cases studied with diagnoses and serology will be found on page 886.

## FAVUS OF THE SCALP AND EYELIDS.

### *Report of a Case.*

By WALTER BAER WEIDLER, M. D.,  
New York.

Favus is classified under the parasitic affections of the skin, very contagious, manifesting itself by an eruption of cup shaped yellowish crusts, which sooner or later unite and form a mass. It is usually seen on the scalp in a mortar like mass of crusts. When it occurs on the eyelids it is usually seen as a separate cup shaped excavation, with the yellowish crusted edges. In the cases reported by Collins (1), MacHardy (2), and Libman (3), the disease was limited to the eyelids and there was no favus seen on any other part of the body. This is an extremely rare occurrence and Libman was unable to find the reports of any other cases, and further search by the writer of this paper has not revealed any more of this type of cases. Cases of favus of the skin, without any involvement of the scalp, are quite unusual.

The Achiorion schönleini first discovered by Schönlein in 1839 is the pathogenic vegetable parasite causing this condition and consists of mycelium and spores, and its presence was demonstrated after an examination of the crusts from the scalp of my patient. There was no active scabbing eruption on the eyelids when I first saw my patient, and all our examinations of the scrapings from the margins of the lids and the cilia were negative. Had we seen him during the active stage of the lesions which must have caused the destructive changes of cilia and lid margins, I have no doubt that it would have been as simple a matter to demonstrate the presence of the Achiorion schönleini as it was from the scalp.

CASE.—J. T., aged nine years, Italian, came to the Manhattan Eye, Ear, Nose, and Throat Hospital for eye treatment. There was a well marked chronic conjunctivitis with rather well marked blepharitis, and some slight ectropion of the lower lid. The condition had been about the same for the past six weeks. Family and personal history negative. Quite a free conjunctival discharge with a marked loss of cilia was present. The lids were thickened and the edges somewhat rounded. The cornea of both eyes were a trifle hazv, but no distinct macula or nebula were noted. The child's personal appearance at present shows a profound neglect on the part of his parents as far as the matter of personal cleanliness is concerned. The skin of his face and body, his ears and head, was covered with dirt, and he looked as if he had not been washed for a month. The scalp was very dirty with crusts, scales, and coal dirt. There was a fringe of hair about the whole scalp of a width varying from two to four inches. The narrowest part of this fringe of hair was in front. The top of the head was more or less bald with scabs and scales of varying size and depth. Some areas of yellow crusty scabs were seen in the midst of the hair. For the most part the whole of the top of the head was bald except for fine, thin, downy hairs, and the skin was dense, hard, dry, and somewhat glazed in appearance. The hair that remained was dry, hard, with a dead ap-

pearance. The hands showed a well marked partial and complete destruction of nearly all of the finger nails. There was deformity of the ends of the fingers, which were club shaped. The same condition was noted in regard to the toe nails. The Wassermann, von Pirquet, and urine tests were all negative. There was no history of any other members of the household being affected with this disease. Neither was I able to get any history of his playing with a cat or a dog that was affected with any skin disease. The ocular condition was treated with boric acid wash four times a day, and applications of the alum stick to the lids every other day. The yellow oxide of mercury was also used for the blepharitis. The active inflammatory condition of the lids cleared up very well after a few weeks of treatment. The scalp lesions of the favus were exposed to the x ray and after several applications of the ray the scalp became clean and free from any of the active signs of the disease.

Dr. Fred Wise examined the case for me and the following is his report: "The examination reveals a scalp presenting the atrophic scarring, produced by a favus infection of five years' duration. The scalp is atrophied, parchment like, wrinkled, pale yellow in color, lifeless in appearance. There is an extensive permanent alopecia, the result of the infective process. At the margin, there are still evidences of sparsely growing, lusterless hair. The nails are furrowed and distorted, as result of the favus infection. There is a loss of eyelashes, with ectropion. The favus spores and mycelia were microscopically demonstrated from the scalp and nails, but not from the eyelashes."

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131 EAST SIXTIETH STREET.

## THE LINGUAL TONSIL.

By J. L. MAYBAUM, M. D.,  
New York.

Because of many obscure and indefinite symptoms attributable to the lingual tonsil, frequently stimulating other diseased conditions from its proximity to the nasopharynx and larynx, an investigation of this subject is worthy of careful consideration. The lingual tonsil, situated at the base of the tongue, on either side of the median line behind the circumvallate papillæ and in front of the epiglottis, is an accumulation of lymphoid tissue similar in structure to the faucial tonsils and adenoids, which, together with the glandular structure surrounding the pharynx, constitutes the so called Waldeyer ring. The diseased conditions to which it is subject are quite similar to those which affect the faucial tonsils, such as catarrhal infection, lacunar infection, abscess, hypertrophy, mycosis, tuberculosis, and syphilis. A not infrequent condition existing alone or combined with hypertrophy, is a varicosity of the veins at the base of the tongue, varix of the lingual tonsil, due to some disturbance in local circulation.

Hyperplasia of the lymphoid tissue at the base of the tongue may in some cases be sufficiently prominent to be visible even by direct inspection, aided only by a tongue depressor. It may be unilateral or bilateral, and in some instances may extend laterally so as to interfere with a view of the sinus pyramiformis, or it may actually be continuous with the



faucial tonsils. The functional disturbances which it causes are due to interference with the free action of the epiglottis and the movements of the tongue. As a deciding factor in the causation of symptoms the size of the lingual tonsil is not alone to be considered, for in some instances a moderate amount of hyperplasia excites an extraordinary degree of disturbances. A neuropathic element is the predominant condition in such cases.

Two forms of hypertrophy may be considered, the congestive type of enlargement frequently associated with gastric hyperacidity or some disturbance of circulation from renal, hepatic, or cardiac disease. Surgical intervention is entirely out of place in this type, treatment being directed to the general underlying condition and to local application of astringents. In the second and more common form, due to an actual hypertrophy of lymphoid tissue, surgical measures directed to the removal of the enlargement in the majority of cases gives complete relief.

The symptoms due to hypertrophy of the lingual tonsil vary considerably in different cases. Usually there is a sensation of a foreign body in the throat, causing constant annoying attempts at clearing the throat. The patient also complains of a dry, hacking, irritating cough—this, together with the above symptom, being caused by the fact that the margin of the epiglottis, normally free, comes in contact with the mass. When there is an actual encroachment of the growth upon the epiglottis, so that the epiglottis is embedded in the lingual tonsil, the cough may be incessant; but more commonly the cough appears at longer or shorter intervals. Not infrequently the patient, very much distressed, will consult the physician, because of the fear of pulmonary tuberculosis. Worthy of mention is the fact that the presence of an enlarged lingual tonsil frequently accounts for the annoying symptom of globus hystericus; this and the irritating cough are the most prominent symptoms for which the patient seeks relief. Körner considers the globus hystericus as a reflex spasm of the esophagus and pharyngeal muscles. These hypertrophies are very annoying and inconvenient in singers and speakers. B. D. Delavan, in a large experience with these people, has observed that they frequently suffer, in speaking and singing, from fatigue, uncertainty, lack of control, and impairment of the timbre of the voice. Among the less common symptoms are attacks of dyspnea, painful swallowing, and constant pain at the root of the tongue, pain radiating to the ears, and rarely small hemorrhages from rupture of varicose veins at base of the tongue. It is necessary to bear in mind the last symptom so as to be able to assure the patient that the condition is not of pulmonary origin. Occasionally accumulation of secretion in the crypt of the lymphoid masses may be responsible for a foul taste or odor in the mouth, as illustrated in the following case:

CASE I.—M. J., age thirty years, female, consulted me May 10, 1915, because of foul breath, for which she had been treated by a stomach specialist without obtaining any relief. The bad odor was only slightly apparent to the patient, but her attention was constantly drawn to the annoying condition by relatives and friends. During the winter months she frequently was hoarse and had a dry, irritating cough.

Examination of the nose, throat, and teeth was negative, except for a moderately hypertrophied lingual tonsil more marked on the right side, showing five or six yellow white spots. Pressure upon the enlarged tonsil brought to view a few intensely foul smelling masses. Under local anesthesia, the removal of hypertrophied lingual tonsil resulted in a complete disappearance of the disagreeable odor. Coughing spells and hoarseness likewise ceased.

CASE II.—Miss T. W., age twenty-five years, school teacher by occupation, referred to me by Dr. Denzer with a history of constant, dry, hacking cough which had continued for three weeks unrelieved by the usual medicinal remedies. Patient had pulmonary tuberculosis eight years. Dr. Denzer's report of pulmonary examination at present time: Old lesions at both apices, in quiescent state. Examination: Patient is very much underweight and anemic. Examination of nose and nasopharynx, negative. Larynx showed slight congestion of both cords. Moderate hypertrophy of the lingual tonsil, more marked on the left side, which impinges upon free edge of the epiglottis when slight attempts at swallowing or speaking were made. Patient refused operation. Five per cent. silver nitrate solution applied to the hypertrophied mass resulted in immediate, complete relief for five days. With the return of symptoms the patient consented to operation. Under cocaine anesthesia the lingual tonsil was removed with Myeles lingual tonsillotome with complete and permanent cessation of symptoms. The interesting feature of this case was the intensity of the symptoms, despite apparently innocent looking lingual tonsils, which for a time cast doubt upon the diagnosis because of the history of pulmonary tuberculosis.

The only effective treatment of hypertrophy of the lingual tonsil is its complete removal. The operation is performed under ten per cent. cocaine anesthesia with an instrument especially adapted for the purpose, such as Myeles lingual tonsillotome. Hemorrhage, which for a time may be profuse, ceases after applying pressure with a swab moistened in adrenalin one to 2,000. Patients refusing operation may receive temporary relief from local applications of five per cent. solution of silver nitrate, Mendel's solution, etc. Lingual varix, if responsible for symptoms, is best treated by means of galvanic cautery under local anesthesia.

Suppurative affections of the lingual tonsil, though comparatively infrequent, are important to recognize because of the possibility of serious complications and even death from edema of the larynx or bursting of the abscess during sleep. Two types of cases may be recognized, the less common variety, suppurative inflammation confined to the lingual tonsil, and abscess formation spreading to and infiltrating the surrounding tissues, peritonsillar type. There is usually a history of slight injury to the base of the tongue from a foreign body, toothbrush bristle, fish bone, etc., followed soon by alarming inflammatory signs. Inability to find a foreign body does not necessarily exclude its presence, as it may be imbedded in a follicle of the severely swollen tonsil or its presence may be overlooked because of an overhanging epiglottis. The symptoms of peritonsillar lingual abscess are indeed alarming. With the onset of severe pain at the root of the tongue, frequently radiating to both ears, there is a severe rise in temperature to 103° or 104° F. The tongue is moved with difficulty, trismus sets in early so that examination of the condition soon becomes extremely difficult. The indication is to make a free incision into the abscess with a curved bistoury. Even though pus is not obtained relief soon follows.

17 EAST THIRTY-EIGHTH STREET.

# Dietetics, Alimentation, and Metabolism

## Food and Food Preparation, in Health and Disease

### DIETETIC FADS AND FANCIES.

By JOHN EDWARD LIND, M. D.,  
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(Continued from page 795.)

Coming back for a few minutes to the history of civilization, let us see upon what meat the ancient nations fed that they waxed so great. The ancient Greeks appear to have been vegetable eaters by choice, especially the Athenians, who are generally credited with having been the most cultured people of their time. In Athens the dietetic staples were wheat bread, olives, figs, and fruit. To be sure we meet in the songs of Homer and other poets allusions to feasts where meat was served, but it is to be noticed that the account shows that it was a rarity and only served on very special occasions, much as readers several thousands of years hence will run across allusions to banquets in the Wilsonian era when champagne was served and will then be moved to put down that drink as a usual accompaniment of a meal.

Taking all the evidence, we find that barley was the staple food of the heroic ages. The ancient Romans fed upon it; Ajax, Achilles, Hector, Ulysses, Æneas, all the great warriors fortified themselves for combat, not with Barleycorn, but barley. The Spartans' simplicity of diet is proverbial. Meat was a rarity with them and their warriors were fed upon their famous "black broth," a preparation which nowadays we would call a rather thin vegetable soup. Rome, in her early, strenuous days, lived simply upon pulse and barley; corn was raised in large quantities and distributed once a month to the poor. Later on the custom grew into such abuse that the distribution became a daily one and amounted in fact to a "bread line" where the population came to live unblushingly on charity.

As Rome grew in grandeur and wealth physically, but began to pass into a moral decadence, the food of the people, especially that of the upper classes, became more and more extravagant, and among the royalty and nobility profusion and richness of food were carried to the wildest extremes. At no other time, perhaps, in the history of the world have such banquets been given as were common occurrences with such emperors as Nero and such epicures as Licinius Lucullus. Favorite Roman dishes were eggs stained with various colors, fricasseed sucking puppies, wild boars stuffed with game and poultry, water rats, snails, and maggots fattened on old timber. Rare birds were thought delicacies and thousands of peacocks, ostriches, flamingoes, swans, and cranes were offered up to please the Roman palate; ragouts were made of the livers and brains of small birds for the table of Heliogabalus, together with the beaks of parrots and pheasants and the tongues of peacocks and nightingales.

Cooks in the days of Rome's greatness were given every encouragement and furnished with every in-

gredient to make their dishes successful. Oysters were sent all the way from Britain by relays of runners that they might appear with somewhat of their freshness at the table in the Roman villa; animals were hunted because it improved the quality of their flesh; fowls were thrashed to death and one noble threw a slave in his fishpond to improve the flavor of his lampreys. Indeed, one writer of the period attained a fleeting fame by a brochure on How to Roast and Eat a Goose Alive. Some of the Roman dishes probably would not appeal to modern palates. One favorite delicacy was pie made of nightingales' tongues; another was fowls boiled in aniseed water and served with a sauce of aniseed, mint, mustard seeds, and asafetida. Vast quantities of food were consumed at these banquets owing to the pleasing custom of the *vomitorium*. At the conclusion of an ordinary sized meal, large vases were brought to the guests, who incited emesis by pharyngeal irritation or any other way, got rid of the stomach contents, and started to fill up again.

Probably the only noteworthy rival to the ancient Romans in their feasts of gluttony was Charles V of Germany, who was a famous gourmand. To tickle his palate, when sated with the ordinary dishes, he and his chef ran the culinary gamut through such variations as roasted horse, cats in jelly, lizard soup, and fried frogs, so that the story goes that when he demanded a new dish of his cook that worthy suggested a compote of watches as being the only thing he had never tried.

When the Roman Empire fell agriculture went into an eclipse which lasted for about five centuries and then gradually came into its own again. Since that time it has never ceased to be the dependence of the human race. Speaking broadly, all Europe and America is agricultural, and upon the tillers of the soil the nations depend for their daily bread. A brief review of what the world eats may not be inappropriate here. Of course, it must be understood that in speaking of these various dietetic customs we mean only the native and natural food of the people. Wherever a race has come into close contact with Europeans their national diet has been modified and in many instances has even acquired so many European characteristics as completely to lose its identity. Furthermore, the diet alluded to is intended to cover several centuries, and consequently generalities must be dealt with rather largely.

The people of the East are vegetarians. Egypt lives mainly upon rice, onions, and dates. Boiled horsebeans, lentils steeped in oil, gourds, and melons are also popular. Rice is also the staff of life in Persia, Arabia, India, China, and Japan. The Hindu eats a pound and a half of rice a day and drinks only water. He avoids beef and would lose caste by touching it. With this diet he is able to perform extremely arduous muscular work. The Chinese use very little animal food; it is true that dogs and rats may appear on the menu, but chiefly because the abundant population of China makes all



food there comparatively scarce. They also use soups made of gelatinous substances such as sea slugs or birds' nests imported from the islands in the China and Java seas. Along the coast fish is added. Tea is the common beverage and is served cold, without sugar or cream. Japan's diet is much the same; they are very abstemious, but use more fish and poultry than their neighbors. Hot rice cakes and tea form a favorite meal. In the East Indian Archipelago, Java, Sumatra, Borneo, and the Philippines, the diet is much the same, except that alcoholic liquors, especially wine, play a larger part in the dietary.

Northern Asia offers a contrast to the abstemious peoples south of it. The Tartars and Siberians are great flesh eaters. The Tartar's great delicacy is horseflesh and his national beverage is *kumys*, fermented mare's milk. The Siberians hunt and fish for their food; although grain is abundant, bread was unknown there until the latter part of the nineteenth century.

The food of Europe and North America is too well known to be dwelt upon here except to remark that it is a mixture of animal and vegetable. In Mexico the national diet is Indian corn, either in the form of porridge—*atale*—or in thin cakes—*tortillas*. Beans—*frijoles*—are also popular. In South America wheat and cattle are so largely raised as to assure a liberal diet. In Peru maize and potatoes are the staple food. Chile's produce is fine wheat and Argentine is noted for its cattle. The diet of Brazil is especially well balanced.

Although the foods of the nations seem somewhat diverse when examined superficially the net results are about the same. Every country has its strong men, and the longevity of its inhabitants is about the same as that of the inhabitants of other countries at the same period, making due allowances for climate and occupation. At any rate, food does not seem to play much part in longevity, in spite of the claims of the health faddists that the simple diet of the ancients caused them to live longer. It is certainly true that the men of Biblical times lived to a great old age; from a number of examples we will only mention Adam, 930 years, Noah 950 years, and Methusaleh, 969 years. Even at a later date there were Serug, 230 years; Salah, 433 years, and Shem, 600 years. Just what a year was in those happy days of long ago will probably never be known. As we draw nearer to our own time and our records become somewhat more authentic, we have the early Christians, St. Anthony, 105 years; St. Epiphanius, 115 years, and Arsenius, 120 years. The most famous old men of modern history are Thomas Parr, 152; Henry Jenkins, 169; John Rovin, 172, and his wife, 164, and Peter Zoten, whose age would not even make a Bible patriarch blush, as he attained to 185 years before passing away. It is maintained by the food fanatics that such longevity was only reached by simple diet, but there is no direct proof of this. The only argument we have found bearing on the subject is the statistics collected and published anonymously in New York in 1835 (5) showing that 152 hermits of whose lives records exist lived 11,580 years or an average of seventy-six years and four months each, while 152 Academi-

cians, most of them scientists, lived 10,511 years; an average of sixty-nine years and two months. This might be taken to show that simple diet is conducive to longevity, but after all the difference in years was slight and so many other factors undoubtedly existed that it would not be logical to consider the diet alone.

We come now to consider the fads and foibles of modern times. They are legion in number, but when examined closely tend to drop into three boxes mentioned above: vegetarianism, fasting, and excessive mastication. In some cases they are made part of religious ceremonies; in other cases they are lauded for themselves alone; often they are used to fleece the gullible, and in many cases they are promulgated by cranks who actually believe they have hit upon an epoch making discovery.

Let us first take up vegetarianism. From the earliest times of which we have any record there have been eminent men who were opposed to the use of animals for food, basing their objections usually on three grounds, the same three that are still being quoted: First, the use of meat means cruelty to animals and tends to brutalize the dealers in it. Second, it is disgusting to fine sensibilities to eat the flesh of dead animals. Third, mankind enjoys better health when meat is eliminated from the diet. Among the prominent men who have either been vegetarians or expressed themselves in favor of the theory are Doctor Hecquet, of Paris—the Sangrado of Cervantes—Epicurus, Pythagoras, Xenophilus, Shelley, Sir Isaac Newton, while writing his treatise on optics; Benjamin Franklin in his early days, Plutarch, J. J. Rousseau, and Pope. Furthermore, the monks of Monte Santo and the Indian Brahmins may be put in this class and the ancient Spartans were to all intents and purposes vegetarians.

Distinguished men, moreover, have not hesitated to express themselves on the subject. Thus Plutarch: "I am astonished to think what first induced man to taste of a dead carcass." Rousseau's comparison of flesh eaters and vegetarians has been quoted above. Pope says: "Nothing can be more shocking or horrible than one of our kitchens sprinkled with blood and abounding with the cries of creatures expiring or with the limbs of dead animals scattered or hung up here and there. It gives one an image of a giant's den in romance, bestrewn with the scattered heads and mangled limbs of those who were slain by his cruelty." Thomas Muffett, mentioned above, gives his opinion of meat as follows: "Nay tell me, can civil and humane eyes yet abide the slaughter of an innocent beast, the cutting of his throat, the mauling him on his head, the flaying of his skin, the quartering and dismembering of his joints, the sprinkling of blood, the ripping up of his veins, the enduring of ill savours, the hearing of heavy sighs, sobs, and groans, the passionate struggling and panting for life, which only hard hearted butchers can endure to see?"

In our times the most picturesque champion of vegetarianism is George Bernard Shaw, who has not eaten meat for years, although he is not intolerant to those who do. One of his friends tells that Shaw invited him home for lunch, and when he hesitated pretended to believe that it was on account



of his hobby and reassured him, saying, "Oh, don't worry, I don't eat them, but my wife has plenty of dead bodies about the house."

Nations and religions have differed greatly in their attitude toward meat. Thus Mohammed incorporated dietetic rules in the Koran forbidding the consumption of pork, which was of course good hygiene, as was also his injunction against wine, considering the fact that his followers lived in such countries as Arabia and Syria. English athletes train on beefsteak, Hindu wrestlers on sweetmeats. Dr. Harvey Wiley has recently suggested that football players eat lumps of sugar during a game. The hamal of Stamboul carries incredible weights on a meatless and, what Occidentals would call insufficient, dietary. Likewise the Sikhs of the Punjab, the Italians, the Kaffirs, and the Arabs are all vegetarians, either absolutely, or nearly so, and yet perform feats of strength and endurance.

About 1832 the Rev. Sylvester Graham, a lecturer, publicly advocated a very simple diet without meat and small in quantity, proclaiming that the citizens of New York, where he first spoke, were rapidly drifting to destruction through their gluttony. His address stirred up considerable animosity toward him, but he had his disciples, and in 1835 one of them published anonymously a defence of his system. Since that time vegetarianism has flourished throughout the United States; it has its cookbooks and its restaurants, its disciples and its mockers. It is difficult to estimate how many vegetarians there are in this country, but the number undoubtedly runs up into the millions.

The second great class of food faddists comprise those who believe that eating too much is responsible for all, or nearly all, the disease in the world. Their remedy is to reduce the diet to almost nothing or even omit food altogether for long periods of time. The most ardent exponents of this method actually believe that a fast of the proper duration will cure anything, unless the individual has eaten so much in the past that the accumulated toxins of several thousand meals have paralyzed the vital functions beyond recovery.

The history of the world, both Biblical and profane, is full of accounts of fasts. Jesus fasted forty days in the wilderness; Moses at the age of 120 fasted four months on Mount Sinai. Fasting was endorsed by the priests of ancient Egypt and in the Mithride of Persia a fifty day fast was required. It was part of the method of healing practised in the ancient Æsculapian temples of Gos and Guido, in 1300 B. C. In modern times there have been many fasts which have attracted the attention of the public. This country remembers especially that of Dr. H. S. Tanner, who fasted forty-two days in 1877. In 1902 a George Prophester, of New York, fasted for fifty-two days. In 1903 eight athletes, under the supervision of Bernarr McFadden, who is an advocate of fasting, went for seven days without food and then performed many feats of strength and skill in the presence of an audience. About this time a seventeen year old Brazilian girl, Maria de Conceicas, said she had gone six months without food; but in this case, as in all others presenting such wonderful statements, we must take them *cum grano*

*salis*. Hysteria and catatonia, as well as malingering, are to be considered.

In 1900 Dr. Edward H. Dewey (6) published a book which he called *The No Breakfast Plan*, which has had considerable popularity. Doctor Dewey graduated at the University of Michigan, served in the Civil War, and began practice in 1866, using fasting and its modification for thirty years in his private practice. In his book he tells of his Civil War experiences, his distrust of drugs and his astonishment at the fact that patients desperately ill sometimes refused to eat anything and got well anyway. Finally, he says, the supreme discovery burst upon him that the human body is a vast reservoir of predigested food. Working with this knowledge he cured himself of dyspepsia and his patients of everything else.

Dr. Dewey's no breakfast is typical of the restricted diet school. If we believe that overeating is the cause of all the ills of course it is a simple cause to remove and the ills are cured. As a matter of fact, food, while undoubtedly a potent source of evil if abused, looms much too large in the scheme of things in these people, who, for some reason of individual psychology, have all their interest at the nutritional level. A far more rational view of the subject is taken by George M. Beard (7), who, writing in 1871, examines the subject thoroughly and comes to two main conclusions: first, that the majority of the inhabitants of the world are underfed, and second, that overeating is very rarely a cause of chronic disease among the intelligent classes.

By far the most picturesque dietetic fad of all is that of excessive mastication, commonly known as Fletcherism, after the man who made it popular in this country. Let us say at the outset that this cult cannot be dismissed with a smile, for, according to one of his disciples (8), there were in 1910 in the United States alone 200,000 families practising his method, that is, roughly, one million people. Fletcher's method may be summed up as follows, in his own words (9): "We should masticate—submit to vigorous jaw action—everything that we take into the mouth, liquid as well as solid, until the nutritive part of it disappears into the stomach through compulsory or involuntary swallowing, and spit out the rest."

He claims to have discovered and described a new organ which he calls "Nature's food filter," formed by the muscular folds at the entrance to the throat, together with the palate. When food has been properly masticated the "natural swallowing impulse" takes hold of it and passes it on into the interior. Whatever does not invite that impulse is not nutritious and should be spat out. Each mouthful should be chewed until it invites the impulse, no matter how long it takes. It will usually require from thirty to fifty movements of mastication, but may take a great many more. Fletcher tells of a young onion which required 722 mastications before it became peaceable.

Other features of Fletcherism are: bowel movements about once in eight days; the "Z" position in passing feces; the "last flash of taste," which he describes as a delicious sensation just before the

mouthful of food is claimed by the "food filter." By the way, why could not he have called it "Fletcher's food filter"? Taste is the sole guide to the nutritive value of food. To be sure, pure protein does not taste, but he maintains that it is always accompanied by some thing which does taste good. Liquids can be "chewed" in this way just as solids, and when this is done whiskey loses its taste. Fletcher describes normal appetites as a "watering of the mouth for some particular thing and false appetite as an indefinite craving for something, anything to smother disagreeable sensations. The latter is frequently expressed by the symptoms of "faintness" or "allgoneness." He sums up his creed as follows: "Imposition upon the body of any excess of food or drink is one of the most dangerous and far-reaching of selfabuses; because whatever the body has no need of at the moment must be gotten rid of at the expense of much valuable energy taken away from the brain service."

We have examined then the three main classes of food foibles and all of them which arise from time to time will be found to be modifications of one of the three. Nearly every individual has his own dietetic hobby, a belief that one particular article of food or abstinence from something will cure or prevent illness. Physicians are not always exempt from this fetishism. This doctor believes in a milk diet; that one has an antipathy to it. One starves his typhoid fever cases, the other one feeds them.

There have been real developments in the past decade in dietetics, but as they represent progress they have no place in an article with this title. We refer especially to the Food and Drug Act in 1906, Allen's fasting treatment of diabetes, and the vitamin discoveries. After all, when it comes to a question of food and all the human frailties connected therewith, we can think of nothing more appropriate than one of those generalities at which we railed awhile back: "What's one man's meat's another man's poison."

#### REFERENCES (Continued.)

5. *A Defense of the Graham System* etc., New York, 1835. 6. EDWARD H. DEWEY: *The No Breakfast Plan*, 1900. 7. GEORGE M. BEARD: *Eating and Drinking*, New York, 1871. 8. HENRY KLEIN: *Dietology*, Kingston, New York, 1910. 9. HORACE FLETCHER: *Glutton or Epicure?* New York, 1903; *What Sense?*

**The Rôle of Food in the Etiology of Cardiovascular Renal Disease.**—Allan Eustis (*Southern Medical Journal*, February, 1917) asserts that excessive protein food, irrespective of intestinal toxemia, overworks the kidneys, and is at least a predisposing cause of cardiovascular renal disease. He makes it clear at the same time that he does not assert all nephritis to be due to faulty metabolism or even to have its inception as such in the majority of cases, while he does believe that this may be the etiological factor in some cases. In considering the rôle of food in the etiology of cardiovascular renal disease we have to consider only the proteins, as no evidence has ever been presented that the carbohydrates, water, and salts have any influence, and it is only in rare cases of acidosis that the products of incomplete oxidation of fats have an irritating effect upon the renal epithelium. The question therefore becomes one of the quality, rather than the quantity of the food.

**The Bacteriology of Foods.**—Edwin O. Jordan (*Journal A. M. A.*, April 14, 1917) presents a broad general discussion of the present status of the bacteriological examination of foods, laying special emphasis upon the inability to establish standards of any fixed value. In the case of milk, the bacteriological examination of which has been the most extensively pursued, the actual bacterial count may vary within enormously wide limits and the product yet be harmless for human consumption. The type of bacteria, their source, the length of time during which the milk has been kept, and the temperature must all be taken into consideration in drawing any conclusion as to the quality of the product. Even enormously high counts are by themselves not necessarily to be taken as evidence of uncleanness in the handling of the milk. The effect of bacterial multiplication in milk and its sanitary bearing are not yet thoroughly understood, and since in the great majority of cases pathogenic bacteria are not present, or not demonstrable, the problem is to determine whether the products of ordinary bacterial multiplication are harmful. Upon this subject there is little certain information, and we know that some bacterial products are not only not injurious, but may even increase both the palatability and the digestibility of milk. Attempts to find specific bacteria by which it could be determined whether the milk was bad or good have not been successful. Milk with low bacterial count has been known more than once to be the cause of epidemic infection. Of far greater importance than the determination of the bacterial content of milk is the adequate control of the sanitary conditions under which it is produced and handled, and of the health both of the cattle and of those engaged in handling the milk. In the case of the flesh of cattle the conditions relative to bacteriological standards of wholesomeness are even more subject to question than has been shown to be true with milk. Bacterial standards have been proposed for oysters, but reliance cannot be placed on such standards alone, and control of the sanitary conditions of the beds and of the mode of handling is of far greater importance. What has been said of the other food products applies with equal force to our knowledge of the importance of the bacterial content of eggs. It is evident that the present value of the bacteriological examination of a food depends very largely upon its nature and upon the information at hand regarding the conditions of its production and distribution. Uncleanness, carelessness, and the neglect of proper preservation usually lead to an increase in the bacterial content, and in so far as these factors favor the chance of specific infection, to that extent can the abundance of organisms give some index of the wholesomeness of the product. In the present state of our knowledge our so called standards are often only working guides and not suitable for adoption as official regulations for the guidance of the technically uninformed, and the surest method of undermining public confidence in doing the good work so far accomplished, and leading to a reaction against sanitary measures, is by the enforcement of regulations which in a few years are shown to be unjustifiable.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

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Address all communications to  
A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

### Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MAY 12, 1917.

## DOCTORS GIVE FIRST AID TO THE ALLIES.

As this issue of the NEW YORK MEDICAL JOURNAL goes to press the men and material for six base hospitals are leaving the United States for the front in France, carrying the first personal aid to the Allies provided by the United States. Each of these base hospitals embraces a personnel of 253 men and women, with all the medicines, surgical instruments, surgical supplies, bedding, clothing, litters, and appliances necessary to equip completely a base hospital capable of accommodating five hundred patients.

With each hospital unit go twenty-three surgeons, among whom are some of the most eminent men in the United States. These leaders go at great personal sacrifice to give their services to their country. The surgeon who gives up his practice for a year or more can never hope to reassemble it intact, consequently these men who have gone to the front have not only given up the incomes which they would have received during the time they may be absent, but also renounce a large portion of any future income which they might reasonably have expected had they remained in active practice. Looked at solely from its financial standpoint, the sacrifice

made by these surgeons is greater than that which has been made by any other class of citizens. Not only are they sacrificing their present income and future prospects, but they are also subjecting themselves to the manifold discomforts and dangers of war.

The successful surgeon is one of the busiest of men. Every moment of his time is fully occupied. There are men among the leaders who labor daily for from sixteen to eighteen hours. When at the front, their physical strength will be the only limit of how much they do. They will be called upon frequently to operate continuously as long as they are able to stand the physical strain and will then have to leave others to carry on the tasks which they are unable to perform. After unusual activity on the front, the surgeons of the base hospitals are worked to the extreme limit of human endurance, and they are called upon to perform the most nerve racking work. Modern war so utterly wrecks the human "cannon fodder" fed into its maw that the surgeon is constantly confronted with new and horrible complications of injuries; injuries which require the exercise of the highest degree of skill, ingenuity, patience, and labor to repair. The work must be done under great stress, rapidly, without time for study or deliberation, but none the less skillfully and effectively. Such work requires the greatest scientific judgment, the widest range of knowledge, and the utmost self-abnegation on the part of the worker. The men who go out with the American base hospitals possess these qualifications to an eminent degree, and we congratulate the soldiers of France who will be ministered to by the American surgeons at the front. In this crisis as in many others, the medical profession has been the first to respond, and it speaks well for the high standards of duty held by the medical profession that so prompt and so generous a response has been made to this first call of duty which has come to America in the world war.

## PHYSICAL EXAMINATION OF LARGE GROUPS OF MEN.

To the physician in active practice the physical examination of recruits to the army seems to be only a minor detail and to require no especial instructions or training. Army officers who have had experience in this branch of military medicine think differently, however. Colonel Willcox in a recent article (Willcox: The Physical Examination of Large Bodies of Men, *Military Surgeon*, April, 1917) calls attention to some of the difficulties attendant upon the physical examination of



large numbers of men. In 1898 and again last year, he says, the medical corps of the army became suddenly saddled with an enormous increase in this branch of work. Many medical men, who for years had been doing chiefly sanitary work, had to be assigned to this particular work, and in addition doctors from civilian life had to be trained as rapidly as possible to become proficient in this service. The examination of even 10,000 men, Colonel Willcox says, is a large problem, and this is of course a comparatively small unit in modern warfare. No other examination should be made than a complete and accurate one. Too often in the past have men been admitted to the service with some grave defect actual or potential which retires them after a short time and compels the government to support them the rest of their lives. Even the men called from the National Guard have to be examined, although theoretically they are physically sound.

The keynote to the rapid and accurate examination of men, says Willcox, is system. He cites an instance where six physicians, all prominent and successful practitioners in civil life, were working proficiently and rapidly; they had evolved a system of their own and were examining 100 recruits daily. One of the chief reasons more speed was not attained was that the discovery of any unusual anomaly or disorder was the signal for a sort of clinic or demonstration of it, these men being enthusiastic souls in love with their profession. However admirable in the abstract such professional interest seems, it did not make for record breaking rapidity in examination. Later on, these six men were put to working with a different system and were soon examining seven or eight hundred recruits daily. This, Willcox thinks, is the maximum that could be attained with such a force and that only when all the doctors are enthusiastic and skillful.

To perform Wassermann tests alone on a regiment of, say, 1,500 men a day—and Willcox thinks that military surgeons may soon be confronted with such a problem—would require seven medical officers, fourteen noncommissioned officers and eight privates, all of these working in the most systematic and diligent manner. He mentions several points which should be observed if physical examinations are to be done at the greatest possible speed. First, the officers of the regiment should cooperate well by having their men formed in the proper place without delay and passed through the various parts of the physical examination promptly. Second, the doctors fresh from civil practice should be especially warned against malingering, as this is practically negligible in private life compared with its prevalence in the army. Third, each doctor should examine only one part of the body, as in that

way he soon becomes for this purpose practically a specialist in that region, and furthermore no part of the body is slighted. For example, if one surgeon makes a full physical examination of each one of a number of recruits, we can imagine him, by the time he had come to his twentieth or thirtieth for the day, giving but casual attention to the arches of the feet or the rectum, or some other part of the body which yet might quickly incapacitate the soldier for active service. Fourth, the less significant parts of the machine should not be neglected, in other words, the soldiers doing such tasks as preparing men for examination and entering up the results should be encouraged; they should be made to feel that their work is an important part of the whole: the result will be a speeding up of the entire process.

Colonel Willcox calls attention to many other matters in his excellent article which should be read *in toto*. Among them are the building for the examination; it pays, he says, to build a long, wooden structure which should contain dark rooms, running water, tables, benches, etc. A good dental surgeon is indispensable and Wassermann reactions and small-pox and typhoid vaccinations should be done at the same time as the physical examination proper.

Altogether the physical examination of large masses of men is not a sinecure and no general practitioner should assume that he can come directly from civil life and do it expeditiously. He must be content to make haste slowly until, with his brother officers, he has formulated some sort of system.

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#### BALL PLAYING AND CITY PLAYGROUND NEEDS.

Spring and the approach of school vacations signalize the annual outburst of youthful energy in outdoor games. City conditions place hard restrictions on the exercise of the small boy's play instincts. It is almost pathetic to see a group of youngsters, serious as brokers over a ticker tape, playing marbles on ten square feet of Mother Nature's bosom, slightly soiled, between broken flagstones. However, the passerby's sympathies are not so likely to be aroused by ball games played with a hard baseball, though his sense of justice may concede the abstract necessity of such games. The dangers of this practice in city streets are obvious, especially to the physician who is frequently called to treat contusions, concussions, shock, etc., during this open season for pedestrians.

In the case of a young woman, a knock on the head from a fast ball in a city street resulted in unconsciousness and symptoms of cerebral concussion, which, happily, passed away. The consequence of

such a blow in a subject with brittle and sclerotic arteries would be most serious. Severe injury and tragedy, even, may be caused by a blow on the eye. Whether the ball strikes the eyeball or the orbit, the least dangerous of the serious injuries that may occur is a subluxation, or even a complete luxation of the lens; the smallest degree of lens displacement will impair vision very markedly, thus constituting a serious disability, while a complete luxation may be accomplished by a possible rupture of one or more coats surrounding the eye ball, so that the lens may even be driven through the sclera and become impacted under the conjunctiva. On the other hand a subluxation or a partial dislocation of the lens tends eventually to become a complete displacement, with a possible glaucoma from pressure, and iridocyclitis from injury to the ciliary body; in fact under the best of circumstances a dangerous state of affairs is established that may spell disaster from sympathetic involvement of the other unaffected eye, that makes the removal of the injured one an immediate, imperative necessity. This is but one of the possible injuries that may be caused by being hit by a hard baseball: we need not go into fuller particulars concerning other accidents, such as rupture of the choroid, detachment of the retina, injuries to the macula, and the like.

It is not pertinent to discuss the recklessness in ball playing, as recklessness is synonymous with the absolute preoccupation of real healthy play. Young America must play, or devote his abundant energies to less desirable activities. Games with hard balls must not be played on the street under ordinary conditions. Provision must be made for more play streets and more playgrounds, and then more. Weighty problems are engaging our city fathers. The duties of our more or less weighty police are weightier than ever before in these troublous times. The lax enforcement of the existing city ordinances against ball playing in public thoroughfares promises to make the passerby's problem of selfpreservation the weightiest problem of all. An alternative has been proposed, i. e., the use of a soft hollow rubber ball. Take this proposition home and try it on your son. The boy on the street must play ball—real ball—but we must have the proper facilities for the protection of the public—playgrounds.

#### PHYSICOCHEMICAL FACTS AND THEIR PSYCHICAL BEARING.

The clear visioned study of facts wins attention and carries conviction. It brings concrete definiteness into the bewildering realm of speculation, speculation, however, which is busy because vital problems have called it into being.

Therefore Kappers's latest investigation into the phenomenon which he has named neurobiotaxis (*Journal of Comparative Neurology*, April, 1917) casts some light from physicochemistry upon the problems of mental life. Such close attention to evolutionary processes alters the direction of the cry, "Tis life whereof our nerves are scant. . . . More life and fuller that we want." That is the burden which after all sends the sick and inefficient to physician, clergyman, and social worker, or to any fad or fancy which will promise new sources of energy, of life. Then comes the result of investigation to make clear that this life is already ours, but that its energy is subject to transposition and transmutation, and life's success or failure lies in the ability or disability to accomplish this to the best advantage. The long history of creative evolution is thus one of shifting, of supplying the "scant" nerves from the force within, the conserved energy, because these nerves are the transmitters of this energy to the adaptation or nonadaptation of the organism in its environment. Such a shifting has been taking place phylogenetically and takes place in ontogenetic development in somatic evolution and is in this probably but an expression of an analogous transposition in the psychical sphere.

Kappers has studied it here in regard to the abducens nucleus which changes its position from one centre of visual coordination fibres to another set. The necessary condition under which this takes place is that of correlation of the centres in similarity of function. Synchronous and successive stimulation by functionally similar stimuli initiates a change in position of the neuron and the outgrowth of the dendrites toward the centre of stimulation, which means contrary to the direction of the nerve current. This is explained and illustrated at length by comparison with the process of galvanotropism, a phenomenon observed in other living organisms or parts of such organisms under electric stimulation. In the nerve cell, too, this is a process of galvanotropism and to this Kappers has given the name neurobiotaxis. He extends his study of the phenomenon to include also the explanation of the growth of the axon in the direction of the stimulus. The whole process he believes to be based upon Bok's experimentally developed theory of "stimulogenous fibrillation" or development through function.

He confesses that he started out with no psychological purpose in his investigations, but finds the process analogous to the psychological law of association. He further suggests even more than a mere analogy when he mentions the increase of stimulus by "simultaneity, successivity, similarity, and contrast," which we may accept as forming the mental

complex, which may be a reinforcement toward useful and increasing efficiency of adaptation, or may form the pathological complex which threatens to engulf the otherwise free psychical life. His reference to association by contrast as being due in the first place to simultaneity of impression which leads to later discrimination is illuminating also of that psychical phenomenon which the psychoanalysts have called ambivalence, and aids in interpreting this contradictory and disturbing factor of the psychical life.

This investigation therefore forms a most interesting contribution to the knowledge, through its physicochemical basis, of the attempt of life to furnish its scant nerves, even to create their tracts and centre for life's functions. It is of equally practical value if it throws light upon the building up of psychical centres through association and supplies some meaning to psychical disturbance which neurasthenia, psychasthenia, and other terms, more scant of meaning than are the nerves of life, fail to convey. It is therefore a further guide to an understanding and intelligent handling of mental conditions. "The stimuli," according to Kappers, "which arrive in the nervous system, especially the relation between those stimuli, mould the material substratum of the mind; this correlation is the primary force, and expresses itself in the material arrangements of our nervous system."

#### STANDARDIZATION OF PITUITARY EXTRACTS.

It has long been known that different preparations of pituitary extract exhibit a wide variability in their physiological action, although no adequate reason for this variation has been given. In a recent investigation of this subject George B. Roth (Pituitary Standardization, *Hygienic Laboratory Bulletin No. 109*) reports the result of his experiments and advances an explanation for the varying effects of the different preparations. He points out that the measurement of infundibular extracts by testing the effect upon isolated uterine muscle alone is not strictly indicative of the proportionate effect upon blood pressure. In his experiments, therefore, the blood pressure effect was examined as well as the effect on the contraction of the isolated uterus. He finds that there is a natural variation in the infundibular extracts from different animals of the same species and that the extracts from different species of animals vary quantitatively in their activity. For example, it was discovered that the infundibular extracts made from the pituitary bodies of cats, dogs, and hogs are more active than similar extracts from the pituitary bodies of cattle, sheep, and rabbits. This furnishes an interesting

comment on the effect of diet on the nerve structure and internal secretions of the body as the infundibular material from carnivorous and omnivorous animals apparently exhibit a greater potency than that from herbivorous animals.

In the investigation of the effect of pituitary extracts upon the motor activity of the isolated intestine considerable variability was discovered and it is suggested that the motor depression obtained with some of the preparations may be due to the preservative used in their preparation. It is further recommended that a method of standardization for pituitary products be established in order that a more uniform action may be assured in the therapeutic uses of pituitary extracts, which are constantly growing in popularity and favor as uterotonics, diuretics, and hemostatics.

### News Items

**Changes of Address.**—Dr. Farrand B. Pierson, to 837 Park Place, at Nostrand Avenue, Brooklyn, N. Y.  
Dr. J. F. W. Meagher, to 220 Brooklyn Avenue, Brooklyn, N. Y.

**New York Doctors Enrolled in the Medical Reserve Corps.**—Major Henry C. Coe, of the Officers' Reserve Corps, Medical Department of the Army, says that about five hundred New York physicians have received commissions in the Officers' Reserve Corps. The quota to be supplied by New York calls for two thousand. A recruiting office is open daily at the Academy of Medicine, from three to five o'clock.

**Columbia School of Dentistry.**—An administrative board for this new department of Columbia University has been announced, with Professor James C. Egbert at the head. Other members of the board are: Dr. Henry S. Dunning, Dr. Samuel W. Lambert, Dr. William J. Gies, Dr. Francis Carter Wood, Dr. Henry W. Gillette. The trustees announce the receipt of \$4,000 from an anonymous donor for the support of the school.

**Prohibition Zones About Military Posts.**—The General Medical Board of the Council of National Defense has recommended the creation of zones surrounding all military posts in which the sale of alcoholic liquors is to be prohibited, and from which prostitutes are to be barred. The board has recommended that vigorous steps be taken for the prevention of venereal diseases, and that provision be made for athletics and recreation.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, May 14th, County Medical Society (board of directors), Samaritan Hospital Medical Society; Tuesday, May 15th, Mount Sinai Hospital Clinical Society, West Branch of the County Medical Society; Wednesday, May 16th, South Branch of the County Medical Society; Thursday, May 17th, Northeast and Southeast Branches of the County Medical Society; Friday, May 18th, Logan Medical Association, Northern Medical Association.

**Changes in the Faculty of the College of Physicians and Surgeons.**—Dr. William G. MacCallum, professor of pathology at the College of Physicians and Surgeons, Columbia University, has resigned to accept the chair of pathology and bacteriology at Johns Hopkins University. No permanent successor to Dr. George E. Brewer in the chair of surgery has been appointed, but Dr. Adrian V. S. Lambert, associate professor of surgery, has been designated head of the department for the next academic year. The resignation of Dr. Virgil P. Gibney as professor of orthopedic surgery, and Dr. Homer F. Swift as associate professor of medicine, are also announced.



**Smallpox in Austin, Texas.**—The United States Public Health Service reports that virulent smallpox has been present in Austin, Texas, since the fourth week in January. Incomplete reports which have been received by the service give a total of 123 cases up to April 21st, of which at least 22 were fatal. The greatest number of cases were reported during the weeks ending April 7th and 14th, when 25 and 22 cases, respectively, were reported.

**Prohibition during War Time Favored by Doctors.**—At the annual meeting of the American Society for Clinical Investigation, held in Atlantic City, Tuesday, May 1st, under the presidency of Dr. Haven Emerson, health commissioner of New York City, the following resolution was adopted:

*Resolved,* That in the critical condition of the world's food supply we consider it desirable that the manufacture of alcoholic beverages and their importation into this country, be prohibited for the duration of the war and for at least one year thereafter.

**Columbia War Hospital to Be Ready in a Month.**—The work on this hospital has been started, and the executive committee expects to have buildings for a 500 bed unit ready by June 4th. Although money for the maintenance and equipment has not been subscribed, the committee is so sure of public support that the work of construction will be rushed. An appeal is made for \$425,000; \$50,000 to equip the main hospital, \$10,000 to equip and maintain the mobile field units, and \$365,000 to run the institution for a year.

**Detroit Base Hospital Unit.**—Professor Channing W. Barratt, chief of surgery in Cook County Hospital, Chicago, has been named to the surgical staff of the second Detroit Red Cross base hospital unit. Dr. Herbert E. Randall, chief of surgery in the Flint General Hospital, has received his commission on the surgical staff. Dr. Ernest K. Cullen, assistant professor of surgery in the Detroit College, is also named as one of twenty-three physicians in the medical, surgical, and polytechnical divisions of the unit. For the physician roster thirteen surgeons, seven medical practitioners, and three pathologists are required.

**Base Hospitals Ready for European Service.**—Regular army medical officers assigned to command the six American Red Cross base hospitals about to start for France were announced by the War Department on Tuesday, May 8th, as follows:

Major Robert U. Patterson, Chief of Red Cross Bureau, No. 5 Hospital, from Harvard Medical School, with Dr. Harvey Cushing, as director.

Major Elbert E. Persons, No. 2, New York Presbyterian Hospital; Dr. George E. Brewer, director.

Major Harry L. Gilchrist, No. 4, Cleveland; Dr. George W. Crile, director.

Major Matthew A. Delaney, No. 10, Pennsylvania Hospital, Philadelphia; Dr. Richard H. Harte, director.

Major James D. Fitt, No. 21, Washington University Hospital, St. Louis; Dr. Frederick T. Murphy, director.

Major Christopher C. Collins, No. 12, Northwestern University; Dr. Frederick Besley, director.

There are thirty more Red Cross army base hospitals and five navy base hospitals organized and ready for European service whenever the call comes.

**Personal.**—Dr. Abraham Jacobi, emeritus professor of pediatrics at the College of Physicians and Surgeons, Columbia University, celebrated his eighty-seventh birthday on Sunday, May 6th. A dinner was given in his honor at the New York Yacht Club by about twenty of his former assistants at the college.

Dr. Charles W. Pilgrim, president of the New York State Commission in Lunacy, has been appointed medical director and superintendent of the Manhattan State Hospital for the Insane, on Ward's Island, succeeding the late Dr. William Mabon.

Dr. Walter G. Ryan, medical inspector of the State Hospital Commission, has been appointed superintendent and medical director of the Hudson River State Hospital, at Poughkeepsie.

Dr. Alonzo Englebert Taylor, of Philadelphia, has been elected to membership in the American Philosophical Society.

Dr. William A. Brooks, of Brookline, has been appointed chief surgeon of the Massachusetts National Guard, with the rank of lieutenant colonel.

**Medical Students to Give Ten Ambulances.**—Students of the University and Bellevue Hospital Medical College have organized a committee to raise a fund of \$15,000 for purchasing ten ambulances to be sent with American troops for foreign service. Contributions should be sent to Dr. J. Edelsberg, chairman of the Ambulance Fund Committee, Twenty-sixth Street and First Avenue.

**Conference of Charities and Correction.**—The eighth New York City Conference of Charities and Correction will be held in Manhattan, Brooklyn, and Dobbs Ferry, May 22d, 23d, and 24th. The Public Health Committee, of which Dr. S. Adolphus Knopf is chairman, will meet Tuesday evening, May 22d, in Hosack Hall, New York Academy of Medicine. Dr. S. Josephine Baker, director of the Bureau of Child Hygiene of the Health Department, will read a paper on the Control of the Most Important Infectious Diseases of Child Life, which will be discussed by Dr. Godfrey R. Pisek. Dr. Ira S. Wile will read a paper on the Control of the Most Important Infectious Diseases of Adult Life, which will be discussed by Dr. John S. Billings and others. A general discussion of both papers will follow. Mr. John B. Prest, 287 Fourth Avenue, New York, secretary of the conference, will furnish complete programs.

**The Presbyterian Base Hospital.**—The complete personnel of the Presbyterian Base Hospital Unit of the American Red Cross, organized at Columbia University and the Presbyterian Hospital, that is to leave within a few days for active service, probably in France, as part of the contingent of American surgeons and nurses, has been announced by Dr. George Emerson Brewer, its director. It includes twenty-three doctors and sixty-five nurses. The doctors are George Emerson Brewer, Homer Swift, William Darrach, Sidney R. Burnap, Fordyce B. St. John, Alex McCreery, John A. Peters, Benjamin R. Allison, William F. Cunningham, William Barclay Persons, Robert Kennedy, William C. Woolsey, Gerhard Cocks, Armitage Whitman, Willard B. Soper, Louis Cassamajor, Alwin M. Pappenheim, A. R. Stevens, Roderick Grace, Austin Hobbs, Malcolm McBurney, Henry S. Dunning, and E. H. Raymond.

All the doctors and most of the nurses attached to the unit have been drawn from the Presbyterian Hospital and the College of Physicians and Surgeons. Of the civilian complement of 152 men, ninety-two have already been enlisted.

**Rockefeller Foundation Makes Appropriations for War Relief.**—The Rockefeller Foundation has announced appropriations of \$875,000 for purposes in connection with the war. Of this, \$475,000 will be spent in America for medical research and humanitarian aid and the remaining \$400,000 will go to continue relief activities now being carried on abroad.

The Rockefeller Institute for Medical Research gets \$200,000 for the Carrel Hospital to be established during the next few months in connection with it. This model hospital of 100 beds under the direction of Dr. Alexis Carrel, is to be used to teach the new methods of surgical treatment for infected wounds, worked out by Doctor Carrel and Doctor Dakin in France.

The Rockefeller Institute receives an additional \$60,000 for instructing military and other surgeons in new methods of diagnosis, for the preparation of serums similar to those it has sent abroad for use in army camps, and for the purpose of finding improved means of treating peritonitis and shock.

Funds were also provided for thorough study abroad of mental diseases among soldiers, and the kinds of provision needed for their care at the front and in base hospitals. This investigation is to be undertaken by Dr. Thomas W. Salmon, medical director of the National Committee for Mental Hygiene, who is to supervise American psychiatric hospitals to be established by the Government. Doctor Salmon will develop methods of receiving, classifying, and distributing the various kinds of mental and nervous disorders. The Foundation has appropriated \$15,000 for buildings for a naval psychiatric hospital to be erected on the grounds of the United States Marine Hospital in New York by the National Committee for Mental Hygiene and operated by the United States Public Health Service.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 851.)

In rheumatic conditions the ordinary salicylates are, from the standpoint of expense, more advantageous than acetylsalicylic acid which, in spite of its recent diminution in cost, is still about four times as expensive as sodium salicylate. The earlier claim that acetylsalicylic acid is superior to sodium salicylate in that it produces no gastric irritation is held by Roch to have been unfounded; it is realized, moreover, that direct irritation of the stomach by sodium salicylate can be obviated by combining one or two parts of sodium bicarbonate with it, thus preventing liberation of the irritating salicylic acid by the hydrochloric acid of the gastric juice. Again, the antirheumatic action of acetylsalicylic acid seems less vigorous than in the case of sodium salicylate, the former being broken up only slowly and incompletely in the intestine, and therefore partly absorbed without change.

For antipyretic purposes, acetylsalicylic acid is, as a rule, distinctly to be preferred to acetanilid because of the especially objectionable depressing effect of the latter in these cases. Acetylsalicylic acid has been found to act well as an antipyretic in relatively small doses—even seven and one half grains—and can, therefore, usually be satisfactorily substituted for the more costly acetphenetidin or antipyrine. In the milder febrile processes as well as in rheumatic conditions, W. E. Robertson (1917) recommends a mixed dose of six grains of acetylsalicylic acid, four grains of acetphenetidin, and two grains of Dover's powder. In view of the high cost of acetphenetidin he at present substitutes for it one grain each of acetanilid and caffeine.

Among the general anesthetics, chloroform has increased in price since the beginning of the war much more than ether, doubtless owing to the superiority of the former for military use and the greater popularity of chloroform among the allied European nations as compared to the United States. The greater rapidity of action of chloroform is an advantage over ether which weighs heavily in its favor at the front and in all military hospitals in which rush work is frequently unavoidable owing to the large numbers of cases to be handled at once. Thus we find that, whereas the price of ether remains practically as in the fall of 1914, that of chloroform more than doubled in the first half of 1916 and has since receded but slightly. Weight for weight, chloroform is now approximately twice as expensive as ether. Since the quantity required for anesthesia is about four times less, chloroform remains in practice about one half as expensive as ether. The greater mortality and tissue toxicity of chloroform, however, renders substitution of chloroform for ether inadvisable ex-

cept under special circumstances, such as those above referred to.

A more legitimate means of reducing the consumption and expense of anesthetics where many cases are to be dealt with, is the preliminary administration of morphine, which, as shown by Madelung, 1910, reduces by one third to one half the concentration of anesthetic required. This applies in particular to light anesthesia, and not to deep anesthesia or to experimental death anesthetics; the margin of safety or range from light to deep anesthesia is thus considerably increased by the morphine (Sollmann). In this procedure, however, it must be remembered that the irritability of the respiratory centre is diminished and the tendency of the pupils to dilate in the collapse stage of anesthesia is antagonized by the morphine. Greater watchfulness on the part of the anesthetist, as well as some additional watching after the close of the operation, are therefore necessary. Similar considerations apply where both morphine and scopolamine are administered before anesthesia. The narcosis is perceptibly deepened by these agents, but the zone of safety, according to recent experiments, is not augmented as it is where morphine is given alone. Another method of reducing anesthetic expenses where stovaine is obtainable, is the substitution, in appropriate cases, of spinal for general anesthesia; considerable experience with this procedure and a precise knowledge of its contraindications are, however, required before it can be applied with success and safety.

Turning to the local anesthetic agents, we note that the chief member of this group, cocaine hydrochloride, has undergone only a relatively moderate increase in price until the last few months, when the alkaloid rose to a level almost twice as high as that of 1914. Most of the cocaine substitutes, including novocaine, stovaine, alpin, and even betacocaine hydrochloride, recently recognized in the U. S. Pharmacopoeia, are now practically unobtainable. Tropacocaine is still available at a price about eight times that of cocaine, but is among the least valuable of the cocaine substitutes; although less toxic than cocaine, it has the peculiarity of hindering the local vasoconstrictor action of epinephrine and thus tends to prevent blanching of the tissues to be incised. Quinine and urea hydrochloride, now official, is obtainable, relatively inexpensive, and practically nontoxic, but is unavailable in many cases in which cocaine is employed, owing to the persistent local edema caused by even weak solutions, its strongly acid reaction, and its tendency to induce fibrous induration when injected in solutions stronger than 0.5 per cent.

To be borne in mind in attempting to reduce the quantity of cocaine used in local anesthesia is the synergistic effect of added minute amounts of epinephrine and the potentiation which has been shown to occur when potassium sulphate is dissolved in cocaine solutions. The use of cocaine hydrochloride



in a menstruum of 0.5 per cent. potassium sulphate and 0.9 per cent. sodium chloride, as recommended by Kochmann (1914), is believed almost to double the anesthetic activity of the percentage of cocaine present. Other methods of reducing the amount of local anesthetic include proper application of the infiltration or pressure principle, the use of a hypotonic or hypertonic solution, the slowing of the absorption into the system by interruption of the circulation from or to the anesthetized part, or the addition of acacia to the anesthetic solution (Erhardt), and the practice of nerve blocking, whereby, as mentioned, e. g., Sollmann, as little as one eighth grain of the cocaine has proved sufficient for an amputation at the shoulder joint.

(To be continued.)

**Operative Treatment of Peripheral Nerve Injuries.**—J. Renfrew White (*British Medical Journal*, March 24, 1917) emphasizes the difficulty encountered in deciding when to operate to repair an injured nerve and says that considerable latitude may be allowed and judgment must be reached on the basis of the individual conditions. Operation should never be undertaken as long as there is any reason to believe that bacteria may still be present in the tissues, even in latent foci. In cases of complete nerve division the indications for operation depend in part upon whether the lesion is anatomical, physiological, or combined. When the nature of the lesion in this respect is unknown operation should not be prolonged beyond a reasonable period of probation in the absence of signs of returning function. Much the same plan should be followed in cases of pure physiological lesions. Where there is incomplete division operation should be performed if the condition remains stationary; if the clinical signs increase in severity or extent; if serious disability remains after some recovery of function; or if there is persistent pain. The operative technic is beset with difficulties, but the objects sought should be the restoration of nerve function or continuity by removal of fibrous spindles, nodes, bands, and adhesions; adequate stretching of the nerve; nerve grafting and nerve implantation. When grafting, implantation, or restoration by suture are tried special precautions must be taken to prevent the development of scar tissue at the site of the operation, both by prevention of infection and by choosing suitable tissues for the nerve to pass through and then by covering the suture line with some material such as Cargile membrane. The nerve ends in cases of completely divided nerves should be sought by finding the normal nerve above and below the break and tracing each portion to its termination. It is often possible to gain much in the length and avoid artificial means of extending severed nerves by preparing new and shorter channels through the tissues, through which they are then drawn and the ends united directly. Where nerve anastomosis is undertaken one should select as healthy nerves those which have minor functions, and even these should never be completely divided but the distal end of the severed nerve implanted into their course.

**The Treatment of Acute Lobar Pneumonia.**—A. Graham-Stewart (*Practitioner*, April, 1917) emphasizes the importance of certain general principles, which do not always receive the attention they deserve, although when carried out they place the patient in a much better position to combat the malady. First he places the importance of mental and physical rest. One essential is the absence of worry, a source of which is the anxious looking relative. It is therefore advisable that relatives should not visit the sick room frequently. All mental activity or strain should be kept away, and it is wise not to mention the word pneumonia in the hearing of the patient, as this often causes a feeling of anxiety and hopelessness. Physical rest should be complete. Reaching for a vessel in which to expectorate frequently causes shortness of breath and taxes the heart. Frequent examinations of the back of the lungs are to be avoided; once the diagnosis has been made, a careful physician will confine his stethoscope more to the heart, noting its rhythm, the nature of the sounds, and watching for cardiac dullness extending to the right of the sternum, fullness of the liver, and engorgement of the veins in the neck. Percussion of the chest should be gentle and light, for heavy percussion is distressing. The most suitable and most restful position must be determined in each individual case; cardiac conditions generally demand that the head and shoulders be raised with pillows. Next comes the importance and necessity of adequate sleep. The author considers persistent insomnia to be one of the worst prognostic signs; general exhaustion is produced with a lowering in the vasomotor tone. The cause of the insomnia may be cough, pain, an uncomfortable bed, nervous tension, general discomfort, or restlessness. Sleep must be obtained, if necessary by means of a hypnotic. Veronal, medinal, tetronal, and sulphonal are unsafe in his opinion. Next the importance of open air treatment is discussed. Deficient aeration of the blood is one of the dangers, so the patient should be placed right in the window, which is kept wide open, top and bottom, day and night. The importance of a correct diet follows. Small quantities of the most digestible and easily assimilated foods should be given frequently. Little harm ever arises from indulging patients in their rather odd fancies for food; it is possible to stick too closely to the method of pouring pints of starchy, sloppy, disagreeable, and gas producing foods into a patient. Finally he insists on the importance of a suitable environment and of bright and cheerful surroundings. The room should be sunny and clean, and attention should be given to details which will render it pleasant.

The writer then passes to the treatment of special symptoms. Pain may be relieved in the earlier stages by one eighth to one fourth grain of morphine with 1/150 to 1/200 grain of atropine, as the opiate will do less harm than the pain. Hot applications are useful, and if the pain in the side is very severe the lower ribs may be lightly strapped with adhesive plaster. For persistent cough heroine may be used with care. When expectoration is difficult the most useful prescription is a combination of old fashioned remedies, potassium citrate, spiri-



tus ætheris nitrosi, liquor ammonii acetatis, and camphor water. Ammonium carbonate with small doses of sodium iodide loosens the expectoration and renders it more easily expelled. In selected cases five to ten minims of tincture of nux vomica, flavored with spirit of chloroform, liquid extract of licorice, and syrup of tolu, may be used with advantage. A dose of five or ten drops of balsam of Peru on a lump of sugar three times a day is also useful. Gastric sluggishness can be aided by the following prescription:

R	Liquoris arsenici hydrochlorici, . . . . .	℥ss-j;
	Tinc. capsici, . . . . .	℥j;
	Tinc. nucis vomicæ, . . . . .	℥v-x;
	Acid. nitrohydrochlor. dil., . . . . .	℥xv-xx;
	Liq. hellan et pepsin com., . . . . .	℥j;
	Syrupi aurantii, . . . . .	℥j;
	Aque destillate, . . . . .	℥j.

Misce. Ft. mist. Signa: Three times a day after meals.

Constipation must be prevented, but drastic purgatives should be avoided, and care should be taken with enemata in the feeble, as they cause collapse at times. Any straining must be avoided. Phenolphthalein in doses of one to five grains once or twice a day has, perhaps, fewest drawbacks. If the rectum tends to become loaded, cascara evacuant may be given, and if the movements are offensive or clay colored one eighth grain of calomel may be given every half hour for four to eight doses. The mouth and teeth should be cleansed regularly by the nurse. Abdominal distention calls for the cutting off of milk and starchy foods. Highly concentrated urine with heavy lithuric deposits requires the free use of fluids, barley, and lemon water, and of citrates. High temperature is best reduced by sponging. Cyanosis should be combated with oxygen.

The writer believes that if the heart can be kept right in pneumonia the lungs will generally take care of themselves, but that digitalis is useless, and worse than useless. The general employment of strychnine in unselected cases he holds likewise to be unscientific and injurious. The general principles of treatment, spoken of at first, are undertaken to conserve the powers of the heart, which are strained to the utmost in this disease. There is no specific to fall back upon when the heart fails. So far as the drug treatment of pneumonia is concerned there is some reason to believe that quinine in small doses, two to four grains every four hours, has a favorable influence, but the value of other drugs is questionable, except in selected cases.

**Heart Disease.**—G. A. Sutherland (*Lancet*, March 24, 1917) discusses several of the phases of disturbance of the heart and states that it is generally accepted that direct cardiac therapeutics offers a very restricted field in cases of acute inflammatory diseases of the heart. About all that can be done is to make use of measures to allay or remove infective diseases, such as the use of salicylates in acute rheumatism. There are no direct means for checking disturbed action or strengthening weakened cardiac action when due to acute or subacute cardiac inflammation. Treatment should not be based merely upon the presence of a murmur or a valvular lesion, but should rest upon disturbance of compensation. Digitalis is used with the idea of improving the contractile power of the heart, but is of little

value for this purpose. Its main field of action lies in the influence it has upon abnormal rhythm, which constitutes one of the most important elements in the loss of compensation. The direct action of digitalis in slowing the heart and making its rhythm more orderly adds immensely to the heart's power and increases the efficiency of the circulation. This leads to an improved state of nutrition of all of the organs of the body, quickens the circulation in the lymphatic system, and relieves congestion in all of the organs. It has no direct diuretic action, but in cases of cardiac dropsy it usually leads to abundant diuresis as a secondary result of its general effects upon the circulation. It does not act as a diuretic in cases without cardiac decompensation. There is a possibility that in large doses it may exert a slight irritant action upon the kidneys and thus increase its tendency to cause diuresis. In some cases digitalis will be found to bring relief to the other symptoms, but still fails to provoke free secretion of urine. Here, often, the simultaneous administration of a member of the caffeine group, such as caffeine, theocine, or theocine sodium acetate will suffice to initiate a profuse diuresis which will continue until all the edema is removed. Similar effects may also follow the relief of pressure by paracentesis in cases of ascites in heart disease. Digitalis is devoid of vasoconstrictor action in man, and frequently leads to a reduction in vascular tone through improved circulation. Any rise in the blood pressure which may occur from digitalis is due to the improved action of the heart.

**Digital Rotation in Occipitoposterior Positions of the Vertex.**—G. A. Peck (*American Journal of Obstetrics*, March, 1917), after noting the paucity of descriptions of this procedure in literature, points out that of all vertex presentations, seventeen per cent. are estimated to be occipitoposterior, though spontaneous rotation eventually occurs in all but four per cent. Avoidance of injury from prolonged pressure on the head renders it advisable, however, not to await the spontaneous anterior rotation. While a probable diagnosis of occipitoposterior position can be made from the slow progress of labor in the second stage and from other signs, the only positive diagnosis is by recognition of landmarks on the fetal head. This is best done at the beginning of the second stage, just after rupture of the membranes and during uterine contraction. Taking as chief landmarks the sagittal and the two arms of the lambdoid sutures, forming a letter Y, doubt is removed by remembering that during uterine contraction the occipital bone will be found depressed beneath the two parietal bones. Digital rotation before the vertex is engaged usually fails; it is best accomplished after the occiput impinges on the pelvic floor, and during contractions. In these periods the parietal bone lying anteriorly overlaps its fellow, and if the occiput is to the right and posterior, the index or middle finger, or both, of the opposite (left) hand are hooked onto the bony ledge formed at the anterior arm of the lambdoid suture and pressure applied to move the latter upward or forward in the direction in which the occiput should rotate. The effort may have to be continued through several uterine contractions before the occiput remains fixed

anteriorly. In cases where the anterior fontanelle presents because of incomplete head flexion, the middle finger of the examining hand may be hooked into the notch formed during contractions by the depressed occipital bone, and traction made in the direction of the sagittal suture while the frontal bone is pressed upward with the thumb. When complete flexion has been secured, digital rotation is next proceeded with. After rotation, time for remoulding should be allowed, to secure the lesser diameters of the head for delivery. In conjunction with forceps, digital rotation is likewise of value, serving to maintain the rotation obtained with the forceps during their removal and reapplication.

**Scopolamine and Morphine during Labor.**—W. Osborne Greenwood (*British Medical Journal*, March 17, 1917) reports highly satisfactory results for both mothers and babies from the use of this method of analgesia in a series of 150 consecutive cases. He emphasizes the fact that success can be secured only under proper conditions of quietude for the mother and the constant attendance and observation of the operator throughout the entire course of labor. Of the entire series only two patients failed to show amnesia, giving a proportion of over ninety-eight per cent. of successes. No routine plan of administration or fixed size of dose can be established, the chief element of success resting upon the judgment of the operator. A small proportion of the babies in his series were somewhat oligopneic, but none was asphyxiated and none required treatment for the oligopnea. Labor was not delayed, accidents and complications were not more frequent than by other methods, and the infant mortality was as low as the general average for other methods of delivery. The essential feature of safety was to secure complete amnesia only and not to carry the administration of either of the drugs to the point of anesthesia. The method proved strikingly valuable in the prevention of the marked exhaustion and shock so uniformly following labor.

#### **Vaccine Treatment of Cerebrospinal Syphilis.**

—O. P. Bigelow (*Cleveland Medical Journal*, February, 1917) recalls the ineffectuality of the present methods of treatment in paresis and in some cases of tabes and the earlier forms of syphilitic nervous involvement. He points out the fact that chronic lues is marked by chronic, circumscribed foci of inflammation, which is precisely the type of lesion in which vaccines have proved most successful; that in the early stages the entrance of the spirochetes into the blood stream leads to the formation of antibodies more or less successful in combating the infection; that the strains of spirochetes causing these nervous lesions differ from those causing the acute manifestations of generalized syphilis; and, finally, that the spirochete to be used is that strain contained in the patient's own spinal fluid. The previous administration of potassium iodide should, theoretically, aid the action of the vaccine by rendering the granulation tissue more permeable by breaking it down and at the same time liberating an increased number of spirochetes into the spinal fluid. Acting upon these theoretical grounds the author has given intravenous injections of autogenous spinal fluid in a number of cases with some promise of securing beneficial results.

**The Treatment of Pernicious Anemia.**—Ralph C. Larrabee (*Boston Medical and Surgical Journal*, April 19, 1917) acknowledges that we do not know the cause of this disease and must still regard it as invariably fatal, but holds that we can by various methods give its victims a small measure of relief and a little longer lease of life. There is no one measure or method of treatment that is indicated in every case, the means best adapted to meet the indications of the moment must be chosen for each case. So far as we can speak of a systematic treatment it should be, in the writer's opinion, something as follows: Every patient should receive arsenic, best administered continuously by the mouth. If the Wassermann reaction is positive, or if there is other evidence of syphilis, salvarsan should be used. Iron should seldom be given except during recovery from relapses, where the increase in red corpuscles outstrips the increase in hemoglobin and the blood picture approaches that of benign anemia. The diet should be regulated to control putrefaction and intestinal indigestion, and to preserve the nutrition. Hydrochloric acid and other aids to gastric digestion should be used freely. When the anemia is rapidly increasing the careful use of catharsis and regular and thorough lavage of the colon, and perhaps also of the stomach, is in order. If the anemia still progresses, and especially in hemorrhagic and aplastic states, transfusion, best by Kimpton's tubes, should be done. If one or more transfusions are not followed by remission, it is justifiable to remove the spleen.

**Renal Stone.**—George Gilbert Smith (*Boston Medical and Surgical Journal*, April 12, 1917) says that in mapping out the treatment of renal stone the surgeon should have as a foundation for his decision certain data in regard to the patient. The age and general condition must first be considered, and in relation to these the influence of the kidney condition upon the patient. The absorption of toxins from an infected kidney may render necessary an operation which in other respects would be inadvisable. The signs of renal insufficiency, particularly those pertaining to the gastrointestinal tract, must be borne in mind. Anorexia, flatulence, nausea, and vomiting may be indications either of reflex nervous disturbance, or of uremia. The total renal function, best estimated by the phenolsulphonphthalein test, should be determined, as well as the specific gravity, the albumin, and the sugar content of the urine. The function of the separate kidneys should be known. Good x rays of the entire urinary tract are essential, but the additional knowledge gained by determining the exact position of the stone is not worth the discomfort and expense. Whether pyelotomy or nephrotomy is necessary, can be determined after delivery of the kidney. The question of nephrectomy should be settled, at least tentatively, before operation. If the other kidney is normal as shown by negative urine, negative x ray, and good function, a markedly decreased function of the kidney with the stone should suggest nephrectomy, as it seems preferable to remove a seriously damaged kidney in such a case than to leave an infected organ which has slight value as an excretory organ, and in which stones are likely to be formed. A pyelonephrotic kidney



with insufficient ureteral drainage should be removed. Poorly drained pockets in kidneys should be obliterated, resected or provided with drainage. When the disease is bilateral and advanced operation may be contraindicated. In less advanced cases the better kidney should be operated on first. Operation should be supplemented by aftertreatment and diet, based upon the analysis of the calculus removed. To prevent the recurrence of phosphatic stone one should drink freely of water, take a teaspoonful of calcium carbonate with or after meals, and avoid eggs, milk, fish, and fruits. If the stones are oxalate it is advised that the urine be kept highly acid, that carbohydrates, which by their fermentation increase the formation and absorption of oxalic acid, should be eaten sparingly, and that foods of high oxalic content, such as rhubarb, spinach, strawberries, figs, potatoes, tomatoes, and plums, should be avoided. To prevent uric acid deposition avoid a diet favoring the production of highly acid urine, eat chiefly vegetables, fats, and carbohydrates, and a low protein diet of purin free nature, avoiding asparagus, liver, sweetbread, kidneys, meat extracts, malt liquors, claret, etc. In a case of mixed stones in which the phosphates play a part, dietary treatment should be directed toward a diminution of phosphates in the urine.

**Practical Methods of Anesthesia.**—James T. Gwathmey (*British Medical Journal*, March 24, 1917) says that the anesthetic should be suited to the patient; induction easy; respiration, blood pressure, and color index remain normal; that maintenance should vary with the needs of the surgeon while keeping the patient's condition as nearly normal as possible; and that the transition from the anesthetic to the conscious stage should be as quiet and smooth as the induction. There is no single ideal method of anesthesia. Anesthesia should be preceded by preliminary treatment to prevent acidosis, consisting of the administration of four grams each of sodium bicarbonate and lactose every four hours for two days before operation. The urine should be rendered alkaline if acid, for which the sodium bicarbonate should be increased if necessary. Glucose should be given per rectum following the operation, and 0.6 gram of quinine hydrochloride in sixty mls of water at 100° F. may be given rectally immediately after operation, followed in half an hour by saline proctoclysis or 200 mls of olive oil. From four to six doses of the quinine should be given at intervals of six hours. For preliminary narcosis the following mixture should be given by rectum from forty to ninety minutes before anesthesia:

R	Paraldehydi. . . . .	}	.....ää 4-0-8.0;
	Potassii bromidi, }		
Aque,	.....	q. s. ad.	.125.0.

Morphine or codeine may be used in place of this formula is desired. Chloroform, anæsthol, and ethylchloride are very useful for beginning anesthesia or to supplement other agents. Essence of orange should be used with ether to prevent its disagreeable odor and the reflex effects of its irritant vapors on the respiratory centre. Open drop ether and simple gas ether sequence should never be used. The same is true of all forms of apparatus depending upon automatic suction. Nitrous oxide oxygen ether

sequence by the closed method is excellent, as is endopharyngeal anesthesia or the use of the ether vapor mask. The semiopen method with the vapor mask should be used for head, neck, or upper thorax operations, and the closed method for abdominal ones. Gas oxygen anesthesia, supplemented with ether, should be restricted to selected cases. Oil ether colonic anesthesia is excellent for a very large number of cases, and is specially indicated where the element of fear is marked. It must always be borne in mind that the preliminary and postanesthetic treatment are as important as the anesthesia itself, and these should be in the hands of the anesthetist himself, who should be a physician specially trained in his field and never a nurse.

**New Serum for Gas Gangrene.**—Weinberg and Séguin (*Presse médicale*, February 22, 1917) report supplementary researches on *Bacillus oedematiens*, an anaerobic organism which they discovered nearly two years ago in certain toxic forms of gas gangrene. They have found this organism in one third of the cases of gas gangrene terminating fatally, and it seems all the more dangerous in that it has been noted in wounded subjects from all points on the military front. Next to the tetanus bacillus, it is the most violently toxic organism occurring in wounds. The authors have succeeded in preparing an antiedematiens horse serum with antitoxic and prophylactic properties approaching those of diphtheria antitoxin. While its prophylactic is much more pronounced than its curative power, guinea-pigs to which it is administered in conjunction with or within a few hours after the germ inoculation are saved by it. It has been used with success among wounded human subjects in a few cases. In cases of gas gangrene due to *Bacillus oedematiens*, treated from the outset or after excision of the gangrenous focus, it should prove of distinct value.

**Treatment of Cancer of the Cervix by the Percy Method.**—E. C. S. Taliaferro (*The Charlotte Medical Journal*, April, 1917) states that he follows the technic of Doctor Percy, which is as follows: The abdomen is opened and a low degree of heat used. If a cauterizing temperature is used in the heating iron, a carbon core is formed in the cancerous mass. This inhibits the dissemination of heat. The heating head should be passed through the uterocervical junction to the fundus of the uterus. It should be kept in one position until the whole mass contiguous to the heating iron is made so hot that it cannot be held in the surgeon's hand when encased in a medium rubber glove. The heat should be applied until all the structures that were fixed at the beginning of the application are freely movable. To do less than this defeats the object of the treatment, which is the complete penetration of all the cancer infected area possible. This cannot be done in every case, but it can be accomplished in the majority of cases. In far advanced cases it is better first to use the cautery without opening the abdomen and at a later sitting to open the abdomen and do a complete Percy. These patients are usually greatly debilitated from loss of blood and do not stand long operations. The author believes that carcinoma of the cervix, when not too far advanced, can be cured by this method.



# Miscellany from Home and Foreign Journals

**New Dental Sign of Inherited Syphilis.**—R. Sabouraud (*Presse médicale*, March 22, 1917) calls attention to the presence of the rudiment of a supplementary cusp on the internal surface of the first upper molar tooth. Often this unusual mammillary eminence is short, rounded, and flattened against the body of the tooth; in other instances it projects more markedly and is separated from the tooth by a distinct incisure. This peculiarity is of importance because it is easily recognized, occurs as frequently as any other single dental stigma of syphilis, and is generally unaccompanied by any of the other characteristic stigmata. It may be present in an otherwise perfect set of teeth, and is of distinct diagnostic value. In a series of twenty consecutive cases its characteristic nature was uniformly shown by a positive Wassermann test. In two cases the sign led to discovery of syphilis as the cause of inveterate headaches, which yielded promptly to antisyphilitic treatment.

**Prognosis of Duodenal Ulcer.**—Max Einhorn (*Archives of Diagnosis*, January, 1917) points out that, on account of the great advances recently made in the diagnosis and treatment of this condition, the prognosis is now much more favorable than formerly. He divides the cases, in connection with the prognosis, into four groups: 1. Simple duodenal ulcer. Here the prognosis is relatively good provided a rest cure is rigidly carried out, with rectal alimentation followed by a von Leube-Ziemssen milk diet, duodenal alimentation, or simply a milk and egg diet and rest in bed for two to three weeks. The more frequent the attacks, the more doubtful the prognosis under medical measures; gastroenterostomy, preferably with pyloric exclusion, then afford a fairly good outlook. 2. Duodenal ulcer accompanied by pylorospasm and hypersecretion, alimentary or continuous. Severe pains and vomiting are here the chief symptoms, and when the pylorospasm becomes marked slight isochymia will appear off and on. Under alkalis and even a milk diet the prognosis in these cases is rather bad; duodenal alimentation improves it, as a rule, but in case it should not act satisfactorily in two or three weeks, an operation is indicated. 3. Duodenal ulcer with pyloric or duodenal stenosis. Here isochymia is constant. In cases of beginning pyloric stenosis, duodenal alimentation followed by stretching of the pylorus may be tried, but the prognosis is made only by observation of the individual case. If improvement fails to occur, an operation is indicated, with resulting favorable prognosis. 4. Duodenal ulcer with periodically recurring hemorrhages. An interval operation here gives the best results and improves the outlook, though the prognosis should still be cautious, as hemorrhage may recur even after apparent perfect recovery from the operation. In none of the last three groups should the prognosis, in the absence of operation, be made too favorable, as perforation is a possible complication, the likelihood of which increases with the severity of the symptoms.

**Abdominal Hemorrhage of Ovarian Origin.**—Emil Novak (*Journal A. M. A.*, April 21, 1917) reviews the literature of this rare occurrence and reports a case of his own observation. The patient, a girl fifteen years old, was suddenly taken with a violent pain in the right iliac fossa. Examination a few hours later revealed the persistence of the localized pain, rigidity of the right rectus, pallor, prostration, rapid pulse, and no fever. There was moderate leucocytosis with ninety per cent. of polymorphonuclears and a hemoglobin of forty-five per cent. Laparotomy was performed and revealed a ruptured, atresic Graafian follicle in the right ovary together with a small, old, nonruptured tubal gestation on the left side. It seemed probable that the congestion produced by the tubal pregnancy might have been a factor in the production of the bleeding from the old follicle, as the various factors leading to pelvic congestion were found to have been common in the reported cases. Attention was also called to the fact that gynecological examination might very readily lead to the rupture of such cysts. In the majority of the reported cases the hemorrhage was severe. In the present case recovery was satisfactory. The importance of these cases lies in the fact that they are very likely to simulate other abdominal conditions and if operation is postponed lead to fatal outcome from internal hemorrhage.

**Influence of Oxygen on the Hemoglobin in Carbon Monoxide Poisoning.**—M. Nicloux (*Presse médicale*, March 15, 1917) protests energetically against the prevailing impression that red blood cells once poisoned with carbon monoxide may be considered dead and can never recover their oxygen carrying property. While it is true that carbon monoxide forms a more stable combination with reduced hemoglobin than does oxygen, it is not true that pure oxygen, if present in sufficient amount, cannot displace carbon monoxide from carbon monoxide hemoglobin. Either *in vitro* or by respiration *in vivo*, a mixture of one part of carbon monoxide with 220 parts of pure oxygen separates the hemoglobin into two equal parts—fifty per cent. combined with carbon monoxide and the remaining fifty per cent. with oxygen. This ratio remains the same provided the one in 220 mixture of the gases is maintained. Taking into account the fact that air contains only twenty-one per cent. of oxygen, Nicloux finds that air containing one in 50,000 of carbon monoxide can cripple only 2.1 per cent. of the hemoglobin in the system; one in 5,000 cripples 17.5 per cent. of the hemoglobin, while one in 500 cripples sixty-six per cent., the minimum percentage required to produce death. The hemoglobin itself is not injured but will resume its oxygen carrying function as soon as enough oxygen is supplied to drive off the carbon monoxide. By promptly having a patient who has been poisoned with carbon monoxide breathe oxygen as pure as possible a remarkable type of resuscitation can be effected. In animals, Nicloux found oxygen, respired for one hour, capable of displacing nearly all the carbon monoxide.

**Typhoid Epidemic from Carrier.**—James G. Cumming (*Journal A. M. A.*, April 21, 1917) records an epidemic of twenty-three cases of typhoid fever, occurring from the contamination of ice cream by a typhoid carrier of sixteen years' standing. Every person, with two exceptions, who ate the ice cream acquired typhoid fever, and the severity of the attack in each case bore a direct relation to the amount of the cream eaten. Only the carrier herself and her daughter, who had been vaccinated prophylactically two years before, failed to manifest the disease. Three of the patients died. The incubation period varied from five to twelve days and also stood in direct relation to the amount of cream eaten. The investigation of the carrier revealed the fact that she had given typhoid to four other persons during her infective years. Six examinations of the stools of the carrier at intervals of three to six weeks were all positive for typhoid bacilli.

**Foreign Bodies of Microscopic Size in Wounds.**—A. Policard and B. Desplas (*Presse médicale*, March 5, 1917) find that microscopic foreign bodies are very frequently present in wounds in perfect condition. Such foreign bodies do not prevent normal healing, and around them the reaction of the tissues is limited to the formation of giant cells, which arise at about the sixth day through fusion of hypertrophied and proliferated connective tissue cells. In many instances eosinophiles appear in the vicinity, but there are no inflammatory manifestations or influx of leucocytes. Nevertheless, the foreign bodies may be considered certainly septic, and account for the "latent microbic phenomena" of scars, recently studied by Lecène and Frouin. Severe late infections starting in previously quite normal scar tissues are thus easily explained, and the surgical principle of excising granulation tissue and spontaneously arising cicatrices is shown to be rational.

**Gelatinous Barium Sulphate Precipitate in Gastrointestinal X Ray Diagnosis.**—R. Bensaude and M. Terrey (*Presse médicale*, March 22, 1917) refer to the disadvantages attending the use of ordinary bismuth or barium preparations in x ray diagnosis owing to the readiness with which the heavy salts contained sink down to form a deposit in the stomach or bowel and the difficulty of incorporating the salts in solid articles of food. The former defect may, in fact, lead to erroneous interpretation of x ray negatives, a pathological condition being sometimes wrongly suggested. In the preparation recommended by the authors the barium sulphate is present in so fine a suspension that it deposits only very gradually and can hardly be separated from the fluid by filtration. It consists of thick, white cream, containing one half its weight of barium sulphate, and therefore used in doses double the usual amounts, viz., 200 grams for a gastric examination and 300 grams for a one and a half litre enema. Its preparation requires much care, beginning with pure, recrystallized barium chloride, which is precipitated completely with an excess of sodium sulphate; the precipitate is then washed many times to eliminate every trace of chloride. The cream is

used as such for examinations of the esophagus, and for other organs is incorporated in a mucilage or similar fluid. The emulsion can be made immediately by using, for example, forty grams of syrup of acacia with 200 grams of the fifty per cent. gelatinous barium sulphate, and distilled water, enough to make 250 c. c. Such an emulsion is stable for several hours. To secure more prolonged stability the same quantity of barium gelatin is mixed with tragacanth, five grams; acacia, two grams; glycerin, forty grams, and water, enough to make one litre. This solution can be sterilized in the autoclave, and when a deposit forms upon keeping it is at once diffused by agitation. A barium meal is easily prepared by mixing the usual dose of gelatin with fifty grams of powdered soluble chocolate, ten grams of powdered agar, and 150 c. c. of boiling water. The barium sulphate gelatin has proved harmless and yields very good x ray results.

**Diffuse Fibromas of the Ovary.**—Philip J. Reel (*American Journal of Obstetrics*, March, 1917) asserts that cases of diffuse ovarian fibroma are relatively frequent in practice, though as yet little referred to in literature. The condition may occur at any age after puberty, and causes the usual symptoms of tumor of the uterine adnexa. The enlargement of the abdomen is typically slow, but may be accelerated by ascites. Pain is usual, but as a rule not definitely localized, and may be referred to distant parts, e. g., in the opposite side of the pelvis. Occasionally, sharp pain occurs directly over the tumor, due to local peritonitis the result of mechanical irritation. Urinary symptoms may be those of either retention or undue frequency. Obstinate constipation is often encountered, but menstrual disturbances may be slight. Histologically, the tumor is easily confused with fibrosarcoma, because of the very cellular connective tissue structure of even normal ovarian stroma. Because of the size of these diffuse fibromas and the possibility of their becoming sarcomatous, the proper treatment is prompt excision.

**Report on Fifty Cases of Twilight Sleep.**—M. Pierce Rucker and H. Norton Mason (*Virginia Medical Semi-Monthly*, March 23, 1917) state that they employed the exacting technic of Gauss, as described in 1914 by Harrar and McPherson. They believe it advisable, wherever possible, to work in pairs, that one's outside work may not suffer while he is engaged with a case. The memory test, insisted on by Gauss, was always applied, most unfavorable reports of the method having come from observers using instead a fixed dosage. Straub's solution of scopolamine in ten per cent. mannite solution was employed. The indications for the method were formulated thus: a prospectively long, tedious labor; an easy labor in a very nervous subject, without mechanical obstruction; in moderately contracted pelvis, where a trial labor was indicated. Contraindications were: The more serious complications of childbirth, such as placenta prævia; a dead fetus; a prospectively short labor; uterine inertia. Forty-one cases were primiparæ. The authors agree with Polak that twilight sleep is distinctly a first stage procedure. Multiparæ and some



primiparæ need no other anesthesia, but the majority of primiparæ require an inhalation anesthesia in the perineal stage. None of the patients in the series suffered a tear into the sphincter ani. The puerperium was uneventful in all cases. The mothers awoke bright, happy, and feeling well. Among the infants, in no case could death be attributed to the morphine and scopolamine. Five infants were oligopneic at birth. Two of these recovered promptly without treatment. The remaining three, after an initial cry at birth, sank into a deep slumber, from which they were roused only by artificial respiration for periods of from fifteen to twenty minutes. This condition is stated to be harmless; if left alone, the babies recover spontaneously. It occurs only when the dose of morphine is excessive or where delivery takes place shortly after the initial dose. The writers consider the method safe from the standpoint of the mother and free from danger to the child when properly administered.

**Soldier's Heart.**—Adolphe Abrahams (*Lancet*, March 24, 1917) would classify the cases grouped as soldier's heart into: 1. Purely functional cases, occurring in normal men hitherto unused to any form of exertion. 2. Cases due to excessive smoking or the use of drugs. 3. Cases with organic disease of the heart; compensated or uncompensated valvular lesions, myocardial disease, adherent pericardium, and exophthalmic goitre. 4. Genuine soldier's heart with dyspnea, fatigue on slight exertion, lassitude, persistent tachycardia without enlargement of the heart, and variable neurotic symptoms. The precise etiology of the last type is not known and does not seem easy to determine. The influence of toxins, of disturbances of the ductless glands and of nervous disturbances cannot be excluded, but the last seems to be the most plausible explanation as the result of continual nervous strain and repeated psychical shocks. Pure overstrain of the heart should be excluded, as it is impossible to damage a normal heart by any degree of exertion, however great. The condition seems to be rather one of a failure of vasomotor and cardioinhibitory control than one of true disorder of the heart itself.

**The Graham Steell Murmur.**—J. Epstein (*Archives of Diagnosis*, January, 1917) points out that, though uncommon, the Graham Steell murmur, or murmur of relative pulmonary insufficiency, due to high blood pressure in the lungs, is of considerable importance in the diagnosis and prognosis of some cardiac and pulmonary affections. The commoner causes are mitral stenosis, emphysema, chronic interstitial pneumonia, pulmonary induration, and general pleural adhesions. The murmur is soft and blowing, diastolic, is heard best in the pulmonary area and third left intercostal space, and is transmitted down the sternum. The second pulmonic sound is weakened or obliterated while the first sound may be accentuated. Where there are indefinite physical signs of mitral disease, the Steell murmur points to mitral stenosis. When, however, the mitral valve is intact and the left ventricle in good condition, the murmur suggests some chronic pulmonary disease. Again, if there is mitral stenosis or chronic lung induration with a diastolic murmur at the base and right ventricular enlargement

the murmur suggests a relative pulmonary insufficiency and not aortic insufficiency. The former is prognostically helpful, indicating a great pulmonary engorgement which may later lead to tricuspid leakage and general venous stasis. Differentiation between a relative and an organic pulmonary insufficiency may be difficult. A rough, harsh, pulmonic diastolic murmur, without any evidence of mitral stenosis or chronic lung or pleural disease, suggests the organic type. Prognostically, the Steell murmur is, on the whole, an unfavorable sign; yet slight leakage from the lungs into the right ventricle may be temporarily useful, relieving lung congestion and preventing general pulmonary edema.

**Isolation of Bacillus typhi exanthematici from the Body Louse.**—Peter K. Olitsky, Bernard S. Denzer and Carlos E. Husk (*Journal A. M. A.*, April 21, 1917) cite the literature showing that body lice fed upon patients with active typhus fever are infective to animals and that coccoid organisms have been observed in the intestinal tracts of such lice. These organisms have not been cultivated from lice, however, and the present paper presents the successful results of the authors' efforts to cultivate this organism from the bodies of lice and to prove that such cultures were infective for animals. The investigation also showed that the organisms, after subculture, became Gram positive; while fresh from lice or infected animals they have usually been found to be Gram negative. This observation harmonizes the one great difference noted between the findings of the present authors in previous studies upon the cultivated organism and those of workers observing the bacillus in the tissues of the body louse.

**Relation of So Called Ether Pneumonia to Pelvic and Abdominal Surgery.**—W. E. Darnall (*American Journal of Obstetrics*, March, 1917) warns against surrendering to the prevailing misconception that ether, by irritating the bronchi, is largely the cause of postoperative pneumonia. Rovsing has proved experimentally that the bronchi are not at all irritated by ether, which, indeed, was originally used as an inhalation remedy for certain lung diseases, such as asthma, emphysema and bronchitis. Mikulicz, substituting chloroform for ether to reduce the frequency of postoperative pneumonia, observed the complication even more frequently after chloroform, then turning to local anesthesia, was surprised to note a further increase. The true explanation of postoperative pneumonia, which occurs only very rarely except after abdominal operations, seems to lie in the close relationship of the pleural to the abdominal lymphatics. Infections easily travel from the pelvis or other parts of the abdominal cavity up through the retroperitoneal lymphatics to the pleura, base of the lung, or bronchi. Most postoperative pneumonias show a mixed infection with streptococci, colon bacilli, or other organisms in addition to pneumococci. Apparently in most cases postoperative pneumonia is a secondary infection of the lung following a septic abdominal condition. Imperfect lung ventilation due to the fear of taking deep breaths after a laparotomy may also be a factor.



# Proceedings of Local and National Societies

THE NEW YORK ACADEMY OF MEDICINE.

SECTION IN GENITOURINARY SURGERY.

*Meeting Held December 20, 1910.*

Dr. A. R. STEVENS in the Chair.

*(Concluded from page 862.)*

**The Ureteral Bougie as an Aid in Diagnosis** (*Continued*).—Doctor HYMAN agreed with Doctor LeWald and Doctor Stewart that the opaque catheter should be used more, and said that during the past four or five months he had practically given up the injection of thorium except in a few selected cases, and now confines himself to the opaque catheter, with which he can obtain almost as much information as with the injection of thorium or collargol. It does not seem at all necessary to resort to pyelography to discover hydronephrosis; in the majority of cases one can determine a kink by the opaque catheter, and by injection of methylene blue one can determine how large the hydronephrosis is. Also, that there is some danger in using thorium and more danger in the use of collargol, even if one does so with the greatest care. He did not think the collargol necrosis is always due to the force employed in giving the injection.

**CASE.**—In a case at the hospital, collargol was injected into the bladder to determine whether the ureters were patent. The collargol ran up from the bladder into the ureters and into the pelvis. The patient was operated upon later, and an extensive necrosis of the kidney was found, undoubtedly due to the contraction of the bladder and ureter and also of the pelvis, forcing it into the tubules of the kidney.

It is much safer in these cases to resort to the opaque catheter, and in most of them it will furnish sufficient information.

Doctor SINCLAIR said that he had seen a great many radiographs of the ureters with bougies in them where a kink or a curve was said to exist at the bladder extremity; and had always felt that when the ureteral bougie was introduced into the ureter and the kink or curve noted, perhaps it was due to excess of bougie being pushed into the bladder. How can this be determined by the picture? Is not this kink or curve possibly due to the excess of the ureteral bougie in the bladder and not in the ureter? How can one tell by a radiograph just where the mouth of the ureter is, when the patient by a movement generally displaces the bougies?

Doctor BARRINGER said that he did not exactly see how the diagnosis was made in two of Doctor Chetwood's cases. As far as the pictures showed, the turning at right angles of the opaque catheter was the sole way of determining ptosis of the kidney. That seemed to be rather insufficient evidence. A picture of collargol or thorium might give much better evidence. Again, in the picture of the double ureters which Doctor Chetwood showed, there did not seem to be sufficient proof of four ureters. It is possible that two catheters in each of two normal ureters might show precisely the same picture.

Dr. C. G. BANDLER, referring to Doctor Chetwood's very interesting work, said that the course

of the ureter, as depicted by the chart of Schmidt and Kretschmer, depended entirely on the type of instrument used. If one used a stiff bougie, there would be an entirely different course than if a soft flexible catheter were employed. The anatomical course, as seen in the dissecting room, differs markedly from what is seen röntgenographically.

Referring to the matter of injecting the pelvis and ureter without overdistention, Doctor Bandler, of the Post-Graduate Hospital, has been using thorium, which is colored with methylene blue. This is utilized for the purpose of seeing the thorium return alongside of the catheter just prior to the distention of the renal pelvis. The thorium is introduced by gravity, using a small catheter of five or six F. calibre, and the moment the blue is seen returning alongside the catheter, the picture is taken. By this means, ample distention of the pelvis and calyces, with perfect outlines of normal and abnormal kidneys, are secured, with practically no discomfort to the patient.

As to the case of four ureters shown by Doctor Chetwood, Doctor Furniss had demonstrated four ureters, also giving the specific gravity, the chemical content of each specimen of urine, and a radiographic picture showing two pelves in each kidney. Doctor Bandler said that he himself had seen some twenty-two cases of ureteral duplication, but in no instance had he seen four such as Doctor Furniss had demonstrated with pyelography, plus chemistry, plus radiography.

In reference to Doctor Sinclair's question as to determining the position on the plate of the ureteral orifices, Doctor Bandler suggested the use of catheters coated with bismuth paint each alternate centimetre. Determine how far you have introduced the catheter into the ureter before taking the picture, then you can measure absolutely on the plate the point of the ureteral orifice in the bladder from the tip of the catheter. However, Doctor Bandler did not believe this point was of great clinical value.

Doctor CHETWOOD said, in response to Doctor Stewart's remarks that he, Doctor Chetwood, had stated there were some cases in which he believed that thorium or other dark fluid injection was preferable and would reveal what the bougie would fail to show. The ureteral bougie had a decided advantage in many cases, however, wherein it will afford all the necessary evidence; but in other cases, we may obtain by comparison with injection what we cannot get with the bougie alone.

Doctor Sinclair had asked about the manner of locating the ureteral catheter where it entered the ureteral orifice. In most cases it was possible to decide the limit of the catheter in the ureter or bladder by the anatomical landmarks, and in addition, by measurement and by marks on the catheter, as suggested by Doctor Bandler.

Replying to Doctor Barringer, Doctor Chetwood said that perhaps he might better have used the term "pseudoptosis." He had simply shown the pictures on the screen for comparison with other pictures of

prolapse as cases without symptoms and perhaps, like the cases of deviation of the ureter shown by bougie, without any positive proof of ptosis of the kidney, though he thought they were such.

As for the four ureters shown by the bougies, confirmatory pictures were taken to demonstrate the veracity of the case. Doctor Reese would fully verify this. It could be seen on the plate much better than on the screen. Not only this, but a chemical examination of the urinary specimens had been made, which he had neglected to mention. There was no doubt that this was an authentic case of four ureters.

Doctor Chetwood, in concluding, said that his object in preparing the paper was to present typical cases to illustrate different conditions, to lead to a discussion on a broad and general basis. With great improvements in mechanical devices and vast material to study the conditions of the kidney, with the aid of colleagues in röntgenography and cystoscopy, it may be hoped to solve even greater problems in urological surgery.

*Meeting, Held January 17, 1917.*

**A New Type of Tube for Postoperative Suprapubic Drainage.**—This tube, presented and described by Dr. MAXIMILIAN STERN, was not intended to serve all the purposes of suprapubic drainage, but merely to prevent the overflow of urine from the suprapubic wound and act as an automatic siphon. Large clots and pieces of tissue would probably interfere with its action. It was applicable, however, to the opened bladder before the enucleation in a two stage operation and also several days after the enucleation when the clots had been flushed out. Much elaborate apparatus has been devised for the constant aspiration of the opened bladder; in one devised by Doctor Chetwood, with a pump and tank, the vacuum is automatically maintained. The disadvantage of all of these devices lies in the fact that when the fluid in the bladder recedes below the tube in the bladder, air rushes in and the siphonage is lost. The idea was thus conceived of constructing a tube in which the column of water in the overflow could be maintained after the bladder had been aspirated. The water in the suction or overflow tube would reestablish the siphonage when the bladder fills again.

Doctor Stern's tube consisted of two glass tubes, one within the other, sealed together at the top. The space between the tubes was pierced near the top for the attachment of the outlet tube. The lumen of the inner tube was open above and below and accommodated a hollow glass ball. At the bottom the ends of both tubes were curved in to act as a valve seat for the glass ball. Once the siphonage is established water will flow out. The ball would descend as the water flowed until it seats, when the bladder was empty preventing the escape of the water in the tube which would reestablish the siphonage when the ball again floated as the bladder filled.

The instrument in its present form, Doctor Stern said, was crude and was shown now only as a model.

Doctor REHLING asked if the tube worked in the bladder as well as in the demonstration.

Doctor STERN said that it was intended to be used

for the drainage of the bladder before there was any blood clot, and that after the prostatectomy it would probably not be required for a day or two, for there was a great degree of suction in the tube leading to the receptacle, in fact so much so that the ball would have to be rather large to overcome the weight of the water in the column.

Dr. HOWARD LILIENTHAL said that Doctor Stern's idea was excellent and that if the apparatus would work in spite of mucus or thick pus in the bladder, it would undoubtedly prove valuable. He wished, however, to correct Doctor Stern in regard to Doctor Chetwood's apparatus: This consisted of two parts: a large vacuum tank and a small regulating gauge. Intermission of suction was hardly possible with this apparatus because as soon as the vacuum became insufficient the pump began to work automatically to reestablish the necessary air exhaustion.

**Report of a Case of Remote Fatality Following a Successfully Operated Bladder Diverticulum.**—Dr. MARTIN M. WARE said that his patient had been presented before the Society in 1910, and that he wished to comment further upon it because of the very unusual features complicating it, necessitating repeated operations since then, under the last of which—a calculus removal from the kidney—the patient unfortunately succumbed. These complications were so numerous and extraordinary, that a final report upon the case seemed to be of interest.

**CASE.**—The patient first came for treatment for a vague pyuria with frequency. Cystoscopy revealed the presence of an opening into a diverticulum. To corroborate that, collargol injections were made. Upon the basis of this, the first operation was entered upon. No obstruction was found involving the prostate. It was found to be a cystic dilatation, a prolapsed ureter and the orifice of the diverticulum seen in the cystoscope, and a normal ureter on the left side. The operation consisted in resecting the prolapsed and dilated cystic ureter and splitting the wall of the diverticulum by taking out an elliptical section, hoping that the drainage of this cul de sac would be accomplished. No relief followed. In fact, the patient was so badly off after the operation that he was not able to void. Then, after fourteen months, a radical operation was done, namely, resecting the diverticulum by transperitoneal route. In the course of this procedure two ureters were found delivering pus from the right kidney. As the operation was so tedious for removal of the diverticulum, anything in the way of a nephrectomy had to be abandoned and the ureters were then planted in the inguinal region above Poupart's ligament. Thereafter the patient did very well indeed, and began to void urine, which he had not done for fourteen months previously. The two ureters in the groin functioned very well and were no care.

The man then went on for six years with no further attention, except the removal by cystotomy of calculi which developed in the bladder after a year. Then he had attacks of retention and pyuria became more pronounced. In the meantime he began to have a great deal of pain. The two ureters which were functioning delivered pus for a while, and then they began to clear up. This refuted the belief that when a ureter is transplanted the corresponding kidney eventually becomes infected. The kidney condition on the side where the double ureters were encountered finally cleared up completely. When these new attacks began the bladder began to leak, and notwithstanding the diverticulum the patient had as much as 600 c.c. in his bladder. The pain was very severe. X ray pictures taken at intervals of six to eight months showed no findings to indicate operation. After still another attack, though six months previously, no calculus was found; a shadow now appeared in the opposite healthy kidney. Doctor Ware was loath even now to operate, for



he did not know how the remaining kidney with the double ureters was functioning. However, the patient was very anxious to have something done, and Doctor Ware finally agreed to do a nephrotomy. Under cocaine and novocaine he got down through the kidney and at the last stage of the kidney procedure he was able to use nitrous oxide. He had hoped to be able to do a pyelotomy, but could not, for it was not possible to mobilize the kidney. It was enormously enlarged, and the operation proved to be an inordinately difficult one; the kidney was filled with calculi. At first he tried to get as near the pelvis as possible, but the whole kidney from one end to the other was filled with the stones and much debris. The operation was also very bloody. The report from the finding was: On one side were two ureters, transplanted into the loin. On the other side there was the affected kidney, which emptied into the bladder. It was still possible that the two ureters of the right kidney were part of a horseshoe kidney.

On the right side, the analysis of the combined specimens by the phthalin test showed 0.4 per cent. and the bladder urine 0.6 per cent; bladder urine showed a proportion of 0.3 per cent. of urea. On the right side, there was .9 per cent.

Three or four hours after the operation Doctor Ware was summoned to the hospital for what was thought to be a hemorrhage. He effected a hemostasis, but the man died. When the wound was opened no clots were found, so it was probable the patient succumbed to the shock from long operation as well as the insufficiency.

The only other course in this case that might have been followed was to let the patient alone, but he pleaded so strongly for relief that the operation was undertaken.

To summarize: In very complicated cases with a unilateral kidney and with the condition on the other side uncertain, the best course is to do nothing at all.

Doctor SQUIER told of a case in which he had operated last week, that had a certain bearing on the one reported by Doctor Ware.

CASE.—Eighteen months ago the patient had had a prostatectomy performed for an acute urinary retention. The wound had been slow in healing and had broken down two or three times. The man came to the office with eighteen ounces of foul smelling residual urine, and it was impossible to get the bladder clean enough to cystoscope him. Doctor Squier operated to drain the bladder and ascertain the condition behind the retention. The patient had a typical hourglass bladder, at the bottom of which was a tiny opening which led into a diverticulum. The right ureter was in approximately normal position. There was a web, dividing it in half. The diverticulum was cut through to get more room, if possible. The left ureter was in the diverticulum, and a little pressure on the ureter caused urine to spurt out for two or three inches. Pressure over the right ureter made pus come out.

In all probability this man had a large hydronephrosis on the left side and a pyonephrosis on the right. Doctor Squier said he believed that in many malformed bladders, especially if there has been any operative interference, infection ascends very rapidly to the kidneys; also if there is a malformation below, there is likely to be something of the kind higher up, and unless there is a practically sterile bladder, the advisability of operating is questionable.

Doctor WARE said he believed Doctor Squier was correct in what he said about malformed bladders. He would have liked to report this case long before, but waited to see the outcome. In going over the literature of the subject he found that much time was spent in the diagnosis, the question of operating, etc., but there was very little reference to the peculiar complications that are noticeable in most of these patients. To cite a similar experience, in doing an operation for a large prostate, in two stages, he had

come upon the orifice of a huge diverticulum in the bladder. He went no further than draining the bladder. The accidental character of these findings was the peculiarity of most diverticula.

Recently Doctor Ware had a case of pyuria in which symptoms were precipitated in a most obscure way. The patient had been catheterized while he had a fracture of the leg. While in bed an infection was acquired, the cause of which was a puzzle. An attempt was made to cystoscope him, and the condition was such that there seemed to be no end to the washing that was necessary. A cystotomy was done, and not finding anything in the bladder, Doctor Ware proceeded to wash it out, when it occurred to him that a large quantity of water had been put in, and he wondered where it had gone. He investigated and found a diverticulum that had never given the patient any trouble. It was not until the catheter was used that the bladder became infected and the trouble started up.

**Case of Carcinoma of the Bladder Apparently Cured Five Years after Operation.**—Dr. HOWARD LILIENTHAL's account of this case was published in full in the March 3d issue of the JOURNAL.

Doctor SQUIER said he believed that one of the most important points in operating upon vesical carcinoma is to provide for proper drainage outside as well as inside the bladder.

He was inclined to think that if Doctor Lilienthal had mobilized the bladder and run a cigarette drain down behind it, he would not have had to open the perineum. The infection was probably lymphatic, as well as by way of the ureter. These points are obvious, as Doctor Lilienthal sees now as well as anyone. Doctor Lilienthal should be congratulated upon the results secured. Very few surgeons can show a case five years after removal of an absolutely proved carcinoma of the bladder.

Doctor PECK said that he had had one experience that reminded him of Doctor Lilienthal's case, though he had not taken away so much of the ureteral orifice as Doctor Lilienthal did. The wound was left open, and suprapubic drainage was done. A week or ten days later, the woman suffered an attack of acute kidney distention, pain, and tenderness, and a sensitive kidney could be felt, with rise of temperature. Complete ureteral obstruction was suspected and it was decided to cut down upon the kidney. There was a distended pelvis with beginning infection. Nephrotomy was performed, and a large size ureteral catheter was passed through kidney and ureter into the bladder and left in place. A mattress suture placed through the kidney substance around the nephrotomy wound and catheter checked hemorrhage, and a small additional drain was left down to the kidney surface. The catheter was removed four or five days later. The patient had no return of the ureteral obstruction. She returned to the hospital one year later with another tumor on a different part of the bladder wall, but had a patent ureteral orifice and no local recurrence on that side.

Doctor Peck said his idea was to leave the catheter in long enough to allow healing of the orifice to go on around it and possibly prevent the return of obstruction at that point.

Doctor VICTOR PEDERSEN referred to the micro-



scopical diagnosis and told of a case which he had reported a year and a half ago. There were three lesions in the bladder a half inch apart. The report on one growth was cancer and on the other two growths papillomata. As a matter of fact probably all three were cancerous. With regard to mobilization of the bladder and drainage of the perivesical spaces Doctor Pedersen said that he was reminded of a case of prostatectomy. He was consulting assistant at the operation. A hole was torn in the floor of the bladder and in Doctor Pedersen's judgment the perivesical spaces should have been drained at once. They were not drained and the outcome was a severe pericystitis and cystitis which resulted in contracture of the bladder and a condition worse than that for which the operation was done. Doctor Pedersen said that he agreed heartily with Doctor Squier on the point of free drainage inside and outside of the bladder in all these cases.

Doctor REHLING said that he had done two or three operations, and he always drains suprapubically and has no trouble. One of these patients is under observation now, two and a half years later.

Doctor LILIENTHAL regretted that all the points of his case had not been discussed, although, as he had remarked in the beginning, it would take long to cover all the debatable aspects. He admitted that extraperitoneal drainage would have lessened the chances of infection, but judging from other operations in this field, he did not believe that it was always essential. In view of the fact that so much of the ureter had been ablated he believed that a nephrectomy at the time of the operation would have been worth considering, or that the ureter might have been tied off as suggested by W. J. Mayo in dealing with carcinomatous implication of the ureter from malignant disease of the colon. Presumably this patient's right kidney was not infected at the time of the operation. Had the ligation of the ureter been followed by renal symptoms a nephrectomy might have been done as a second procedure. He believed that it was by no means certain that infection of the kidney could have been avoided in any event.

Doctor Lilienthal stated that he had on several occasions removed small prostatic protuberances which were interfering with urination and that he had done this with the actual cautery without complete prostatectomy. The result had been uniformly good. In one case, that of a man being at the time forty-eight years old, a warm personal friend, he had performed this operation. The destruction of the median lobe had been followed by eight years of perfect function, the patient continuing well up to the present time and emptying his bladder completely.

**Stricture of the Ureter.**—Dr. H. DAWSON FURNISS said that the cases of ureteral obstruction that he had seen had been almost exclusively in women with histories of trouble of a long standing. A diagnosis of stone had been made in most cases, but no stone had been found with the x ray. Where no stone was found the appendix was usually removed without relief.

These cases generally start with the typical symptoms of intermittent ureteral obstruction at first, a

year or six months apart, then coming more frequently, every month or so, and more severely. One patient when seen was having an attack every Wednesday morning after suffering several years. Usually nothing abnormal is found in the urine. The cases of stricture that he had seen had not usually been associated with great renal distention.

In a patient with a history of renal colic, when stone and tuberculosis could be excluded, ureteral obstruction could be suspected. Such a patient was first x rayed, the urine was examined, and indigo carmine was given intravenously. If elimination is delayed and diminished or absent on one side, while the other is normal, it indicates renal insufficiency. This with other negative findings suggests stricture and hydronephrosis. With pyelography, it was possible to make a graphic diagnosis in all these cases. Doctor Furniss said, however, that pyelography should not be attempted except in hospitals, where any possible complications may be promptly attended to, and the consent of the patient should be obtained for an operation if deemed necessary, for the passage of a catheter and the injection of the fluid may cause the stricture to "swell shut," and there may be an acute attack causing considerable trouble. In one instance this occurred with a patient in the clinic, and she had a severe attack of pain. She had no rise in temperature for the first three days, but at the end of the fifth day she had a temperature of 107.4° F. When a patient gives a history of renal colic and the pyelograph shows only slight dilatation, if the pain of the examination is of the same character as that of the attack, the condition is almost surely renal.

**Ureteral Obstruction.**—This paper by Dr. LEO BUEGER was published in full in the May 5 issue of the JOURNAL.

**Stricture of the Upper Ureter.**—This paper was read by Dr. WILLY MEYER.

Doctor PECK said that he saw a case of complete abstraction of the upper ureter in a patient who had had a nephrectomy done on the opposite side some years previously. The patient came to him with a complete retention of forty-eight hours' standing, and was in a critical condition. An emergency nephrectomy was performed, intending to attempt permanent relief later. She made a good recovery, and the wound drained freely. It was possible to get a catheter up to the pelvis of the kidney from below and leave it there for a short time, but as soon as it was removed, symptoms of obstruction reappeared and the drainage through the urinary fistula in the loin was reestablished. A secondary operation was performed, and it was found that the obstruction was due to a dilated pelvis which pouched below the ureteral orifice and by valve like pressure had closed the ureter. A plastic operation was attempted, hoping to make an anastomosis between the pelvis and ureter, but it failed; and permanent drainage was established in the loin, with which the patient managed to get along pretty well until she died of another trouble a year later.

This case explained the procedure in the next case of this type. This patient had had attacks of pain

## Letters to the Editors

### PSYCHIATRIST VERSUS PSYCHOLOGIST.

NEW YORK.

#### To the Editors:

As members of a committee appointed at a meeting of the New York Psychiatric Society, December 6, 1916, to inquire into the activities of psychologists and more particularly of those who have termed themselves "clinical psychologists" in relation to the diagnosis and treatment of abnormal conditions, we desire to make the following report:

We have been greatly impressed by the earnestness and success with which psychologists are endeavoring to make their science serviceable in dealing with the practical affairs of everyday life. We wish to record our belief in the wide usefulness of the application of psychological knowledge and of the findings of certain psychological tests in such fields as the modification of educational methods with reference to individual differences, the vocational problems presented in various special industrial operations, the development of scientific methods in advertising, salesmanship and other means of business appeal and in the investigation of such special problems as the relation of environmental factors to the quality and quantity of the output of the individual. We feel that the results to be attained in these fields justify the belief that the widening of the scope and application of psychological knowledge will make psychology one of the most useful of the social sciences instead of a narrow field for study and research with but little actual contact with the practical problem of life.

We have observed with much distrust, however, the growing tendency of some psychologists, most often, unfortunately, those with the least amount of scientific training, to deal with the problem of diagnosis, social management, and institutional disposal of persons suffering from abnormal conditions. We recognize the great value of mental tests in determining many questions which arise in dealing with such patients, but we have observed that most of such work is being done by psychologists and particularly by persons whose training in psychology is confined entirely to learning how to apply a few sets of these tests, is carried on in schools, courts, correctional institutions and so called "psychological clinics," quite independently of medically trained workers who are competent to deal with questions involving the whole mental and physical life of the individual.

We believe that the scientific value of work done under such conditions is much less than when carried on in close cooperation with that of physicians and that serious disadvantages to patients suffering from mental disorders and to the community are likely to result and, in many instances which have come to our attention, have resulted. This is especially true when the mental condition of the patients examined involves questions of diagnosis, loss of liberty, or educational issue more serious than redistribution of pupils or rearrangement of courses of study. In spite of these facts two States have enacted laws permitting judges to commit mentally defective persons to institutions upon the so called expert testimony of "clinical psychologists" regarding the abnormal mental conditions from which patients are alleged to suffer. We believe that the examination upon which a sick person is involuntarily committed to permanent institutional custody is one of the most serious responsibilities assumed by physicians and that in no case whatever should it be entrusted to persons without training enabling them to take into consideration all the medical factors involved. The same is true of mental examinations of juvenile delinquents and criminals whose whole careers depend, in many cases, upon the determination of their condition.

We desire to make the following specific recommendation:

1. We recommend that the New York Psychiatric Society affirm the general principle that the sick, whether in mind or body, should be cared for only by those with medical training who are authorized by the State to assume the responsibility of diagnosis and treatment.

2. We recommend that the society express its disapproval and urge upon thoughtful psychologists and the medical

extending over some years, with evidence of hydronephrosis of the right kidney. Examination revealed a much dilated pelvis of the same type as in the former case, a pouching of the pelvis of the kidney below the ureteral junction, and the valve like lateral pressure. On opening the kidney a single stone was found in one of the calyces, which had evidently been the factor in establishing the obstruction and causing the dilatation by acting as a ball valve. There was no actual stricture; it was a valve like closure. By excision of a diamond shaped segment of the pelvis the pouching was corrected, and a probe was passed down to the bladder to make sure the ureter was patent. It was feared that in replacing the kidney in the wound the kinking would reappear and become fixed by the reparatory process. It therefore occurred to Doctor Peck that it would be well to leave the probe in place for twenty-four hours in order to insure the line of the ureter being direct and to prevent any kinking during the short period of fixation of the kidney in its new position. That was done and the end of the probe was brought out of the wound in the loin and strapped to the surface and removed twenty-four hours later, causing no appreciable irritation. A small drain was placed alongside, down to the kidney pelvis. Later a cystoscopic examination showed that the kidney was secreting normally. The patient has followed up and has had no return of his symptoms.

Shortly afterward another case with obscure symptoms came under observation. There was no calculus in this case, but a long history of intermittent attacks of pain. The cystoscope revealed no lesion. Exploratory laparotomy was performed in the belief that the cause of pain was intraabdominal, and a tense hydronephrosis was felt. A second incision was made over the kidney posteriorly and the same operation was performed as in the other case. That was in 1911, and the patient has had no further trouble.

Doctor Peck said that he remembered the case to which Doctor Meyer had referred, in which after dilating the ureteral stricture he had left in the catheter. He did not know certainly whether or not it was of any particular benefit in that instance, but it would have extended to prevent an added kinking. The patient had twenty-six small stones in the ureter above the stricture, most of them like sand, a few the size of BB shot. The patient had a cicatricial stricture undoubtedly caused by the presence of the calculi. He had seen great dilatation of the ureter above a stricture within two inches of the bladder, the cause of which could not be definitely established, but was probably inflammatory. Through a ureterotomy in the iliac region it was possible to pass a No. 15 French sound after dilating gradually. That patient has been followed up for five or six years and has remained perfectly well.

Doctor MEYER, closing the discussion, said it is evident that in the ureters, so far as stricture is concerned, we have to expect nothing else than in any other part of the system, and that if there is trouble it cannot be said that there is not a calculus present with obstruction. This can always be proven with certainty—or a traumatism, or tuberculosis, or specific disease as the cause of the hidden trouble.



profession in general an expression of disapproval of the application of psychology to responsible clinical work except when made by or under the direct supervision of physicians qualified to deal with abnormal mental conditions.

3. We recommend that the society disapprove of psychologists and of those who claim to be psychologists as a result of their ability to apply any set of psychological tests undertaking to pass judgment upon the mental condition of sick, defective, or otherwise abnormal persons when such findings involve questions of diagnosis, or affect the future care and career of such persons.

CHARLES L. DANA, Chairman,  
ADOLF MEYER,  
THOMAS W. SALMON.

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*The Internal Secretions.* Their Physiology and Application to Pathology. By E. GLEY, M.D., Member of the Academy of Medicine of Paris; Professor of Physiology in the College of France, etc. Translated from the French and Edited by MAURICE FISHER, M.D., Clinical Professor of Medicine, New York University and Bellevue Hospital Medical College; Attending Physician, Montefiore Home and Hospital for Chronic Diseases. Authorized Translation. New York: Paul B. Hoeber, 1917. Pp. 241. (Price, \$2.)

As a physiologist Gley has been noted for the early interest taken in the vegetative nervous system, especially in that portion of it termed the hormonopoeitic system. The present small volume contains a concrete setting forth of the history of the doctrine of the internal secretions, a discussion of the different glands, their secretions, hormones and parhormones, a short chapter on the classification of the internal secretory glands and their products, and a final chapter dealing with the complex problem of the functions of the glands and their interrelationships. It is a brilliant little work, somewhat sketchy in its performance in places, but one of the best of its kind and to be cordially recommended. It has one glaring defect. The goal of life has little or no place in Gley's physiology. The acts of the machinery, and the way the wheels go round are beautifully described and brought into comprehension, but the intrinsic why is left almost untouched. This is due to the static training in the colleges. The book has nothing about feelings as stimulants. It talks of hormones as activators of physiological functions, but pays no attention to human wishes, desires, angers, hates, as the specific stimulators of hormone activity.

*Histérie-pithiatisme et troubles nerveux d'ordre réflexe en neurologie de guerre.* Par J. BABINSKI, Membre de l'Académie de médecine; médecin de l'Hôpital de la Pitié, et J. FROMENT, Professor agrégé médecin des hôpitaux de Lyons. Avec 37 figures et 8 planches hors texte. (Collection horizon précis de médecine et de chirurgie de guerre.) Paris: Masson et Cie, 1917. Pp. 267.

The reader will look in vain in this book for anything applicable to the pressing medical problems in today's crisis. It can scarcely be called new since it occupies itself with a restatement, even for many pages in direct quotation of Babinski's former descriptive statements of hysterical manifestations and those of his predecessors and contemporaries.

The present increased appearance of hysteria, as of other nervous disorders, intensified and multiplied in frequency and form of manifestation under the stress of war, seems to have brought nothing new to these authors which might afford through existing conditions a broader insight into an interpretative understanding and suggest a therapeutical approach to determine the reality of the disease and effectually restore the men to active service as far as pos-

sible. This but proves the unreality of their static, lifeless theories and descriptions.

Not "hystérie-pithiatisme" nor "troubles nerveux d'ordre réflexe" separated each from the other, will ever solve the problem of the hysterical entity or explain why it is precipitated into activity by the vicissitudes of war. Nor will they bring it there or elsewhere under effective medical control. "Pithiatisme," suggestibility, modern therapy has proved an empty, meaningless term apart from a deeper penetration and recognition of the dynamic force whose effort at expression meets with a resistance here greater and more forceful in war conditions than that which reality ordinarily offers. This increases the tendency to imperfect symptomatic expression which creates the protean disease phenomena which the authors see fit to discuss and describe separately. The apparent suggestibility has no more place in the explanation of the symptoms and disease manifestations than in serviceable treatment. Rather it merely points to the ultimate reason for its appropriation by the underlying dynamic attempt at adjustment to hard conditions, its frustration manifesting itself in these disturbances, psychical and physical.

The book confesses itself the unsatisfactoriness of its treatment of hysteria. It offers nothing to relieve the suffering or to enlarge the efficiency of military medical practice.

*Traitement et restauration des lésions des nerfs.* Par MME. ATHANASSIO-BENISTY, interne des hôpitaux de Paris. (Salpêtrière.) Preface du PROFESSEUR PIERRE MARIE, membre de l'Académie de médecine. Avec figures dans le texte et 4 planches hors texte. (Collection horizon précis de médecine et de chirurgie de guerre.) Paris: Masson et Cie, 1917. Pp. 178. Prix, 4 fr.

This very short, practical and useful volume from the new Horizon Collection gives a fairly complete summary of the methods of examination and the clinical syndrome of the chief peripheral nerve lesions as seen in the French hospitals. In the earlier days of the war the great number of new injuries gave rise to an immense amount of surgical interference. Little by little it became apparent that such interference was not as advantageous as was anticipated. The opposite principle of conservation has taken the place of radical operation.

This present volume details at length and with considerable ingenuity the more grave clinical signs which indicate the necessity for early operation. These operations even under the best of circumstances have remained far from satisfactory, and the resulting disabilities have been manifold and crippling. The orthopedic amelioration of these has been made a special feature of this little volume.

*A Manual of Therapeutic Exercise and Massage.* Designed for the Use of Physicians, Students and Masseurs. By C. HERMANN BUCHOLZ, M.D., Orthopedic Surgeon to Outpatients; Director of the Medicomechanical and Hydrotherapeutic Departments of the Massachusetts Hospital, Boston, Mass.; Assistant in Orthopedic Surgery, Harvard Medical School, etc. Illustrated with 80 engravings. Philadelphia and New York: Lea & Febiger, 1917. Pp. xi+427. (Price \$3.25)

Here is a concise presentation of a subject too much neglected by the physician of today; a neglect which is swelling the purses of the osteopath, the chiropractic, and other allied paths. Bucholz divides his book into two parts, the first dealing with the general principles and technic of exercise and massage, the second with their application to specific morbid conditions. A chapter is devoted to subacromial bursitis, one to lumbrosacral and sacroiliac affections, one to faulty posture, etc. Much of the book will be found of great help. Often, however, the author becomes very vague and indefinite, especially to the reader who knowing practically nothing of the subject discussed, wishes to learn something about it. For example, one can read the chapter on sacroiliac affections, hoping to get some points in the treatment of this stubborn disease and be greatly disappointed. Bucholz assures us that he has helped many patients by exercise, etc.; to this assurance he adds four case reports and a few vague remarks. We have no doubt that the author is a good therapist; we wish we could say that he is a good teacher.



## After Office Hours

The *Literary Digest* for April 21st prints a satirical letter, and some verses it inspired, burlesquing the usual patient medicine testimonial.

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In the *McClure's* for May, Dr. Lewis B. Allyn has his usual interesting page on food and drugs. If more so called "popular" medicine were of this kind, the quiet, conservative general practitioner would feel less bitter against the publicist. Doctor Allyn is working for the public good and hence the great majority of the medical profession everywhere is indebted to him.

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It is difficult to see just what audience is to be edified by an article such as "Methods of Treating Wounds" in the *American Review of Reviews* for May. It is hardly presented in a popular or interesting enough way for the layman, and it is far too incomplete for the physician to extract much meat from it.

\* \* \*

There is something very pathetic to our mind in the story of Hugo Münsterberg, as told by himself in the *May Century*. While many persons only know this genial professor of psychology by his not too tactful utterances at the beginning of the Great War, there are hosts of his friends who will recognize and welcome the kindly human personality revealed in the present article. He tells how he decided to come to America for a short visit at first, and how he gradually made friends and a home here. He ends briefly telling of the outbreak of the war and then the pathetic question, "When shall I see my fatherland again?"

\* \* \*

It seems that the higher a man of letters rises in his art, the more ready he is to eulogize the medical profession. Thus Dickens abounds with complimentary allusions to it, although he, of course, could not resist burlesquing ridiculous examples of his time. We are all familiar with Thackeray's famous passage beginning, "When lawyer, and statesman, and divine, and writer are snug in bed, there is a ring at the poor doctor's bell." And now comes William Dean Howells, the kindly dean of American letters. In the *May Harper's*, commenting on a symposium which recently appeared in the *Medical Review of Reviews*, he gives his own opinion of the medical profession, which is highly flattering. There is not room to quote one tenth of what he says, but here are a few phrases: "The great thing is the trust and honor we all feel for the physician at large. . . . If doctors are almost universally gentlemen because they were born so or because their noble Hippocratic oath has made them so, they are successful in virtue of that quality as much as by the potency of their drugs. . . . No other sort or condition of men talks half so well, so intimately, so wisely. . . . The bereaved often turn more willingly to the doctor who has not saved their beloved than to another who has not lost them."

\* \* \*

The conductor of the Spinal Column in *The Medical Pickwick*, embarrassed with a surplus of wealth, decides to plan a Utopian hospital. Ample parking space will be provided for the benefit of newly graduated internes. . . . A series of fee splitting rooms will be tastefully arranged about a central lounging room for the attending staff, each room being provided with a microtome. . . . If more than one disease is present in any one patient, he must have one room for each. . . . Rooms are available at the nominal price of \$100 a week.

## Meetings of Local Medical Societies

**Monday, May 14th.**—New York Ophthalmological Society; Society of Medical Jurisprudence; Roswell Park Medical Club, Buffalo. Williamsburg Medical Society. Brooklyn; New Rochelle, N. Y., Medical Society.

**Tuesday, May 15th.**—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Medical Society of the County of Monroe; Tri-Professional Medical Society of New York; Medical

Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Society of the County of Westchester; Federation of Medical Economic Leagues of New York.

**Wednesday, May 16th.**—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York (annual); Schenectady Academy of Medicine; Women's Medical Association of New York City (annual); Medicolegal Society of New York; Buffalo Medical Club (annual); Northwestern Medical and Surgical Society of New York; Bronx County Medical Society; Dunkirk and Fredonia Medical Society; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology).

**Thursday May 17th.**—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn; Æsculapian Club of Buffalo; New York Celtic Medical Society.

**Friday, May 18th.**—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society (annual); Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society; Saratoga Springs Medical Society (annual).

## Births, Marriages, and Deaths

### Born.

DOUGLASS.—In New London, Conn., on Tuesday, April 24th, to Dr. Walter Douglass and Mrs. Douglass, a daughter.

### Married.

LEWIS-SNYDER.—In Somerset, Pa., on Wednesday, April 25th, Dr. Norman B. Lewis, of Johnstown, and Miss Emily B. Snyder.

### Died.

ALLEN.—In Lafayette, N. J., on Monday, April 16th, Dr. Edgar Allen, aged sixty-five years.  
BAILEY.—In Cleveland, Ohio, on Friday, April 20th, Dr. Robert Bailey, aged sixty-eight years.  
BANKER.—In Columbus, Ind., on Monday, April 23rd, Dr. Adoniram J. Banker, aged seventy-one years.  
CASTLE.—In Kansas City, Mo., on Wednesday, April 25th, Dr. Otto L. Castle, aged thirty-three years.  
EAKIN.—In Gallipolis, Ohio, on Thursday, April 19th, Dr. Jehu Eakin, aged sixty-eight years.  
FELT.—San Francisco, Cal., on Wednesday, April 18th, Dr. Rae Felt, of Eureka, Cal., aged forty-eight years.  
GAY.—In Boston, Mass., on Saturday, April 28th, Dr. Herbert S. Gay, aged forty-six years.  
GOOD.—In Jacksonville, Fla., on Friday, April 20th, Dr. Joseph M. Good, of Williston, Fla., aged forty-seven years.  
KILLEBREW.—In Rocky Mount, N. C., on Sunday, April 22nd, Dr. Charles L. Killebrew, aged seventy-two years.  
KINGSBURY.—In Glastonbury, Conn., on Monday, April 9th, Dr. William Sanford Kingsbury, aged fifty years.  
MACDONALD.—In Chicago, Ill., on Saturday, April 28th, Dr. Edward V. MacDonald, aged fifty-eight years.  
MC HATTON.—In Macon, Ga., on Sunday, April 22nd, Dr. Henry McHatton, aged sixty-one years.  
O'CONNOR.—In New Haven, Conn., on Saturday, April 28th, Dr. Matthew P. O'Connor, aged sixty-nine years.  
ROOD.—In Stevens Point, Wis., on Saturday, April 7th, Dr. Galen Rood, aged eighty-seven years.  
SMITH.—In Bloomington, Ill., on Saturday, April 21st, Dr. George R. Smith, aged fifty-eight years.  
SQUIRE.—In Buffalo, N. Y., on Saturday, April 28th, Dr. William J. Squire, aged fifty-seven years.  
STRAW.—In Portland, Me., on Sunday, April 29th, Dr. Neil W. R. Straw, aged sixty-three years.  
TAYLOR.—In Louisville, Ky., on Monday, April 9th, Dr. P. Richard Taylor, aged fifty-four years.  
WADDELL.—In Wauseon, Ohio, on Saturday, April 21st, Dr. James H. Waddell, aged sixty-four years.  
WILLIAMS.—In Jacksonville, Fla., on Saturday, April 21st, Dr. Frank G. Williams.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 20.

NEW YORK, SATURDAY, MAY 19, 1917.

WHOLE No. 2007.

## Original Communications

### EXPLORATORY TYMPANOTOMY.\*

*For the Relief of Deafness Due to Adhesions or Chronic Suppuration.*

*Preliminary Communication.*

BY HAROLD HAYS, M. D., F. A. C. S.,  
New York.

For a number of years the author has attempted to devise some operation for gaining entrance to the middle ear cavity for the purpose of inspecting the middle ear and correcting any abnormalities presented. Many otologists perform operations upon the middle ear for the purpose of improving hearing. These operations consist in dividing and breaking up adhesions, removing one or more of the ossicles, and performing any other operative procedure necessary under the circumstances. They are performed through one of two channels: through the ear canal or through an opening into the antrum and mastoid bone (Stacke operation). By either of these routes it is impossible to do exact work in the middle ear, not only because of the smallness of the area to be operated upon, but because it is impossible to obtain an exact view of the middle ear. It is the general opinion of experimenters on the middle ear that in a certain proportion of cases the hearing is decidedly improved for a time at least whenever it was possible to break up adhesions or relieve the pathological condition present. However, in the majority of cases, no decided improvement is obtained. Realizing the inexactness of the operative procedures heretofore resorted to, the author started some experimental work in the autopsy room. Through the kindness of Doctor Larkin, of the Pathological Laboratory of the City Hospital, he was able to obtain fresh autopsy material, that is, autopsy material only twenty-four hours old. This was a great advantage, as the tissues were in a practically lifelike condition. Unfortunately most of the investigations on the ear have been made on dissecting room material with which it is impossible to get good results, as the degenerative changes in the temporal bone and middle ear takes place very quickly. The object in view was to devise some operative procedure which would allow one to get within a short distance of the ear drum so that it would be possible to see the middle ear cavity after the drum was thrown to one

side. After numerous experiments had been tried, the following operative procedure was devised.

An incision is made between the auricle and the temporal bone in the natural fold present there. The incision extends from the upper pole of the auricle downward to the tip of the mastoid. This incision is deepened until one strikes the periosteum of the mastoid, and then the dissection is continued downward along the posterior cartilaginous canal wall to the junction of this cartilaginous wall and the bony canal wall. An incision is made at this point of junction and the auditory canal is incised for about two thirds of its circumference. The auricle and deeper tissues are thrown forward and held in this position with a sharp retractor. From this dissection one is able to get an excellent view of the ear drum, which is only about three eighths of an inch beyond the severance of the canal (Fig. 1). One now notes a small ledge of bone overhanging the superior wall and continuous anteriorly with the spine of Henle. With a small chisel this small ledge of bone is chipped away, thus exposing the drum more definitely. The next step is the incision through the ear drum (Fig. 2). This incision starts in the upper portion of Shrapnell's membrane, posteriorly, and is continued along the circumference of the drum to the anterior quadrant. A flap of the drum is thus made, which can be thrown forward (Fig. 3). One now obtains an excellent view of the posterior two thirds of the middle ear cavity. In this region there is the incus, stapes, the oval and round windows, and the promontory. All except the stapes and oval window can be easily seen, and the outlines of the malleus can be followed through the folded partition of the drum as it is thrown forward.

Most of the adhesions take place between the bodies of the incus, and the malleus, or between the drum and the internal wall of the middle ear. Adhesions also take place between the ossicular joints. The larger adhesions show up so that they can readily be cut with scissors or a fine knife. The smaller adhesions can be broken down by means of a small feeler probe, which is allowed to work its way very gently between the ossicles, or anteriorly between the drum and the internal wall (Fig. 4). It is almost impossible to obtain a view of the body of the incus, as it is hidden in the attic, but the malleoincoid joint can be seen, and by means of a suitable forceps the adhesions in this joint can be broken

\*Patients presented and lantern slide demonstration given before the Otological Section, New York Academy of Medicine, April 13, 1917.

down (Fig. 5). For experimental purposes, the incus can be brought out from the attic, and thus a view can be obtained of its attachment to the head of the stapes (Fig. 6). After all adhesions are severed and the drum is free, the flap of the drum is brought back to its original position. A small piece of packing is inserted in the canal, and the ear-

tion. He decided to get patients who had no hearing for practical purposes, that is, persons who could not hear the watch or the ordinary whispering voice. During the past month he has operated on four patients—two for so called catarrhal deafness and two for chronic suppuration.

In selecting suppurative cases, one must feel that

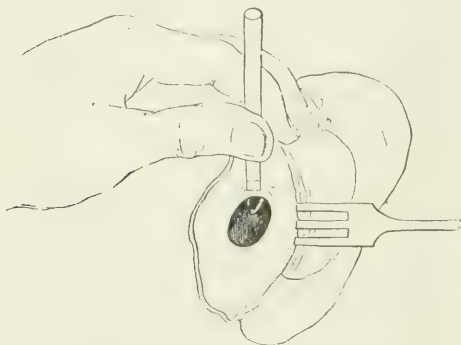


FIG. 1.—Ear drum with insertion of malleus.

tiliginous canal wall is sutured to the periosteum of the mastoid bone to hold it in place. The original wound is now closed.

In other investigations ossiculectomies were performed through this incision. It was possible to do the work far more accurately than through the canal. In these cases, the drum with its malleus insertion was first excised with fine scissors and forceps. The incus was removed from the attic, and the crura of the stapes were amputated. In order to note how much exposure of the attic could be given, the bone above this cavity was chiseled down until the entire attic was in view. After this procedure, a view of the oval and round windows is obtained with promontory between (Fig. 7). One also obtains an excellent view of the Eustachian tube, which it is possible to curette with very little trouble (Fig. 8). After excising the ossicles, the author attempted to reconstruct them in their relative positions (Fig. 9). From this illustration it can be seen that the body of the malleus articulates



FIG. 4.—View of middle ear cavity. The incus is plainly seen, also the promontory and round window.

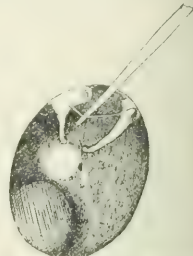


FIG. 5.—Adhesion between the incus and malleus.

the suppuration is caused mainly by diseased conditions in the middle ear itself and in the attic, in other words, that there is no involvement of the antrum or mastoid. In selecting catarrhal cases, one

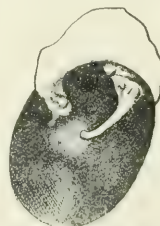


FIG. 6.—The incus is dislocated out of the attic. Head of stapes seen.

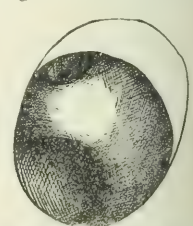


FIG. 7.—The contents of the tympanum have been removed. Oval window above, round window below.

must choose those patients who have fairly wide open Eustachian tubes and in whom the bone conduction is markedly prolonged. In cases in which the Renne test is negative and in which the bone conduction is markedly prolonged, the deafness is in all probability due to the interference with the interpretation of sound waves or to interference with sound conduction.



FIG. 2.—Incision through drum.



FIG. 3.—The incised flap thrown back over insertion of malleus.

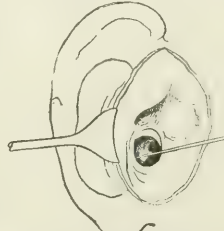


FIG. 8.—Probe passed into Eustachian tube, after contents of the tympanum have been removed.



FIG. 9.—Relative position of ossicles in tympanic cavity.

with the body of the incus which is hidden in the attic, and that a process of the incus dips down to meet the head of the stapes.

In all, ten middle ears were operated upon until the author decided that he was able to perform an operation which was entirely devoid of danger. The next step was the selection of patients for this opera-

In the majority of these cases, the ossicles are out of alignment, or definite adhesions which sometimes can be seen through the drum are present in the ear. In the two cases in which the author has operated, he



has selected the worse ear for operation. One has to be on the lookout for certain dangerous complications such as an acute labyrinthitis or an infection of the mastoid.

The two operations thus far performed for the relief of catarrhal deafness were performed under ether anesthesia according to the procedure just outlined. After the incision was made down to the junction of the cartilaginous and bony canal, all bleeding vessels were clamped. After a view of the drum was obtained, an attempt was made to block off the vessels leading to the middle ear by injecting a 1:1,000 solution of adrenalin along the anterior and posterior canal walls. This procedure was almost entirely successful, so that there was very little bleeding after the incision of the drum was made. Whatever oozing does take place can be kept under control by wiping out the middle ear cavity with small sponges of cotton or gauze. The author was able to obtain excellent views of the middle ear structures and was able to break down the adhesions between the incus and the malleus. After the adhesions were broken down, the drum was put back into its original position, and a small packing of gauze soaked in vaseline was inserted into the canal. The cartilaginous canal wall was then sutured to the periosteum of the mastoid and the posterior wound closed without drainage. In both cases there was absolutely no reaction from the operation, and the wound healed by primary union. The packing was removed at the end of forty-eight hours. Ever since that time, there has been a slight amount of serous discharge from the ears. Both patients state that their hearing is far better with the operated ear than with the other one, although before operation it was decidedly worse. Of course up to this time, it is impossible to know what the ultimate result will be.

Two problems present themselves which cannot be answered definitely yet. First, how can the formation of new adhesions be prevented? One cannot say that new adhesions will not form, but one can draw conclusions from analogy. When an operation is performed for adhesions in the abdominal cavity, it cannot be said that new adhesions will not form, but as a rule new adhesions do not form in a place that will interfere with function. So in the middle ear cavity the author believes that although new adhesions probably will form, it is probable that they will not arise in a place that will interfere with function. The other question that is asked is, How is one to prevent a narrowing of the ear canal? If one is careful to insert the packing properly at the time of operation, no narrowing will take place.

In the two cases operated in for chronic suppurative, the results have been extremely good. One operation was done by the author, and the other by Dr. Daniel S. Dougherty with the author's assistance.

CASE I.—In the first case there was a perforation of long standing in the posterior part of Shrapnell's membrane, from which there was a discharge of cheesy, foul smelling material, indicating disease in the attic. In this instance the operative procedure referred to was performed. The entire middle ear cavity was cleaned out and the diseased area and the attic curetted. The ossicles were not removed, and the drum was allowed to remain in place.

The posterior wound healed by primary union, and on the last examination all that could be seen was a small perforation in the lower part of the drum, from which there was a slight, thin, nonodorous discharge. The original perforation had healed.

CASE II.—In the other patient operated upon by Doctor Dougherty, the drum was almost entirely gone, and there was no evidence of the malleus. The incus was removed and all granulations cleaned out of the middle ear cavity. The attic was curetted, after chiseling down its superior wall.

In both cases, the Eustachian tubes were curetted with a Yankauer curette. The hearing in the first case was about six inches with the watch. The hearing was the same after operation. In the second case, the watch was heard on contact before the operation, and after the operation could be heard about four inches away.

The author presents this operation in his preliminary report because he feels that from an operative point of view, it is entirely feasible and successful. He is in no position at present to state what the ultimate result will be as far as hearing is concerned, but from the evidence now at hand he feels assured that this new route to the middle ear, exploratory tympanotomy, will allow one to work in this small cavity with the utmost precision. One must have a light that gives sufficient illumination, in order to see what he is doing, and at present the author is working on a magnifying stereoscope which will probably magnify the image two or three diameters. The whole problem that presented itself to him was the possibility of entering the middle ear in such a way as to cause no immediately serious conditions or any harmful aftereffects.

11 WEST EIGHTY-FIRST STREET.

## AMYOTROPHIC LATERAL SCLEROSIS.

### *A Pathological Study of an Early Case.*

BY JOHN H. W. RHEIN, M. D.,  
Philadelphia,

Professor of Diseases of the Mind and Nervous System at the Philadelphia Polyclinic and College for Graduates in Medicine; Neurologist to the Howard Hospital, Etc.

The following case is reported on account of its bearing on the discussion of the relationship of amyotrophic lateral sclerosis, progressive muscular atrophy, and chronic anterior poliomyelitis. The patient lived but a year after the onset of the disease, and there were besides muscular atrophy of the hands, arms, and shoulders, and tongue with increased reflexes clinically, an atrophy of the anterior horn cells and cranial-nerve nuclei and degeneration of the anterior roots, with slight degeneration of the crossed pyramidal tracts in the lumbar region as the sole pathology.

CASE.—J. A. W., aged fifty-six years, a waiter by occupation, was referred by Dr. James K. Young on January 15, 1915, to my service at the Philadelphia Polyclinic Hospital. The family history was practically negative. His father, mother, and two brothers were dead, the cause of death being unknown. The patient said he had never been seriously ill, denied venereal infection, and did not use tobacco, alcohol, tea, or coffee. His present disorder began a year previously and consisted of weakness of the right arm, which was soon followed by wasting which shortly afterward extended to the left arm, and these symptoms pro-

gressed rapidly to the point at which he was obliged to give up his work.

On examination it was found that he answered questions poorly, due to his dull mental condition. His appetite was good, he slept well, and the physical examination was practically negative. On protruding the tongue it was found that both sides were markedly atrophied. Both hands were the seat of pronounced atrophy, involving the thenar and hypotenar eminences, the lumbricales and interossei. This was more marked on the right side. The arm muscles on both sides were also wasted, especially the flexors and biceps. The circumference of the right arm was 32 cm. and of the left 33 cm. There was a fibrillary tremor present in the muscles of the arms, the movements being wavelike. The supraspinatus and infraspinatus were atrophied but to a less degree. The serratus magnus and pectorales were also considerably wasted. This was true of both sides.

Examination of the thigh and leg muscles showed no local atrophy, although all the muscles were flabby. The knee jerks were increased and equal on both sides, and the arm jerks were increased on both sides. There was no Babinski phenomenon. The Wassermann reaction was positive. No electrical study was made and a more detailed report is impossible as he was seen but twice before he died and opportunity for further study was impossible. He was placed on increasing doses of iodide of potassium and green iodide of mercury. He died suddenly a month after coming under observation.

The brain and spinal cord were placed in formaline and sections were made from the paracentral and frontal regions; from the corpus callosum, internal capsule, cerebellum, pons, medulla oblongata, and spinal cord. The sections were stained by the Weigert method, with hemalum and eosin and thionin and by the Marchi method.

By the Weigert method sections from the cervical region showed a slight degree of degeneration in the anterolateral tracts, along the border of the cord and extending from the longitudinal fissure to the posterior horn except for a short space just anterior to where the crossed pyramidal tract lies. The anterior roots were small and showed degenerated fibres to a moderate degree. The posterior roots stained well. In the thoracic region the same condition existed as in the cervical region but to a slighter degree. The left anterior root was much degenerated, the right to a less extent. The posterior roots were intact. In the lumbar region there was slight border degeneration extending from the anterior median fissure to the posterior horns in the crossed pyramidal tracts on both sides.

In the cervical region there was pronounced change in the anterior horn cells. The number of cells was greatly diminished, few healthy cells existed, but many of the remaining cells were found in various states of atrophy and degeneration. Some were swollen, had lost their nuclei, or showed displaced nuclei. In others the atrophy of the pigment was pronounced, the nuclei had disappeared and the cell body was greatly atrophied. In the posterior horns the cells were preserved. The cellular change was more marked on the right side and was more extensive in the anterior group of cells, though all were more or less degenerated.

In the thoracic region the same cellular changes were found as those seen in the cervical region. The anterior horns in the lumbar region were slightly degenerated, especially the outer group of cells, which were distinctly atrophied. Clarke's columns were not degenerated. The pyramidal tracts in the pons and medulla oblongata stained well.

By the nuclear stain at all levels studied numerous amyloid bodies were found in all parts of the cross section but more especially in the posterior columns. There was a very slight cell infiltration of the pia around the vessels in the cervical region. There was no change in the vessels of the anterior horns and no evidence of any inflammatory change. In the lumbar and thoracic regions no change was found in the bloodvessels of the pia.

In the prefrontal region the cells stained well. In the right and left paracentral regions the Betz cells showed yellow pigment but their form was normal and no change in the nuclei was observed. The pia of the cortex showed no round cell infiltration in the right and left paracentral regions. In the right prefrontal region, however, there was some round cell infiltration and the pia was a little thickened.

In the medulla oblongata the nuclei of the hypoglossal nerves were degenerated and the fibres of these nerves within the medulla oblongata were profoundly degenerated.

The pathological change in this case consisted then only of atrophy of the anterior horn cells and of the cells of the nuclei of the twelfth pair of nerves in the medulla oblongata, degeneration of the anterior roots, and slight change in the crossed pyramidal tracts in the lumbar region. The change in the white matter otherwise was insignificant and probably without importance. Unfortunately the Marchi stain was unsuccessful, due no doubt to the fact that the specimen had remained in formaline too long a time before being stained. In the case presented, the symptoms of unusual character are the rapid progress of the atrophy, implicating at the end of a year the entire musculature of both arms and hands, the muscles of the shoulders and the tongue, and the increased knee jerks, and arm jerks, in spite of the extreme atrophy. Clinically this differs from the spinal form of progressive muscular atrophy, in which the atrophy takes years to advance to the degree seen in this case, and in the presence of increased leg and arm reflexes.

The symptoms, which in my case suggest amyotrophic lateral sclerosis in an early stage, consist of rapidly progressive atrophy, the early involvement of the bulbar nuclei which has been observed, though not frequently, the exaggeration of the reflexes, in spite of the absence of the Babinski and Oppenheim reflexes, which reflexes Raymond and Cestan state are usually absent and which according to Oppenheim may or may not be absent. The borderline character of this case is instructive and very important as connecting the cases of progressive spinal atrophy with amyotrophic lateral sclerosis. The pathological findings in the case here described appear to be those of amyotrophic lateral sclerosis in an early period of its development, in which the pyramidal tracts had shown involvement merely in the lumbar region and then only to a slight degree. Unfortunately the Marchi stain was unsuccessful.

Duchenne and Aran in 1849 and 1850 first described progressive muscular atrophy as a disease of the muscles. In 1855 Cruveilhier recognized the disease as a spinal one, and Lockhart Clarke showed the lesion to be in the anterior horns. According to Strümpell (1) a distinction should be made between progressive muscular atrophy and chronic poliomyelitis, and Medea (2) asserted that subacute anterior poliomyelitis had a right to an independent existence, though he admits in atypical cases there is a great similarity to amyotrophic lateral sclerosis, while Gowers (3) describes all three diseases under one caption. Charcot (4) concluded that progressive muscular atrophy and amyotrophic lateral sclerosis were different diseases. On the other hand a sharp distinction between chronic anterior poliomyelitis and progressive muscular atrophy was not made by Bruining (5), and Holmes (6) saw a relation between amyotrophic lateral sclerosis and those cases in which the pyramidal tracts were still intact. [J. B. Charcot (7), Philippe and Cestan (8), Williamson (9), and Cassirer and Mass (10).]

All the cases show a similarity clinically as regards the atrophy. Clinically a certain group of



cases may be separated by the presence of spastic symptoms with increased reflexes. In one group fall the cases diagnosed as progressive muscular atrophy and chronic poliomyelitis. In a second group may be classed the cases of amyotrophic lateral sclerosis. Pathologically the appearance in these cases taken together may be either a pure anterior horn disease with little or no involvement of the white matter of the cord; or anterior horn disease and pronounced involvement of the white matter of the cord and brain. Cases in one group lap over into the other, as we shall see later.

In the first class there appear a number of cases. In Eisenlohr's (11) cases the pyramidal tracts were intact, and in Dutil and Charcot's (12) cases, in which the diagnosis was progressive muscular atrophy, the white matter of the cord was normal except for a slight sclerosis of the columns of Coll and the anterior fundamental tracts. Strümpell's (13) case of progressive muscular atrophy did not show any implication of the white substance. In the case of progressive atrophy of the Aran-Duchenne type described by Villers (14), the white matter was completely intact, and in Dejerine and Thomas's (15) case the white matter was absolutely normal. Williamson's case was one of the few, he maintained, to furnish a clear cut pathological evidence that the pyramidal tracts may appear normal in cases diagnosed clinically as progressive muscular atrophy. The knee jerks were present, but there was no ankle clonus. In Phillips's case of progressive muscular atrophy pathologically and clinically amyotrophic lateral sclerosis, also was there no change in the crossed pyramidal tracts. Philippe and Cestan reported two cases of subacute anterior spinal atrophy with autopsies, in which the pyramidal tracts were intact save for a few granules by the Marchi method appearing in the anterolateral tracts. In Alzheimer's (16) cases of progressive muscular atrophy there were increased reflexes, but no spasticity. The pyramidal tracts were intact.

Bruining cited a case in which there was slight degeneration of the white matter of the cord in the cervical region and to a less degree in the thoracic and lumbar regions, though he states it was not to be compared with the degeneration found in amyotrophic lateral sclerosis. He calls attention to the resemblance of this case to those of Oppenheim (17), Nonne (18), Darkschewisch (19), Shuster (20), and Bielchowsky (21). Darkschewisch cited a case of chronic poliomyelitis in which there was a certain degree of rarefaction of the fibres in the lateral and posterior columns with pronounced atrophy in the region of the anterior ground bundle near the anterior horns. In Nonne's case of chronic progressive muscular atrophy with diabetes mellitus there was a slight rarefaction of the fibres of the white matter. Cassirer and Mass and Miura stated that there was no case of progressive muscular paralysis without degeneration of the pyramidal tracts. The case cited by the former observers, clinically was chronic anterior poliomyelitis and not amyotrophic lateral sclerosis, but at the autopsy the white substance was implicated, though not systemic in its involvement. Bielchowsky considered the slight degeneration of the pyramidal tracts, which in his case

of chronic anterior poliomyelitis extended from the spinal cord into the pons, studied by the Marchi method as showing no sure substratum for the origin of the disease. Oppenheim cited a case in which only a slight change in the anterolateral tracts was observed. Dejerine (22) describes two cases of progressive muscular atrophy, in one of which there was no appreciable lesion and in the second of which there existed in the cervical region only a slight degree of sclerosis observable by the carmine stain. In Ewald's (23) case of chronic anterior poliomyelitis there was only a slight implication of the white substance of the anterolateral ground bundles. Moleen and Spiller (24) found only a slight degeneration of the crossed pyramidal tracts in a case diagnosed as chronic anterior poliomyelitis.

Turning our attention to the pathology of amyotrophic lateral sclerosis we find that the more recent studies of the spinal cord changes by the Marchi method have added much new data to our knowledge of the extent of the involvement of the white matter of the brain and spinal cord. In some cases the entire pyramidal tract has been involved from the cortex down throughout the spinal cord, as in the cases reported by Joukowsky (25), Holmes and Hektoen (26), Spiller (27), Rossi and Roussy (28), Charcot and Marie (29), Anton and Probst (30), Sarbo (31), Franchesi (32), Lenmahn (33), Czyhlarz and Marburg (34), Lombroso (35), Mott (36), Miura (37), Mott and Tredgold (38), Hoche (39), and Kojewnikoff (40). Degeneration of the pyramidal tracts was not found beyond the spinal cord in the cases described by Mott and Tredgold, Lejohn and L'Hermite (41). The degeneration did not extend to the internal capsule in the cases reported by Mott, and Mott and Tredgold. They reached as high as the pons in the cases described by Piuscariu and Lambrior (42). It was found as high as the cerebral peduncles in the cases of Pilcz (43), and Kronthal (44). In Strümpell's case the degeneration extended to the superior part of the internal capsule. Ballet (45) made the statement, which is manifestly incorrect, that in the majority of cases the degeneration does not extend beyond the pons. In two cases no change was found in the lateral columns, namely, those of Marie (46) and Senator (47).

Other parts of the spinal cord besides the pyramidal tracts have been found degenerated. That the degeneration extended beyond the pyramidal tract was recognized by Marie in 1893, and Philippe and Guillaïn (62) reported six cases with autopsy and called attention also to the fact that the sclerosis of the anterolateral tracts passed beyond the limit of secondary sclerosis in hemiplegias and that the degeneration held no relation to the intensity of the lesion of the gray substance. They looked upon the disease as a primary one not subordinate to the cellular alterations. The cerebellar tracts were found to be degenerated by a number of observers, namely, Joukowsky, Charcot and Marie, Landois (48), and Lemonine, Piuscariu and Lambrior, Muratoff (49), Spiller, Rossi and Roussy, Philippe and Guillaïn, Aovama (50), Haenel, Hoche, and Pilcz, Pal (51), Sarbo, Miura and Medea, and Holmes. The columns of Goll were diseased in the cases described by



Mott and Tredgold, Shuster, Joukowsky, Marburg (52), Oppenheim, Charcot and Marie, Probst, Rossi and Roussy, Piuscariu and Lambrior, Philippe and Cestan, Hektoen, Spiller, Margulis (53), and Muratoff. Clarke's columns have been found degenerated by Holmes, Oppenheim, Sarbo, Miura, Pal, and Parbot. These were found intact, however, by Rossi and Roussy, and Philippe and Guillian. It will thus be seen that the cerebellar tracts, columns of Goll, Clarke's columns, as well as the pyramidal tracts, have been found to be degenerated.

The anterior horns have been universally found to be degenerated. The cells of the lateral horn were degenerated in the cases cited by Tooth and Turner (54), and the middle root cells were degenerated in the case described by Piuscariu and Lambrior. This was not true, however, in the cases described by Holmes. The anterior roots were degenerated in a number of cases, namely, those reported by Lejohn and L'Hermite, Kronthal, Pal, Oppenheim, Lenmalm, Mott, Hektoen, Kojewnikoff, and Hwass (55). They were degenerated in my own case. The posterior roots were degenerated in the cases described by Sarbo, Hektoen, Rovighi (56), and Melotti, Lenmalm, Oppenheim, and Shuster. The cells of the cortex have been found to be diseased in a certain number of cases. In Probst's (57) two cases the Betz cells, as well as the small and large pyramidal cells, and the molecular nuclear layer, were diseased.

The large pyramidal cells were altered in the cases described by Kojewnikoff, Charcot and Marie, Mott, Marinesco (58), Mott and Tredgold, Rossi and Roussy, Probst, Franchesci, Spiller, and Sarbo. Lenmalm, Lombroso, Alzheimer, and Hoche found disease in the ganglion cells of the cortex also. The large pyramidal elements were diseased in a relatively insignificant manner in the case described by Holmes. The cortical change may be absent or at least not prominent especially in cases of short duration, such as those cases of Spiller's which lasted two months, the case of Mott and Tredgold, which lasted ten months, that of Medea, which was of eleven months' duration, and of Czyhlarz and Marburg, which was of nine months' duration.

The corpus callosum has been found to be degenerated by a number of observers. Spiller found the interior and middle portions degenerated. It was degenerated in the two cases described by Probst, in the cases cited by Mott, Mott and Tredgold, Rossi and Roussy, in the case cited by Naka (59), and in Holmes's case, and finally the corpus callosum was degenerated in Holmes's cases, where the degeneration was limited to the middle third. Holmes reported degeneration of the middle cerebellar peduncles in two cases, an observation he stated had no parallel thereto. Spiller, Czyhlarz, and Marburg observed degeneration in the superior cerebellar peduncles.

The optic thalamus was the seat of some few degenerated fibres in the cases reported by Holmes. Degeneration of dorsal longitudinal bundle was first described by Muratow, since which time cases in which these tracts have been degenerated have been reported by Joukowsky, Mott, Hoche, Sarbo, Miura, Spiller, Rossi and Roussy, and Holmes. Deiters's

nucleus had been found degenerated by Holmes and Alzheimer. The raphi and the stratum lemniscus were degenerated in the case described by Muratow. The medium fillet was degenerated in the cases cited by Holmes and Pal. Inflammatory changes in the spinal cord have been observed by Meyer (60), who found adventitial infiltration with plasma cells and leucocytes in the spinal cord, medulla oblongata, and pons. The bloodvessels were thickened and infiltrated. He looked upon it as an inflammatory process and probably toxic.

Phillips found some periarthritis with some small cell infiltration of the adjacent gray matter. The bloodvessels were apparently normal. Margulis found thickening and proliferation of the pia, increasing in intensity from above downward. Furthermore, they found evidences of lymph stasis, namely, exudate with perivascular lymph spaces, edema of the vessels lying in the nerve parenchyma, venous stasis in the meninges, and miliary hemorrhage. In Margulis's case there was characteristic inflammatory change in the pia. However, there was no infiltration of the bloodvessel walls of the meninges, nor specific change in the bloodvessel walls. In Iwanow's (61) case the changes resembled those in Margulis's case. These changes were found also in those cases described by Pennato (62). The conclusion reached was that the toxin called forth an exudate and affected the bloodvessels from without. The absence of inflammatory changes in the bloodvessel walls speaks of this. Margulis gives a résumé of the pathological facts, namely, that there is a hypoplastic inflammation of the pia arachnoid sometimes with foci of acute inflammation; exudative inflammatory change in the perivascular spaces; diffuse degenerative atrophy of the fibres in the anterolateral segments of the spinal cord with special involvement of the pyramidal tracts; atrophy of the anterior horn cells; secondary atrophy of the anterior roots and fibres of the peripheral nerves. The change is looked upon as a marked inflammatory one. Marburg also comes to the same conclusion. They look upon it as of toxic origin. The toxic theory has existed for a long time and was held by Strümpell, Schmaus (63), and others, but denied by Holmes.

Vascular or perivascular infiltration described by Mott, Meyer, Haenel (64), Lösewitz (65), and others, consisting of lymphocytes and plasmocytes in the bloodvessel walls, were not found by Marburg. Haenel described a change in the bloodvessels of an arterial sclerotic type, including proliferation and narrowing of the lumen, and there was round cell infiltration within the adventitia. In Hektoen's case there was some thickening of the bloodvessels of the spinal pia, but they did not believe that this played an essential rôle in the production of the degeneration. No evidence of inflammatory change was noted in my case whatever. Marburg advances the theory, which seems to have been borne out by subsequent examinations, that the disease is not a systematic one.

When, as Oppenheim states, chronic anterior poliomyelitis can be distinguished from amyotrophic lateral sclerosis in typical cases, and only by the presence of spasticity, as in rare cases the latter may

be lacking, we do not hesitate to advance the belief that these three types of disease, chronic poliomyelitis, spinal muscular atrophy, and amyotrophic lateral sclerosis, are probably one and the same disease in different stages of the same pathological process. The degeneration is so slight in the pyramidal tracts in many of these cases that the function of the tracts involved is apparently not interfered with. In those cases in which there has been found no change in the pyramidal tracts we must assume that the process has not yet attacked the motor tracts. Cases hitherto diagnosed as chronic poliomyelitis and progressive muscular atrophy must be studied with the Marchi method before they can be excluded from the amyotrophic lateral sclerosis group of cases. In Bielchowsky's case of chronic anterior poliomyelitis he found slight degeneration throughout the pyramidal tracts by the Marchi method, but did not attach any significance to its presence. It could well have been a case of amyotrophic lateral sclerosis with beginning implication of the pyramidal tracts. Holmes believed that the cases of amyotrophic lateral sclerosis showing change outside of the motor tracts cannot be excluded from this diagnosis. In some of the cases in which the pyramidal tracts are clearly diseased, the degeneration found by the Marchi method in the tracts outside of the pyramidal tracts is most usually so slight as to make it exceedingly doubtful that the function of the other spinal tracts involved could be affected by the process. All the cases with rare exceptions have shown anterior cell involvement. There are in the literature cases which, besides this change, show slight or no white matter involvement, though clinically amyotrophic lateral sclerosis. (Marie and Senator.)

All gradations of diseases pathologically there have been thus described, from pure anterior horn disease without implication of the white matter, anterior horn disease with slight involvement of the white matter, to anterior horn disease and pronounced white matter involvement including not only the motor tracts of the cord and brain, but also the sensory tracts, when studied by the Marchi method. It must be observed that the changes by this method are slight if widespread, and again it must be noted that such change is insignificant.

The spasticity and atrophy in amyotrophic lateral sclerosis find a ready explanation in the atrophy of the anterior cells and degeneration of the pyramidal tracts; but the slight degeneration in the other tracts, posterior columns, cerebellar, and other tracts of the cord, and in the posterior longitudinal bundle, corpus callosum, spinal cerebellar tracts in the midbrain, and cortical lesions, do not give apparent symptoms, and some authorities hold to the belief, in spite of the degeneration found in the sensory tracts of the cord and in the cerebrum degeneration of the corpus callosum, cerebellar peduncles, posterior longitudinal bundle, fillet and optic thalamus, that amyotrophic lateral sclerosis is a pure motor tract disease. How much significance should we give these findings outside of the motor tracts? Would this degeneration ever go on to a pronounced degree and be observable by stains which show only degeneration of a longer duration? Are they not due to some process shortly preceding death which is not directly related to the original process? Or is it due to a cachexia, as Mar-

burg suggests as a cause of the posterior columns change found in some cases? Or is it a toxin circulating shortly before death which affects widespread white matter and related perhaps to the same process which causes cell atrophy and pyramidal tract degeneration?

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1732 PINE STREET.

## SUPRAPUBLIC PROSTATECTOMY.\*

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Practically every operation in surgery has gone through a process of evolution, various operators contributing suggestions from time to time until a more or less standardized course of procedure has been perfected. More often than not progress has been made along the line of simpler methods. These observations apply particularly to the operation of prostatectomy. In the early days the plan of attack was crude and complicated, the mortality and morbidity were extremely high, and the results obtained in the few survivors were often poor. Today it is not unusual to find a series of a hundred cases reported with one or two deaths or no deaths at all, and the results obtained in a properly managed case are among the most gratifying in the

\*Read at the Brooklyn Hospital Club, April 2, 1917.



whole field of surgery. It is fair to say that one or two per cent. is not a normal expression of the present mortality. In fact, I believe that even now the mortality varies from four to twenty per cent., depending largely upon the skill of the individual operator.

Of course, it is almost unnecessary to say that much of the progress made is due to a more intelligent selection of cases; much credit, however, is due to improvements in preparation, operation, and aftercare. While the principles involved in these procedures are more or less along the same general plan, there are numerous minor variations, and I doubt if any two operators proceed along identical lines. This paper is a brief synopsis of the methods employed by the writer in the average case and is based upon a small personal series of fifty-four operations. Nothing original is claimed other than my own combination of steps in what appears to me the most desirable manner.

With a few notable exceptions, such as Young, of Baltimore, I believe most operators select the suprapubic route, employing the perineal mode of attack when specially indicated. Given a patient in whom prostatectomy seems to be indicated—this paper does not consider the indications and contraindications—the first problem which presents itself is that of preliminary preparation. I believe that in every instance the bladder should be drained and that in the majority of cases this can be most satisfactorily accomplished through an indwelling catheter. I can see no advantage in the so called two step method except when special indications exist. I reserve this procedure for three types of cases: those with vesical calculi, patients in whom it is impossible to pass a soft catheter into the bladder, and in those cases unable to tolerate a catheter after it is inserted. All of these, and particularly the two last groups, are relatively infrequent.

If the bladder is much distended, as it often is, the catheter is passed into the bladder and four ounces of urine withdrawn. A clamp is then placed upon the catheter and it is anchored in the bladder. Every two hours the clamp is removed, another four ounces of urine withdrawn until the bladder is emptied. After this the clamp is permanently detached and the urine is allowed to flow continuously into some convenient receptacle. All this time the patient is allowed to be up and about and is given a light diet and an abundance of water. The bowels are kept open. He is given one dose of 0.5 c. c. of mixed stock vaccines, and urotropin and sodium benzoate, of each ten grains three times a day. The kidney function is tested every two or three days. I rely for this upon the blood urea test, the first, second, and third, hour phthalein excretion, and the twenty-four hour urea. The bladder is irrigated daily with a two per cent. boric acid solution. The blood pressure is recorded, the heart and lungs examined, and where indicated, appropriate treatment is instituted for any trouble that may be noted. The length of time for draining the bladder varies from three to fourteen days or more, depending upon various conditions, the kidney function, condition of the bladder, etc. A badly infected bladder with atonic walls may require a rather long preliminary drainage, whereas

a relatively clean bladder will require but a few days.

The objects of preliminary drainage are threefold: 1, gradually to remove back pressure from the kidney, thus avoiding the dangerous renal congestion that might follow the sudden release of obstruction; 2, to help clean up a badly infected bladder and permit the muscle to regain its tone, and 3, in clean bladders as Cabot and Crabtree have recently pointed out, to vaccinate the patient against a gross infection that might, and probably always does, occur at the time of the prostatectomy.

The patient having been prepared and contraindications eliminated, we are ready to proceed with the operation. On the morning of the day preceding the removal of the gland, the patient receives a dose of castor oil and another injection of stock vaccines. On the morning of the operation he receives no food, but is encouraged to drink water up to within one hour of the time he is sent to the operating room. One half hour before going to the operating room he is given a hypodermic injection of morphine, the dose varying from one eighth to one-fourth grain depending upon the size and vigor of the individual. No anesthetic is administered before he is brought to the operating room and placed upon the table in position for operation. The bladder is again irrigated and finally distended with a two per cent. solution of boric acid and the catheter is removed. The field of operation is prepared as usual, with sterile sheets, towels, etc. The operator is prepared in the usual manner, except that the right hand is not gloved, and an extra large sterile sleeve is drawn over the gloved left hand and gown. In the meantime no ether has been given. We then proceed to infiltrate the line of incision with cocaine using a solution of one to 1,000. After the first puncture of the needle, ether is started by the drop method on an open mask. The cocaine solution is injected first into the skin and then under the skin along the line of incision. The skin is then divided and the aponeurosis and muscle infiltrated and opened. About thirty c. c. of cocaine solution is usually employed. The prevesical fat is carefully incised and the peritoneal fold recognized and pushed back as far as possible toward the summit of the bladder. At this point there is occasionally a slight resistance on the part of the patient. The bladder is then punctured as near the summit as possible, the fluid evacuated, and the opening in the bladder stretched sufficiently to admit two fingers. Two fingers of the gloved left hand are then passed into the rectum and the prostate and bladder neck pushed well up into the pelvis. The index finger of the right hand is gradually forced into the internal sphincter as far as the first joint, thus dilating the muscle and pushing it out of harm's way. The mucous membrane is then nicked with the finger at the upper left quadrant, the line of cleavage carefully sought for and the gland enucleated and delivered usually in two pieces. At this point the ether is discontinued. The amount required is usually two or three ounces. The sleeve and glove are then removed from the left hand and the operation completed with ungloved hands.

Following the enucleation, no irrigation, hot or



otherwise is employed. With one exception, of which I shall speak later, hemorrhage, primary or secondary, has never given me the slightest concern. I believe if the proper line of cleavage is followed and the prostate cleanly enucleated and the bladder cavity left strictly alone, Nature will take care of the bleeding by her usual methods of muscle contraction, vessel retraction, clot, etc.

The bladder wound is snugly closed around a rubber drainage tube at the upper angle of the incision, using interrupted chromic sutures. The aponeurosis is closed with a continuous chromic suture leaving a cigarette drain in the space of Retzius, bringing the rubber tube out through the same opening at the lower end of the wound. The skin is approximated with sutures of interrupted silkworm gut. By this time the patient is usually conversing and the whole procedure has required ten or fifteen minutes. There has been no shock, very little bleeding, and but a small amount of anesthesia.

The patient is now returned to his bed and tap water given by the Murphy drip method until he is able to take water freely by mouth. This is usually the afternoon of the same day. He is encouraged to move about in bed from the first and sit up in bed on the day following. He is usually out of bed on the seventh day. Occasionally, for various reasons, we find it wise to get these patients out a little earlier than this. The cigarette drain is removed in forty-eight hours and replaced by a small wick of iodoform gauze. On the day after the operation the urotropin and sodium benzoate are again started and the diet gradually increased according to indications. No irrigations are employed for the first two weeks and often not at all. I believe in the first few days irrigations may dislodge clots and start secondary bleeding, and when employed a few days later emboli are apt to be thrown off into the general circulation. The rubber drainage tube is removed on the seventh day and the patient instructed to try to pass urine every hour or two during the day. Primary union of the rest of the wound is the rule. Many methods have been suggested for collecting the urine during the interval between the time when the drainage tube is removed and the time when the patient is passing his urine in the natural way. I have found nothing more satisfactory than the simple expedient of laying a piece of rubber dam two feet square upon the abdomen, cutting out a small circle about three inches in diameter over the sinus, spreading zinc oxide ointment over the skin and cut edge. Several absorbent pads are applied over the wound and the rubber dam is folded over the pads. Of course these pads must be changed several times a day, and with competent nursing the patient's bed and clothes are never wet. On about the fourteenth day it is my custom to pass a No. 30 French sound into the bladder. I believe this may prevent contractures which occasionally occur at the bladder neck following prostatectomy.

The average time of complete closure of the suprapubic sinus is twenty-four days. The earliest complete closure in my series is seventeen days; the longest, forty-three days. When the wound is very

slow in closing, a soft catheter may be passed through the urethra and tied in place for a few days and the wound strapped and otherwise encouraged in healing. In this event, it is well to use a bladder irrigation once daily. Of course there are many minor variations from the procedure as outlined, but it seems to me to fit very well for the routine cases.

In my series there were four deaths which can be directly attributed to the operation and two of them preventable. These last two may be charged to lack of experience in early cases.

One patient died from a severe infection of the prevesical space, complicated by uncontrolled hiccoughs, due, I have no doubt, to pericystitis and localized peritonitis. This might have been prevented by better operative technic and more intelligent aftercare. One man died from hemorrhage. This was a case of carcinoma of the prostate and bladder neck in which the prostate was dug out piecemeal. In spite of all measures taken to control it, oozing continued for several days, with final exhaustion and death. The patient should either have not been operated on at all or should have had a radical excision of the prostate and bladder neck in one piece.

Another patient died from moderate renal insufficiency complicated by bedsores, exhaustion, etc. This patient was a man eighty-six years of age with marked arteriosclerosis, rather poor kidney function, and complete obstruction. He was a poor subject for operation and a correspondingly poor prognosis was given. The operation, however, was undertaken at the earnest solicitation of the patient, his physician, and his relatives.

The other death was somewhat of a surprise and was hard to explain. A man of sixty-one years of age had a moderately large prostate complicated by a large vesical calculus. The operation was performed in two stages, the calculus being removed at the first stage and the prostate one week later. His cardiovascular system was apparently in good shape and his phthalein excretion normal. Yet, following the enucleation there was complete urinary suppression and he died in forty-eight hours.

There were two other deaths which I do not believe could be fairly attributed to the operation. One was a man sixty-six years old with marked arteriosclerosis and aortic regurgitation. On the fifth day, while apparently making a perfectly smooth convalescence, he sat up in bed while drinking a cup of coffee and suddenly fell forward and was dead. The other, a man seventy-five years old, with a double mitral lesion, died suddenly while sitting up in a chair on the fourteenth day. I do not think that the operation hastened the death of these patients, but they must be included in mortality statistics.

Of the patients who survived, all had a smooth convalescence, with the exception of three with epididymitis, and the end results were uniformly good. Including the sudden deaths noted, my mortality from the fifty-four cases was eleven per cent. While this is not very commendable, I am confident that with increased experience, a more intelligent selection of cases, and continued employment of the methods outlined, I shall be able to make a much better showing with my next half hundred cases.

# TUBERCULOSIS OF THE KNEE JOINT IN THE ADULT IN WHICH OPERATIONS WERE DONE ELIMINATING MOTION BY PRODUCING FUSION OF THE FEMUR AND TIBIA.

*A Report of Five Cases from the Service of the Orthopedic Hospital.*

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In March, 1911, I published a report of an operation which had been done on January 15, 1909, for the first time (1). The object of the operation was the elimination of motion in the knee joint by producing a fusion of the femur and tibia. This was accomplished by implanting the patella into the joint after denuding it of cartilage and periosteum, making for it a bed of fresh bone in the femur and tibia following the removal of the cartilage from their articular ends. The cases in which the operation was performed at that time were those with flail knees caused by infantile paralysis. It is now my purpose to report the use of the operation in five cases of tuberculosis of the knee in the adult (Figs. 1 and 2).

It is very doubtful whether it is possible by conservative treatment to effect a cure of tuberculosis of the knee joint in the adult. It is certainly

seems probable that the good accomplished by it is due to the elimination of motion where fusion takes place, rather than to the removal of the tuberculous infection which is always difficult and rarely complete. Therefore, the important consideration in the treatment of these cases seems to be the elimination of motion. The operation has been done on these five patients without any attempt to remove the diseased structures, and with as little disturbance of the joint as possible, the single object being that of producing a fusion of the femur and tibia. In Case III, the patella, though diseased, was im-

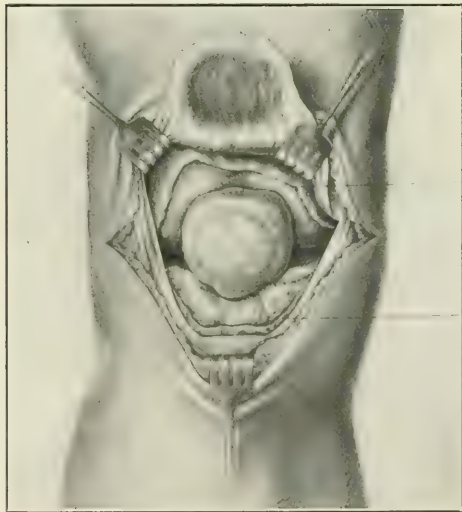


FIG. 1.—Patella implanted into the knee joint.

not possible in a comparatively short period of time. Therefore, both general and orthopedic surgeons have, as a rule, considered these cases operative and have treated them by resection of the joint. The successful cases of resection have been those in which the femur and tibia have become fused. When this does not take place, the disease continues active as a rule and in many instances leads to amputation. Whatever may be said of resection, it

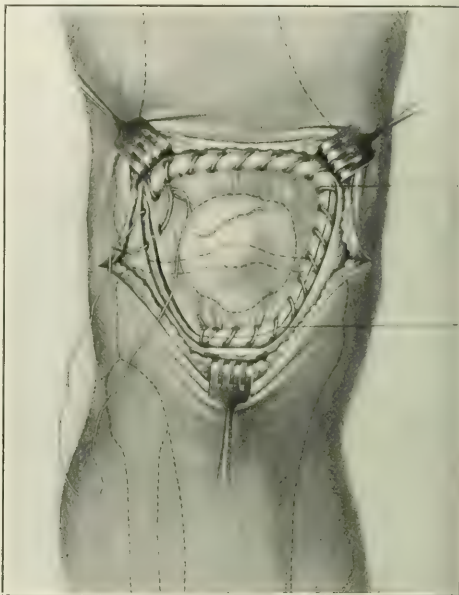


FIG. 2.—Periosteum from patella stitched to that of femur and tibia.

planted exactly as though it had been healthy bone. In three of the cases some tissue was removed for pathological examination and tubercle bacilli were found. The wounds were all closed without drainage except in one instance, Case III, in which there was a discharging sinus. A catgut drain was left in the wound.

CASE I.—E. B., aged nineteen years, tuberculosis of the right knee joint since the age of three years. He had been under dispensary treatment by brace and plaster for sixteen years. During the last few months he had gone most of the time without any form of support, but upon slight injury to the knee would be laid up with acute symptoms for varying periods of time. Finally the year before operation he was compelled to wear a stiff brace all the time. Naturally, there was much interference with his occupation. X ray showed extensive disease of both femur and tibia. Operation January 29, 1914. The joint was opened by a transverse incision just below the patella. The patella ligament and capsule were divided. The patella was turned up thus exposing the joint which showed unmistakable evidence of extensive disease of both femur and tibia. No attempt was made at a very extensive exploration of the joint. The patella was denuded of cartilage and periosteum and found to be healthy. Such small areas of cartilage as were visible on the femur and tibia

were removed and a space was made with a curette in the femur and tibia into which the patella was placed. The patella was placed in position with the knee flexed and then upon extension it was locked very firmly. The periosteum which had been separated with great care from the patella was now stitched to the periosteum of the tibia with ten day chromic catgut. Skin and subcutaneous tissue were closed with the same. Dressing and plaster spica

ease or shortening. She works every day as a laundress.

CASE III.—Mrs. I. B., aged thirty-two years was admitted to dispensary September 1, 1915. Duration of disease in left knee was two years. The joint was swollen, it was painful over internal aspect; motion was resisted in the extremes of flexion and extension by spasm and was painful if forced. She was treated conservatively by immobilizing brace until March 3, 1916, when she was admitted to the hospital on account of an abscess which had developed over the inner aspect of the joint. This was opened March 29, 1916. There was no complication following the opening of the abscess and a sinus formed which continued to discharge until June 6, 1916, when a fusion operation was done. On opening the joint there was such extensive disease that it was a question in my mind just what to do, especially as she had a discharging sinus and the patella was found to be diseased. However, I decided to treat it exactly as the others had been, so the diseased patella from which the cartilage had been destroyed was dissected from its periosteum and implanted in this diseased area of bone in the femur and tibia and



FIG. 3.—Case I. X ray before operation.

applied with the knee in 15° flexion. The wound was healed perfectly in ten days. The plaster spica was worn for six weeks when a short plaster was applied and weight bearing permitted. At the end of six months there was a perfect fusion of the femur and tibia. He has had no trouble since this date and seems entirely well and has no shortening.

CASE II.—H. H., aged twenty-three years, a laundress, was admitted to the Orthopedic Dispensary, August 29, 1915, having just previously left a general hospital where the date for the amputation of her leg had been set. Duration of the disease at this time had been two years, and had been treated by various conservative methods. The left knee at this time was markedly swollen and painful with acute spasm and 40° flexion deformity. Only a few degrees motion was permitted, and there was much heat. Patient was admitted to ward August 27th; operation was performed September 14, 1915, by Doctor Farrell. Joint upon exposure was found to be extensively diseased, involving both femur and tibia. Small amount of tissue removed for pathological examination. Operation as in other cases. Tissue removed from bone showed tubercle bacilli. Wound healed without complication. Perfect fusion was evident in ten months. At the end of one year all support was removed. There was evidence of dis-

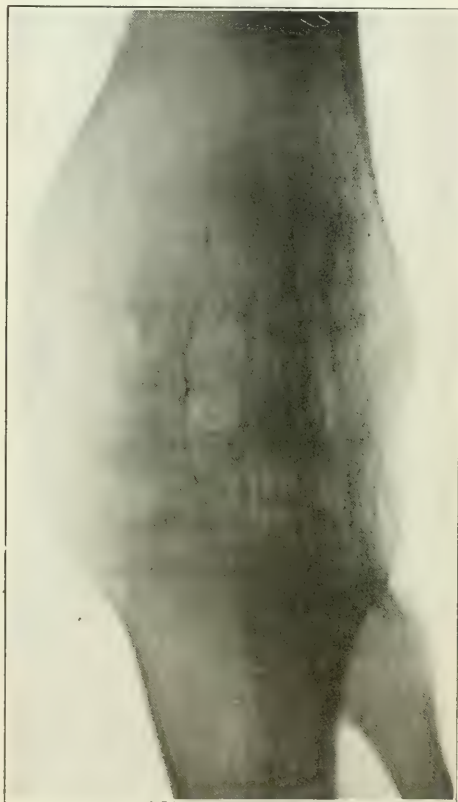


FIG. 4.—Case I. X ray after operation showing fusion.

its periosteum stitched to the tibia below. The wound was closed with the exception of a small catgut drain in the inner corner at the site of the old sinus. This sinus drained for six weeks. There was no discharge of bone from it and a fusion of the femur and tibia has taken place as in the other cases. There is free and constant use of the leg and no symptom of disease. Tissue removed at the time of operation for examination showed tubercle



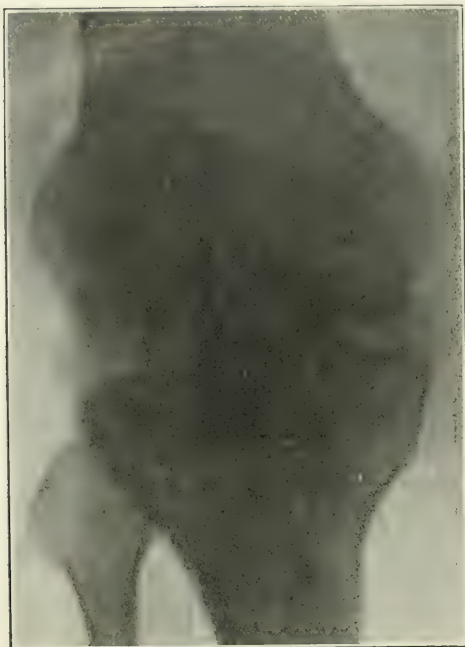


FIG. 5.—Case II. X ray before operation.



FIG. 7.—Case III. X ray after operation showing fusion.

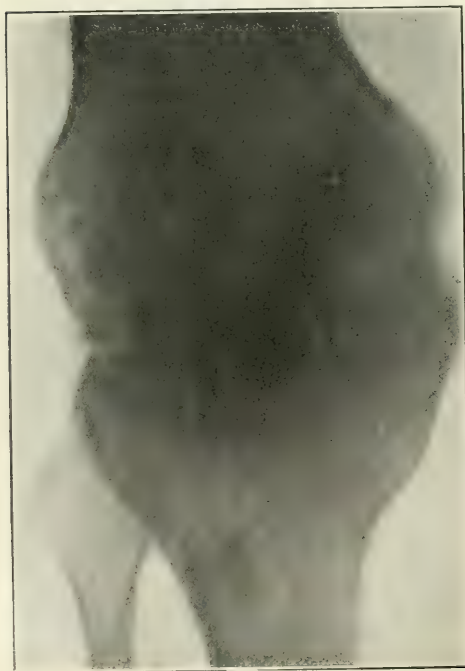


FIG. 6.—Case II. X ray after operation showing fusion.



FIG. 8.—Case IV. X ray before operation.

bacilli. There is a shortening of three quarters of an inch in the leg.

CASE IV.—F. L., aged sixteen years, duration of the disease in right knee was twelve years. It had been treated by various conservative methods. Upon admission to the hospital there was 60° flexion deformity and five degrees motion which without plaster was painful. Operation was performed, October 25, 1916. On exposing the joint, patella was found to be adherent to the femur. Cartilage on both femur and tibia was almost completely destroyed. Patella was chiselled loose from the femur and dissected from its periosteum and flexion deformity was corrected and implanted in the femur and tibia. Wound was closed completely. Fusion occurred six months after operation, all supports removed and there was no evidence of disease.

CASE V.—Bertha Kahn, aged eighteen years, was admitted to the dispensary, April 18, 1916. Duration of the disease in left knee was three years. The knee was swollen and painful with moderate effusion in joint. Only 30° motion was permitted. Marked pain and spasm if

after, fusion was complete and there was no evidence of disease and no shortening. X ray before operation was lost.

In three of these cases, Cases II, III, and V, the activity of the disease was confirmed by a pathological examination of tissue removed from the joint, and in one (Case III) the patella was diseased, so that the presence of active tuberculous

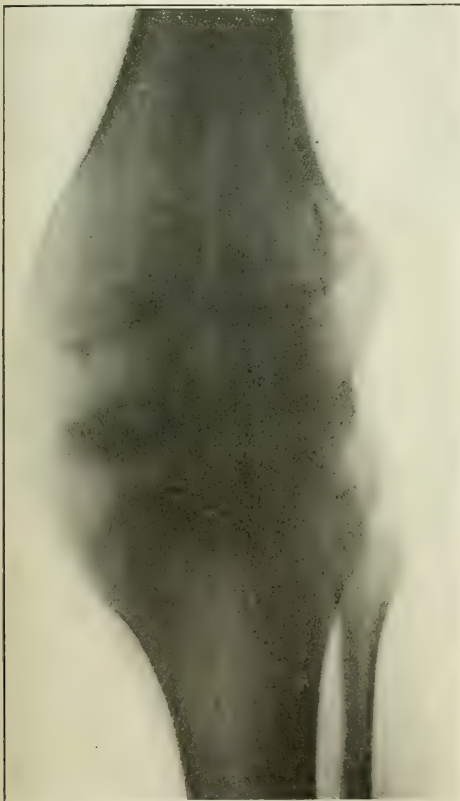


FIG. 9.—Case IV. X ray after operation showing fusion.

attempted beyond this arc. She was treated conservatively until October 20th, when she was admitted to the ward for operation. The knee in the meantime had been growing steadily worse. Operation October 24, 1916. Patella found to be healthy. Disease was extensive in both femur and tibia. A small amount of this tissue removed for pathological examination showed tubercle bacilli. Wound closed. Plaster applied with knee in 15° flexion. Six months



FIG. 10.—Case V. X ray after operation showing fusion.

disease in these cases has not prevented fusion taking place. There can be no doubt that the other two cases, I and IV, had been tuberculous for a long period of time and that there was extensive change in the joint from it, though no tissue was removed for pathological examination. All of these patients began to walk at the end of six weeks, taking up the ordinary activities of their life, wearing either plaster or a brace which was continued for from six months to one year.

130 EAST THIRTY-SIXTH STREET.

#### REFERENCE.

1. *Annals of Surgery*, March, 1911.

**Salvarsan and Its Substitutes.**—J. L. Bunch (*Practitioner*, March, 1917) gives brief accounts of kharsivan, neokharsivan, ferrivine, intramine, galy, hectine, and luargol, the British and French substitutes for salvarsan. He believes that either salvarsan or one of these substitutes, one of which will probably prove equal or superior to the German product, is essential in the treatment of syphilis. No one of these substitutes is universally used.

## SURGICAL ASPECTS OF MALE STERILITY.\*

By ABR. L. WOLBARST, M. D.,  
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Notwithstanding the widespread agitation for "birth control," the childless marriage is still the same problem that it was nearly fifty years ago, when J. Marion Sims stated as a fundamental proposition that any operation or any other treatment for sterility in women is not justified until three points had been decided: 1. It must be ascertained whether the semen contains spermatozoa; 2, it must be determined whether the spermatozoa enter the uterocervical canal; 3, it must be determined whether the secretions of this canal are favorable or hostile to the vitality of the spermatozoa. In spite of the wisdom of these teachings, it is still the custom to regard the childless woman as fair game for the gynecologist, disregarding the condition of the husband, and it is not rare to see a woman mutilated by curette and scalpel as though such procedures were able to cure azoospermia in the husband. It is a sign of promise that gynecologists have begun to raise their voices against these unnecessary procedures; indeed, some of them have gone much further. They have taken up the study of the seminal fluid and have made observations on the spermatozoa that bid fair to bring much needed light to this important subject.

In this country comparatively little attention has been paid to the subject of male sterility, possibly because genitourinary men have been too busy with the newer subject of urology. Nevertheless, with the aid of the new urethroscopic instruments and the facilities offered by them for the study of the deep male urethra, it is now possible to study the male generative apparatus more intelligently than heretofore, and to apply these studies to the treatment and cure of sterility. And it is one of the purposes of this paper to consider these new observations from the standpoint of diagnosis and treatment, as applied to sterility resulting from pathological changes in the male genital tract.

In our consideration of male sterility it is taken for granted that the wife has been carefully examined and pronounced normal. It may be well to remember, in passing, that the gynecologists have not yet, as far as I am aware, devised a working formula for the fertile woman. If the examination of her organs reveals no gross pathological changes and she menstruates regularly, they assume she is fertile and the burden of proof falls on the husband. It is therefore imperative, in every case of childless marriage, to examine carefully both parties involved, not only individually but also jointly, in so far as the effects of copulation on the spermatozoa are concerned. In other words, we must study the spermatozoa together with such changes in the male or female genital secretions as might have a more or less destructive effect on their vitality.

### CAUSES OF STERILITY.

The gross pathological conditions presented by the microscopical examination of the seminal fluid rela-

tive to the spermatozoa may be classified as follows: Azoospermia, in which the spermatozoa are totally absent from the seminal fluid; oligospermia, in which the spermatozoa are present in reduced number and activity; necrospermia, in which the spermatozoa are present, but dead; oligonecrospermia, in which the number is reduced and many of these are dead, and aspermia, in which the seminal emission is slight or absent and when present contains neither spermatozoa nor the other normal constituents of seminal fluid. The etiology of these conditions varies considerably.

*Azoospermia.*—Azoospermia is idiopathic or acquired. Idiopathic azoospermia may be due to an absence of the spermatogenic function in the testes. Unfortunately, it is extremely difficult, if not altogether impossible, to say positively that this condition exists, for we do not know whether or not spermatozoa are being created in a given testis. Aspiration of the organ with a fine hypodermic needle and syringe offers a possible method of determining this question, but it is not always successful. My experience with it has not been satisfactory. Another method with which I have been experimenting recently is to expose the vas deferens near the epididymis and aspirate its contents, the point of the needle approaching the epididymis as closely as possible. In cases of azoospermia, I have succeeded in a few instances in finding spermatozoa by this method, thus convincing me that they are being secreted in the testes; but in several cases without history or evidence of obstructive epididymitis, this search has been fruitless. In these cases, I have been compelled to assume, though there was no proof to confirm the assumption, that the azoospermia was due to the absence of spermatogenesis.

The idiopathic absence of spermatogenesis is found most frequently in cryptorchism and in cases in which the testes have descended properly, but for some unknown reason have remained small and undeveloped. The prevailing opinion that cryptorchism and azoospermia always coexist is questioned, however, by some observers, who found adult spermatozoa in a large number of undescended testes. In one of my cases azoospermia was found five years after Bevan's operation for cryptorchism was successfully performed; but whether this condition existed before operation or appeared as a result of trauma after the operation, it is impossible to say.

Acquired azoospermia is classified as obstructive and nonobstructive. In obstructive azoospermia spermatozoa are secreted in the testes, but their progress is obstructed somewhere in the genital tract. The obstruction is most commonly situated in the epididymis, usually the result of gonorrheal inflammation, closing the lumen of the fine tubules leading from the testis to the vas. Less frequently the obstruction in the epididymis is tuberculous or syphilitic, but the result is the same. Often the vas deferens alone is obstructed, either by an infiltration resulting from the gonorrheal or tuberculous inflammation, or without appreciable cause, by the deposit of a cheesy substance which the microscope is unable to identify. I have found the vas obstructed so that it was impossible for the finest filiform or piano wire to pass into it for any appreciable distance. In

\*Read before the New York Physicians' Association, February 23, 1927.



other cases, the wire has passed into the vas for two or three inches and has there become obstructed. If we try to inject fluid into this occluded vas, the attempt will be unsuccessful. The etiology of this obstruction is not known. With the aid of the pos-

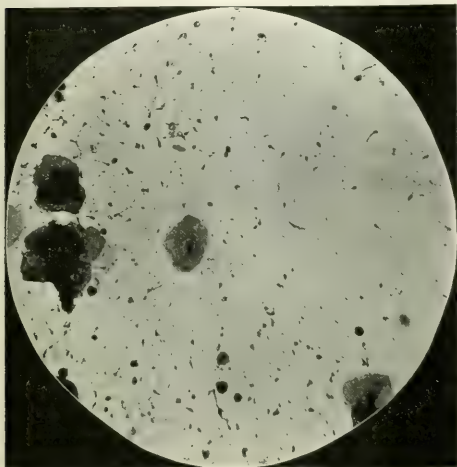


FIG. 1.—Vaginal field with normal distribution of spermatozoa, after coitus.

terior urethroscope, it is possible to localize the obstruction in the ejaculatory ducts, all other portions of the genital tract being apparently normal. In these cases the obstruction in the ducts has been found to consist of lime salts, fat, mucus, epithelial cells, and dead spermatozoa.

In nonobstructive azoospermia, syphilis, tuberculosis, and malignant disease of the testes may destroy its spermatogenetic function when the secretory portion of the testicular substance is seriously involved. It was formerly believed that azoospermia also occurred in these diseases even though the testes were not appreciably involved, but recent observations do not confirm this belief. It is known, however, that mumps and typhoid fever, among the infectious diseases, may cause a suspension of spermatogenesis and thereby produce azoospermia.

A factor in the production of azoospermia not sufficiently recognized is sexual exhaustion due to too frequent seminal emission, whether because of excessive coitus or masturbation. The effect is the same in either case. The secretion of spermatozoa, like any other human function, varies with each individual, and it is evident that the function of spermatogenesis may become more or less exhausted through an excessive drain long continued. The secretion of spermatozoa in the testes being fairly continuous as far as we are aware, it is apparent that under very frequent emissions the seminal fluid will become attenuated, until the function will gradually cease entirely, and azoospermia will result. However, sexual continence for a variable period will often result in the restoration of the function and the reappearance of spermatozoa in the semen.

General debility and serious illness often result in

a temporary azoospermia, due to interference with the proper nutrition of the testes; but as soon as the general health improves, the function is restored and spermatozoa reappear. Allied to this condition is the effect of alcoholism on spermatogenesis. The experiments of Cole and others along this line are of great interest. Cole bred a female rabbit to a male under the influence of alcohol and immediately afterward to a normal male rabbit. In order to identify the parentage of the progeny, two species of male rabbits were employed. All of the young rabbits were born of the normal father. It was evident that the spermatozoa from the normal rabbit, with their normal motility and activity, outstripped the slower moving spermatozoa from the alcoholic rabbit in their race to impregnate the ova. These experiments and others are often utilized to illustrate the fact that spermatozoa from an alcoholic male are less virile and less active than those emitted by a normal male. These observations have been confirmed in a measure by the studies of Simonds, who examined the semen of several human alcoholics at autopsy and obtained results which led him to believe that the function of the testes was suspended at times in alcoholism. A fatty degeneration of the testes seems to have been the result.

Obesity and excessive use of tobacco are also mentioned as factors in azoospermia. Kisch found that azoospermia existed in nine per cent. of his overcorpulent patients. The cause is not known. In several instances I have found an occlusion of the vasa deferentia or the ejaculatory ducts in corpulent persons. In both conditions, it seems to me, there is probably a deposit of fat in these fine ducts

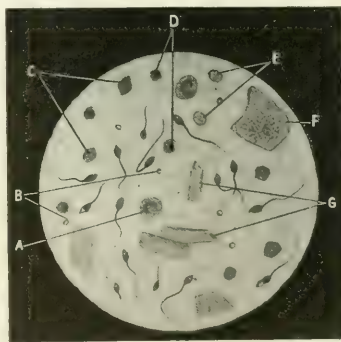


FIG. 2. Elements which may be found in microscopic examination of the semen: A, leucocytes; B, lipoid bodies; C, amyloid bodies; D, red blood corpuscles; E, oval concretions (Marshall); F, epithelium; G, spermatic crystals.

which obstructs the passage of spermatozoa. In many of my obese patients, impotence has been a common factor in the sterility; in fact, impotence seems to be quite common among the corpulent.

Barney reports a case in which spermatozoa disappeared from the semen in a man who had been continent for fifteen years. It is doubtful, however, whether continence for extended periods always leads to azoospermia.

The Röntgen ray is another factor in the suspen-

sion of spermatogenesis. There are conflicting views regarding the permanency of the azoospermia thus produced, but the prevailing opinion is that the condition is but temporary and that spermatogenesis is resumed when exposure to the rays ceases. It would

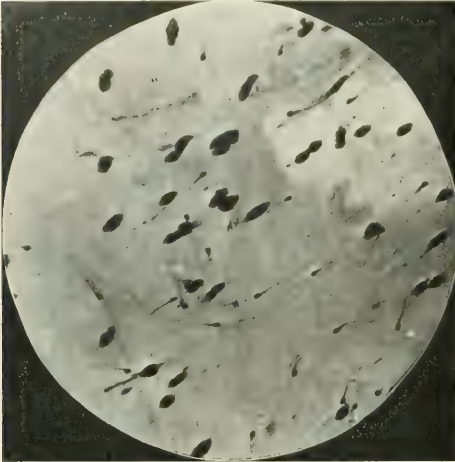


FIG. 3.—Cervical field, showing high occurrence of spermatozoa, after coitus.

seem that this fact ought to be remembered in connection with the movement for birth control.

**Oligospermia.**—Anyone who has attempted to count the number of spermatozoa in a single microscopic field in a normal case must have given up in despair (Fig. 1). Their number is countless. It has been estimated that the total number in a single emission exceeds two hundred millions (Lade, quoted by Reynolds). Nevertheless, it is not a difficult matter to say that oligospermia exists, for in a well marked case, the diminution in the number of spermatozoa is striking (Fig. 2). Examination of a drop of semen taken from the cervix, however, in a normal case, is much less difficult, for it will be found that not more than twenty to thirty spermatozoa will be counted in a single field (Fig. 3). The reason for this great disparity is selfevident, but it is an important fact worth remembering when we are examining patients according to the method to be described later. As Reynolds well states the case, "many spermatozoa must reach the fundus to permit even a few to attain the tubes; many must be lost there for one which reaches the ovum, and if the original ejaculation contained but a few motile spermatozoa it would seem that the improbability of impregnation would be so great as to amount to an almost certain infertility." Oligospermia is therefore to be considered as a potent factor in the production of sterility. In youth and old age the condition is normal; in maturity it is pathological. Frequently repeated ejaculations will bring about this condition, and if long continued will result in necrospermia or azoospermia.

In connection with oligospermia it must be re-

membered that spermatozoa lose much of their vitality in the presence of pus and old blood. The pus and broken down bloodcells exert a deleterious influence on the spermatozoa, and if they are not entirely destroyed they are at least injured to the extent that impregnation becomes improbable, if not impossible. This destructive effect of pus may also explain the sterility which accompanies inflammatory conditions of the uterus and cervix. Massage of the prostate and the seminal vesicles followed by microscopic examination will usually furnish evidence of the presence of pus in the prostatic and vesicular secretions. It is therefore apparent that the most common causes of oligospermia are chronic prostatitis, vesiculitis, and colliculitis. Under these conditions it is evident that spermatozoa coming into contact with purulent secretions will find themselves in an abnormal menstruum and are quickly injured or totally destroyed. Only a fraction of the total number of spermatozoa secreted in the testes survive the destructive influence of these pathological secretions.

Oligospermia is the consequence, and if the condition persists to an extreme degree, all the spermatozoa may be destroyed and necrospermia will result. Oligospermia may also be the result of a partial closure of the vas deferens or the epididymis at one or more points, so that but a few of the spermatozoa secreted in the testes are able to reach the prostate and seminal vesicles. This condition will also be found in serious illness, debility, syphilis, tuberculosis, and all other diseases involving an interference with the function of spermatogenesis. These

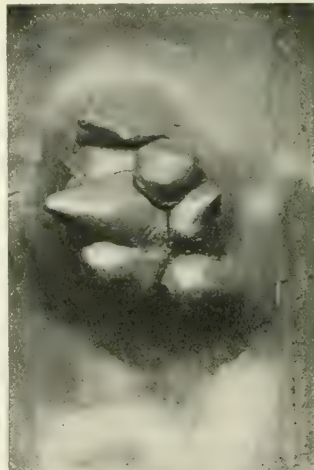


FIG. 4.—Very large verumontanum covered with cystic bodies.

factors not only involve the number of spermatozoa but their virility and fecundating power as well. They are deformed and their motility is diminished. Lespinasse has shown that the normal rate of movement of healthy spermatozoa across the one sixth field using No. 1 eyepiece is about eight to ten sec-

onds. In oligospermia this rate of speed may be markedly diminished so that it may take from twenty-five to thirty seconds for the fastest moving spermatozoa to cross the field. In normal semen not more than two hours after emission, every spermatozoon has a progressive motion, and as the virility diminishes there is a corresponding diminution in the speed and character of the sperm motility. This change likewise affects the morphology of spermatozoa.

It is well to bear these changes in mind, for impregnation is most likely to occur only by spermatozoa that are active and virile. Weak and malformed spermatozoa do not survive long enough in the hostile vaginal or cervical secretions to enable them to enter the uterine cavity and join the descending ovum. "Fertility is dependent primarily on the discharge of effective spermatozoa on the one side and the due release of a normal ovum on the other; but the best of spermatozoa and ova are useless to fertility unless the conditions in the female generative tract are such as to permit their conjugation. A fundamental principle of the subject of sterility, which has, moreover, attracted too little attention is that alterations in these primary factors which are quite sufficient to produce permanent sterility may often fail to affect the health of either partner" (Reynolds).

**Oligonecrospermia.**—In this condition the number of spermatozoa has been diminished, and besides there are a greater or less number of dead ones in the seminal fluid. The principal causes are prostatitis, vesiculitis, colliculitis, sexual exhaustion, un-

prostatitis, for as Fürbringer has demonstrated, the spermatozoa, so long as they are retained in the seminal vesicles, are motionless, and it requires the contact of the prostatic secretion to arouse their normal motility. When the prostatic follicles are

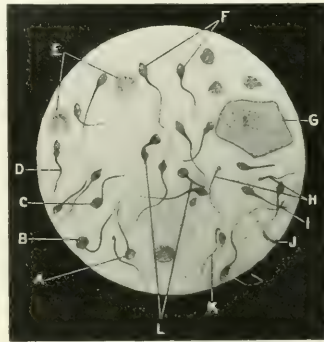


FIG. 6.—Defective specimen sketched two hours after emission; well preserved. Thin and little sediment. Total number of spermatozoa reduced; one in three active. Deformed, immature, and degenerate forms. A, round head, immature; B, large head, inefficient; C, lateral attachment; D, double head; E, leucocytes; F, normal type; G, epithelium; H, headless type; I, characteristic grouping; J, degeneration; K, head separate from tail; L, round heads.

diseased, their secretion is checked, and the spermatozoa are deprived of the stimulant necessary to excite their activity."

**Aspermia.**—There are two forms of aspermia: one in which the seminal fluid is prevented from reaching the urethra through obstruction or otherwise; the other in which the semen enters the urethra but is not ejaculated toward the meatus. In either case, the ejaculation is either very slight or absent, or the semen may dribble out of the urethra some time after the orgasm. The etiological factor may be a tight urethral stricture, which prevents the seminal fluid from passing out of the urethra at the time of emission. All or most of the semen passes backward into the bladder and may be recovered in the urine. A small quantity of the seminal fluid dribbles forward through the strictured urethra.

More frequently a hypertrophied and congested verumontanum will act in the same manner by blocking the seminal flow. The same result usually follows the occlusion of the ejaculatory ducts, which often takes place in chronic prostatitis and colliculitis. Injuries and operative scars in the deep urethra may have the effect of blocking these ducts and thereby producing aspermia. Thompson Walker states that aspermia follows the operation of suprapubic prostatectomy in 32.5 per cent. of cases.

**Anatomic malformations.**—These need but be mentioned briefly. They include marked cases of epispadias and hypospadias, in which the urethral orifice is so situated as to prevent the deposit of the spermatozoa in the vagina.

**Résumé.**—These data may be amplified by a study of eighty-seven cases of male sterility in which the wife was declared normal by her physician, who kindly referred the husband for examination and



FIG. 5.—Large deformed verumontanum and two urethral papillomata.

developed testes, atrophy, cryptorchism, and the constitutional diseases already mentioned.

**Necrospermia.**—The number of spermatozoa may be normal or diminished, but they are all dead. In my experience, necrospermia has always been accompanied by oligospermia. Morton states: "Spermatozoa may be motionless in chronic follicular



treatment. Duration of the married life ranged from three to eighteen years. In every case an examination of the fresh seminal fluid was made, as described later on. According to the microscopical findings, the cases are classified as azoospermia, oligospermia, and oligonecrospermia. One case presented a typical aspermia. The following tables indicate the etiological factors in these respective conditions in my series of cases:

AZOOSPERMIA CAUSED BY	No. OF CASES
Bilateral epididymitis (gonorrheal).....	25
Bilateral epididymitis (tuberculous).....	6
Cryptorchism.....	2
Small undeveloped testes.....	1
Atrophy of testes.....	2
Colliculitis with closure of spermatic ducts.....	2
Prostatitis and colliculitis (gonorrheal).....	1
Prostatitis and colliculitis (nongonorrheal).....	2
Prostatitis with tight urethral stricture.....	1
Marked left varicocele (no other lesions).....	1
	43

OLIGOSPERMIA CAUSED BY	No. OF CASES
Prostatitis and colliculitis (gonorrheal).....	5
Prostatitis and colliculitis (nongonorrheal).....	2
Excessive coitus.....	3
Monorchism.....	2
	—
	12

OLIGONECROSPERMIA CAUSED BY	No. OF CASES
Prostatitis and colliculitis (gonorrheal).....	16
Prostatitis and colliculitis (nongonorrheal).....	8
Excessive coitus (no visible lesion).....	2
Undeveloped testes.....	2
Cryptorchism.....	1
Bilateral epididymitis (gonorrheal).....	1
Marked varicocele (no other lesion).....	1
	—
	31

ASPERMIA CAUSED BY	No. OF CASES
Excessive coitus, colliculitis (nongonorrheal).....	1

A brief résumé of these tables indicates that of these eighty-seven cases of sterility fifty per cent. were due to azoospermia, thirty-five per cent. to oligonecrospermia and 13.5 per cent. to oligospermia. The most common cause of azoospermia is found to be bilateral epididymitis (seventy-two per cent.), of which fifty-eight per cent. were gonorrheal in origin and fourteen per cent. tuberculous. The most common cause of oligospermia is found in prostatitis, vesiculitis, and colliculitis (fifty-eight per cent.), of which forty-one per cent. were gonorrheal in origin and seventeen per cent. nongonorrheal. In the latter form it is to be observed that excessive coitus was the principal factor in twenty-five per cent. of cases. The most common cause of oligonecrospermia is also found in prostatitis, vesiculitis, and colliculitis (seventy-seven per cent.), of which fifty-one per cent. were gonorrheal in origin and twenty-six per cent. nongonorrheal. Here again sexual exhaustion (excessive coitus) is an important factor in this form of sterility. In one case of sexual exhaustion, characterized by total aspermia, the clinical findings consisted of prostatitis and colliculitis. There was no gonorrheal history in this case.

The influence of gonorrhea in the production of male sterility is easily realized when these figures are studied. A review of the above data shows that gonorrhea was the underlying factor in twenty-nine cases of azoospermia (sixty-seven per cent.); in five cases of oligospermia (forty-two per cent.); in seventeen cases of oligonecrospermia (fifty-five per cent.); and in the single case of aspermia. This gives a total of fifty-two cases, or sixty per cent., in which the sterility was due to gonorrheal infection.

These data may be studied from the angle of the pathological lesions as compared with their effects on the spermatic secretion. Thus we find double epididymitis (gonorrheal) resulted in azoospermia in twenty-five cases and in oligonecrospermia in one case. Double epididymitis (tuberculous) resulted in azoospermia in six cases. Prostatitis, vesiculitis, and colliculitis (gonorrheal) resulted in azoospermia in two cases, in oligospermia in five cases, and in oligonecrospermia in sixteen cases. Prostatitis, vesiculitis, and colliculitis (nongonorrheal) resulted in azoospermia in three cases; oligospermia in two cases, oligonecrospermia in eight cases, and in aspermia in one case. Atrophy of the testes resulted in azoospermia in two cases. Undeveloped or small testes resulted in azoospermia in one case, and in oligonecrospermia in two cases. Monorchism resulted in oligospermia in two cases. Cryptorchism resulted in azoospermia in two cases, and in oligonecrospermia in one case. Marked varicocele with no other lesion resulted in azoospermia in one case, and in oligonecrospermia in one case. Excessive coitus, no lesion appreciable, resulted in oligospermia in three cases, and in oligonecrospermia in two cases.

It will be noted that syphilis is not mentioned as a causative factor in any of these cases. This is because neither the personal history nor the clinical examination of the patient in a single instance gave rise to the suspicion of syphilis as an etiological factor, and consequently it was ruled out.

Considerable dependence in the study of these cases was placed in the evidence adduced by the posterior urethroscope. It will be observed that inflammation of the deep urethra, especially the verumontanum and the prostate proper, is responsible for a large proportion of the sterile conditions. In this series the deep urethroscope revealed lesions which were responsible for azoospermia in six cases, oligospermia in ten cases, oligonecrospermia in twenty-four cases and one case of aspermia, a total of forty-one cases (forty-seven per cent.). Without this instrument these pathological conditions could never have been identified and the etiological factor in the sterility would have remained undiscovered.

I have selected two cases illustrative of the pathological conditions of the deep urethra in which the sterility was due to lesions revealed by the posterior urethroscope.

CASE I.—Patient referred for sterility. Married ten years. Wife declared normal. No history or evidence of gonorrhea. Posterior urethroscopy showed a very large verumontanum, almost entirely covered with cystic bodies. The spermatic ducts could not be distinguished. (Fig. 4.) A fresh specimen of seminal fluid showed azoospermia.

In order to determine the seat of obstruction to the egress of the spermatozoa from the testes, an attempt was made to inject a weak solution of argyrol into the bladder through the ejaculatory ducts by way of the vas deferens. This failed, for the fluid entered the vasa deferentia on either side for a short distance but failed to enter the bladder. Diagnosis of closure of the ejaculatory ducts was then made. Repeated attempts have been made to find the ducts and catheterize them through the urethroscope, but have invariably failed thus far.

CASE II.—Referred for sterility. Married seven years. No history or evidence of gonorrhea. A fresh specimen of seminal fluid showed azoospermia. Cystourethroscopy showed a large verumontanum, with a growth of tissue on its left posterior aspect. In addition there were two fairly large sized papillomata—one anterior and the other posterior to the verumontanum. (Fig. 5.) Here again the ejaculatory ducts could not be found after several examinations. But when the growths had been removed by fulguration the ejaculatory ducts became visible and it was found that they were occluded. Subsequent treatment relieved the obstruction, and spermatozoa were later found in the semen. The patient having failed to respond to repeated inquiries I cannot say whether or not pregnancy has since resulted.

*Examination of the semen.*—A matter of extreme importance in connection with the study of sterility is the examination of the semen. It is still the universal custom for the physician in making an inquiry as to the cause of sterility in any given couple to have a condom specimen of seminal fluid examined microscopically. This method is open to several serious objections, which are not usually considered. First, a varying period of time must elapse between the emission and examination of the fluid. In this period the spermatozoa may lose part or all of their vitality, owing to changes in temperature, etc., and as a result a false conclusion would be drawn from the microscopical study. Second, the behavior of the spermatozoa in a rubber condom is no criterion whatever as to their fate in the vaginal secretions. I have encountered numerous instances in which spermatozoa have lived in a condom for four or five hours, whereas at a subsequent examination spermatozoa from the same individual were found dead in the vaginal secretion within forty minutes from the time of emission; and the reverse is sometimes true.

It is therefore evident that if we are to study spermatozoa properly we must observe them under the conditions which nature imposes, and under which their function in the scheme of life is carried on. That is, we must examine them with reference to their behavior in the vaginal secretions. An important step in this direction was made by Hühner when he examined a series of women within an hour or two after coitus. In this manner he was able to determine how long spermatozoa lived in the vaginal secretion, what point they reached in the cervix, and what effect was produced on them by the female genital secretions. It has seemed to me, however, that certain important elements in the study of spermatozoa were lacking even in this method of examination. For instance, if the woman reached the doctor's office an hour after coitus, and the spermatozoa were found dead in the vaginal secretion, how could he tell whether they were dead on emission or died in the secretion? And how long did it take them to die? What was the character of the secretion before coitus and after coitus? What effect did the spermatic secretion have on the

vaginal secretion in relation to its litmus reaction?

To answer these and other questions that arise in connection with this it has been my custom for several years to study the seminal fluid immediately after natural coitus. Continence is enjoined for at least a week. The examination may be made at the office under special arrangements which have thus far never been objectionable to the patients, or preferably in the home of the patient. The latter method is better because the strange surroundings often render men impotent. All that is required for the examination are a microscope, slides and cover-glasses, litmus papers, a speculum, and a platinum loop. The wife is first examined as to the character of her genital secretions, no douching having been allowed for twenty-four hours previous to examination. The vaginal secretion is tested as to acidity or alkalinity and a note made of the result; similarly with the cervical discharge. Immediately after coitus, the woman still recumbent, a drop of seminal fluid is taken from the vagina and examined under the microscope and the findings noted. Particular note is made of the number, motility, shape, etc., of the spermatozoa and the other seminal constituents (Fig. 6). Simultaneously the reaction of the vaginal secretion mixed and unmixed with the spermatic fluid is likewise examined and tested for the reaction. These microscopical examinations and tests are repeated in fifteen or twenty minutes and a note again made of the findings. The second and third examinations will often indicate a marked falling off in the activity of the spermatozoa, and in cases of extreme hyperacidity, or much leucorrhea, many spermatozoa alive at the time of emission will now be found dead. The inference to be drawn is clear, namely, that the acid or purulent secretion is killing the spermatozoa at a rapid rate. On the other hand, one will sometimes be surprised to find spermatozoa highly active for a long time in a slightly acid or neutral vaginal secretion, when they survived but a few minutes in the condom. The vaginal secretion in these cases acts as a stimulant and increases their vitality.

The third and final examination is made forty minutes after coitus. By this time the following information has been definitely established: 1, whether there was a cervical plug which obstructed the entrance to the uterine cavity; 2, what is the reaction to litmus of the vaginal and cervical secretions before coitus and after coitus when mixed or unmixed with the seminal fluid; 3, whether the spermatozoa were emitted into the vagina alive or dead, active or inactive, numerous or few, etc.; 4, how many, if any, of the spermatozoa reached the cervix and the cervical canal during the period of examination; 5, how long the spermatozoa survived in the mixed and unmixed genital secretions; 6, whether a seminal plug has formed in the posterior vaginal fornix, and how long the spermatozoa in it survived.

A moment's thought will show that this method of examination is invaluable in the study of male sterility, for it gives us first hand and trustworthy information of the fate of the spermatozoa in the vaginal secretions under conditions imposed by nature. In numerous instances I have found living

spermatozoa immediately after emission, notwithstanding reports of previous condom examinations made in laboratories or by physicians to the effect that the spermatozoa were all dead. This discrepancy is readily understood when we consider the elements of travel, time, and temperature involved in an examination of the condom specimen. The highly important fact that the spermatozoa were alive when emitted but died in transit to the microscope cannot be revealed in these condom examinations. On the other hand, spermatozoa reported alive and active in a condom specimen and therefore thoughtlessly regarded as efficient and capable of fertilization are by this method often found alive on emission, but dead shortly after being mixed with the vaginal secretions. This method also confirms recent investigations which show that feeble spermatozoa may be stimulated to a considerable degree when mixed with normal female secretions.

In considering the character of the spermatozoa and their fertilizing efficiency, it is necessary to consider four distinct factors, all of which enter into the equation: 1. the degree of oligospermia, that is, to what degree is the number of spermatozoa diminished; 2, the percentage of perfect, imperfect, or deformed spermatozoa; 3, the percentage of spermatozoa that are motile, and their degree of motility, whether lively or sluggish; 4, the length of time activity persists, whether in the condom or in the vaginal secretions. Upon the basis of these data, seminal fluid may be classified as twenty-five, fifty, or one hundred per cent. efficient; or it may be classified as absolutely sterile, poor, fair, or vigorous in quality (Cary).

The spermatic fluid having been examined with reference to its fate in the vagina, we are now in a position to speak with definite knowledge as to the cause underlying the sterility. If we find the spermatozoa normal in number, morphology, and motility, and sufficiently virile to have survived the vaginal and cervical secretions, it may be taken for granted that the husband is not at fault. We must inquire further into the genital organs of the wife for the cause of the sterility. However, when oligospermia, oligonecrospermia, azoospermia, or aspermia are present, we must find the cause of the childlessness in the male genital tract. Briefly, we must look for these conditions: in azoospermia, bilateral epididymitis principally, cryptorchism, undeveloped genital organs, atrophy of testes, closure of spermatic ducts, occlusion of the vas deferens, marked prostatitis, vesiculitis, and colliculitis, tight urethral stricture, and rarely marked varicocele; in oligospermia, prostatitis, vesiculitis, and colliculitis principally, sexual exhaustion, monorchism, and wasting disease; in oligonecrospermia, prostatitis, vesiculitis, and colliculitis principally, sexual exhaustion, undeveloped genital organs, cryptorchism, monorchism, and in rare cases marked varicocele; in aspermia, stricture and colliculitis.

Within the scope of this paper it is impossible to discuss at great length all of these conditions. They require a careful investigation into the history of the patient, particularly with reference to the occurrence of gonorrhea and its complications. Epididymitis and prostatitis are the most important com-

plications to investigate. Immoderate sexual life is another factor that must be considered. No examination should be considered complete without a thorough investigation of the verumontanum and the deep urethra, especially the orifices of the ejaculatory ducts, by means of the posterior urethroscope. Not only is this necessary from the standpoint of diagnosis, but because many of these cases of sterility are amenable to treatment with this instrument.

(To be continued.)

## PSEUDOHERMAPHRODITISM.\*

*Record of a Case of Bisexual External Organs of Generation, Psychic Hermaphroditism, and Gummatous Ulceration of the Genitals.*

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Ovid relates that Salamacis fell in love with Hermaphroditus, the son of Hermes and Aphrodite, and that, despairing of having her affection reciprocated, she begged the gods to incorporate her in her lover's body. Her request was granted, and thus began the strain of bisexual beings. The traditions and records of ancient peoples contain many references to hermaphrodites. Romulus is fabled to have issued an edict directing that these beings should be placed in wooden caskets and thrown into the sea, and the Christian Emperor Constantine ordered them to be executed. In the ancient Egyptian records we find hermaphrodites accused of hindering the annual overflow of the Nile by bathing in its waters. The Talmud contains an exhaustive description of them under the name of "*tumtim*"; they were forbidden to hold spiritual positions, and could be neither rabbis, teachers, nor lawyers. Even the aboriginal inhabitants of this continent noted their occurrence; and the Florida Indians enslaved them and set them to do the hardest work of the tribe.

True hermaphroditism has been very rarely recorded, and the cases so labelled are in most instances not beyond doubt. True hermaphroditism means the occurrence of the organs of both sexes and the functionally active reproductive glands of both sexes in one and the same individual. False or pseudohermaphroditism is a condition in which the external genitals are bisexual to a varying degree, but in which the reproductive glands, the ovaries, or testicles, are distinctly unisexual. This includes almost all the cases of hermaphroditism of which we have satisfactory records. The psychological condition of these individuals varies greatly, but in most cases it is distinctly bisexual.

Harking back for a moment to our student days, we recall the fact that the germinal epithelium called the Wolffian bodies appears at the side of the kidneys during the first few weeks of embryonal life. These masses are connected by the Wolffian ducts

\*Read before the New York Physicians' Association, February 23, 1907.



with the allantois and urachus, while other lateral ducts are called the ducts of Müller. Later at the eighth or twelfth week of embryonal life, the posterior parts of the Wolffian body are differentiated into ovarian or testicular tissue. In the former case Müller's ducts become the Fallopian tubes, uniting below to form the uterus and vagina, while the Wolffian ducts degenerate. In the latter case Müller's ducts degenerate, and the Wolffian ducts develop into the vasa deferentia. Hence it appears, as Virchow states, that in the first few weeks of human life there are neither males nor females; there are only *homines neutris generis*. If now with the development of one kind of germinative gland and duct the other kind does not degenerate, but persists and continues to grow, the various degrees and kinds of hermaphroditism or pseudohermaphroditism occur.

It is evident from the foregoing that the cause of this class of malformations is not a local one, as is the case with such deformities as clubfoot. It is a central germinative one in which heredity may be expected to be the main etiological factor. Facts confirm this supposition, since cases are on record in which deformities of this kind have been observed in three successive generations. As is usually the case where exact etiological data are lacking, alcohol has been blamed for its occurrence; and so has tabes, as well as a general syphilitic infection which we now know to be etiologically the same thing as tabes. Certain it is that these unfortunate individuals show in almost every case marked stigmata of degeneration, other developmental deformities, hysteria, epilepsy, psychoses, criminal tendencies, and abnormal sexual inclinations. All these are common among them.

Many of the statements made above are exemplified in the following case:

CASE I.—Betty W., negress, fifteen years old, born in New Jersey, was admitted to the City Hospital August 18, 1916, suffering from an ulcerative affection of the external genitals. She gave a history of rape by a white man some four months previously, and ascribed her present trouble to that cause. Examination showed tumefaction and extensive deep ulceration of the labia, perineum, and adjacent regions. While abnormality of the genitalia was noticed at once, no complete examination could be made at the time. The lesions were evidently gummatous in nature, and the patient was at once put on the ordinary mercury and iodide course of treatment, with appropriate local measures, with the result that in about three weeks the ulcerations were so far healed that further examination could be made. In five weeks they were completely cured with the development of extensive areas of white scar tissue marking their site. The subjoined account of her physical state is the result of numerous examinations made during the fall of 1916.



FIG. 1. Betty W.: Cast of upper teeth.

Betty is a dark negress of low intellectual type, five feet and two inches in height. Her general appearance when nude is distinctly male; the thorax is of the male type with relatively broad shoulders. There are no female mammary glands, the nipples and subjacent glandular tissue being less in size than is often seen in distinctly masculine individuals. Her muscular development is mediocre; there is no distinct panniculus adiposus; the abdomen is flat, and the hips and pelvis are small and of a definitely male type. The mons veneris is well covered with hair, which, however, does not end in a transverse line in the suprapubic region, but is continued irregularly upwards to the umbilicus. The dorsum nasi is flat and her lips are thick and prominent. Her mental faculties cannot be called subnormal for the class and type that she represents. Her voice is distinctly feminine. The genitals and mouth show abnormalities that require examination in more detail.

Mouth: The palatal vault is extremely high, and very narrow. The upper teeth are apparently placed in a double row around the arch (Fig. 1); the dental report is to the effect that this is due to a simple displacement of the upper external incisors, and an irregular displacement of the molars on both sides.<sup>1</sup>

In view of the fact that other developmental anomalies, hernia, spina bifida, hydrocephalus, polydactylia, ectropia vesicae, etc., have been frequently noted in these cases of hermaphroditism, this is hardly a true explanation of the condition.

Genitals: As the patient lies in the dorsal position on the examining table, the external genitals are so distinctly male in appearance that there would be no doubt as to the patient's sex on casual examination (Fig. 2). There is apparently a large scrotum containing the usual organs, the left half considerably larger and more prominent than the right. On top of this lies a very large penis of the usual form, but it is noticeable that the corpus spongiosum of its apex is much larger than usual in comparison with the rest of the organ. This "penile" organ in a flaccid condition is four and one half inches long, measured from its upper base at the symphysis to the tip of the glans, and the glans itself is three inches in circumference over its largest diameter. It would be an abnormally large penis in a true male, and it presents the further anomaly of the disproportionate size of the spongy glans which occupies more than half of its length (Fig. 3). When this organ is lifted up an apparently complete hypospadias is present; a urethra is represented by a deep furrow on the posterior surface of the organ, ending distally in an open but well formed meatus urinarius, and flattening out proximally into a shallow



FIG. 2. Betty W.: External genitals.

low channel which is lost in what looks like the vestibulum vaginae of the female (Fig. 4). From the glans there extend downward on either side two distinct and prominent cords representing and feeling like the corpora cavernosa; these cords remain side by side as in the male

<sup>1</sup> I owe the cast of the denture from which the photograph is taken to the kindness of Dr. J. Lowenstein, the dentist to the City Hospital.

down to the root of the penile organ, and then diverge to enclose the vestibule and are apparently lost in its walls.

The small triangular vestibulum which can be seen when the penile organ is raised contains the true urethral opening leading through a short canal into the bladder, as in the normal female. Just above it is a very small protuberance which under ordinary circumstances would be taken for the clitoris. Below the urethra is a small oval opening, evidently the orificium vaginae; it admits, though with some difficulty, the introduction of the examining finger. Posterior to this is a small but apparently normal perineum, back of which is the anus.

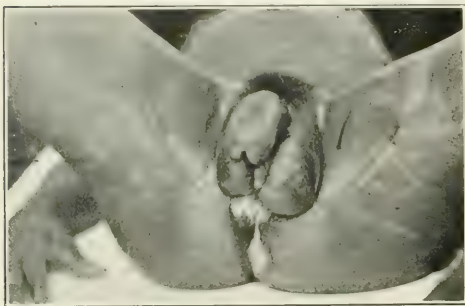


FIG. 3.—Betty W.: External genitalia; note size of spongy glands.

The two halves of the apparent scrotum are completely cleft, and when separated show a vestibule, urethra, introitus vaginae, perineum, and anus, as above described. These lateral masses look and feel rather like scrotal tissue than like labia majora; they are covered with coarse corrugated skin, and are large and hard. The left one is much larger than the right; the skin of both has been the seat of a deep ulcerative process and is greatly thickened. Most careful palpation fails to reveal the presence of any organ in these labial or scrotal masses; nor does firm pressure reveal any of the peculiar sensations which the presence of testicle or prolapsed ovary would occasion. Both masses are hard, sclerosed, and insensitive. From the upper portion of the left and larger labium or scrotum a cord can be distinctly felt, which passes upward and outward to be lost in the inguinal region; this we take to be the remains of the gubernaculum. There are no traces of the labia minora. Vaginal examination and combined rectal and vaginal examination show the presence of a rather short and narrow vagina, at the end of which a perfectly distinct though small cervix uteri is palpable. A body of the uterus could be only indistinctly felt, though repeated examinations convinced us of its presence; uterine annexa are not demonstrable.

During the six months that Betty has been in the hospital she has menstruated only once, and that scantily; the nurse in charge of the ward is positive that nothing like regular menstruation takes place with her. At the time of her entrance the labia or scrotal halves, the introitus vaginae, the perineum, and the perianal region, were the seat of extensive gummatous ulceration, which, as previously stated, prevented thorough examination for some time; and this ulceration is now represented by deep white scars which show very prominently against her dark skin, and by various indurations that remain. Dr. G. W. Child, gynecologist to the hospital, did us the favor to examine the patient. He regards the penile mass as an extra clitoris and advises its amputation. Dr. Eugene Fuller, the genitourinary attending surgeon, also examined her, and his conclusions agree entirely with our own.

Betty's vita sexualis is of interest, though of course her own statements have to be taken with reserve. Her stories of rape by a white man only some months ago as her first sexual experience do not seem likely to be true in an individual of her race and age; sexual life usually begins much earlier. In fact her accounts at different times are not in accord; since at one time she admits only one or a

few forced cohabitations, and at others describes her own sensations during intercourse. Her ascription of the genital ulcerative lesions for which she came into the hospital to the forced intercourse four months before is necessarily wrong; they were certainly gummatous, though whether due to acquired syphilis or heredosyphilis we could not ascertain. They had been present certainly for several weeks before she came to us. No evidences of recent syphilis were found, and her specific infection was either hereditary or acquired a year or several years before.

Betty says she enjoys the sexual act with males, that she does not care in that way for females, and that during intercourse the penile organ becomes erect. The first statement and the last are probably correct, for the penile organ is composed of erectile tissue, both spongy and cavernous as in the male. But her second statement is at variance with that of the nurse in the ward, who positively affirms that the patient displays no interest at all in males with whom she is accidentally brought into contact, but that she is very devoted to the females in the ward, fondling them whenever permitted and unchecked, and striving to form close friendships with them. Psychical homosexuality at all events can be stated to be present.

All things considered, we regard the case as preponderantly female because of the presence of a vagina and cervix, and in spite of the presence of a penis and of sexual impulses toward the female sex. Klebs, indeed, demands for the decision of female sex the presence at least of labia minora which are absent in our case, but this is a postulate whose validity we cannot admit. Pozzi records cases in which, though there were complete external genitalia of the female type, testicles were found to be present, and it had to be decided that the individuals were of the male sex.

That the very large erectile organ present in our case is not merely a gigantic clitoris is evident from the fact that there is a fairly large and well defined vestibule with a urethral opening in it in the position normal for the female, and that directly above this orificium there is a small protuberance which is as typical a clitoris as is seen in many normally



FIG. 4.—Betty W.: External genitalia; showing vestibule, urethral opening, clitoris, and "penile organ."

formed female individuals. The patient therefore has both a penis and a clitoris. Some memorable mistakes have been made concerning such supernumerary organs. Thus Berendes operated on what



he supposed was merely a hypertrophied clitoris; later Landes proved the amputated organ to have been the penis of a masculine pseudohermaphrodite, since he found testicles present.

That the difficulties in the determination of the real sex of these abnormal individuals may be great is evidenced by many recorded cases. Badaloni recounts that Maria Faustina, who, after ten years of life as a married woman, was sued for having intercourse with other females. The sex having been established as male by an official examination, Faustina sued his brother for a share in an inheritance that had fallen to him, and he was sued in his turn by the brother for seducing the latter's wife. Karl Menniken, after living from his twenty-seventh to his fifty-seventh year as a married man, died finally from carcinoma of the uterus. Gunkel, a girl with male sexual inclinations, was by court decided to be a male, and died at the age of fifty. The autopsy showed the presence of ovaries and tubes and a hypertrophied clitoris with a urethral opening two and a half centimetres in front of the apex of the glans. Beclard described the case of Marie Madeleine Lefort, of Paris, who had a clitoris ten and a half inches in length. She was otherwise entirely feminine and menstruated regularly. Gælius Aurelius stated that the poetess Sappho abused five women. There are numerous recorded instances of individuals of doubtful sex serving as soldiers or as teachers in schools; of two hermaphrodites marrying, and both becoming pregnant from extraconjugal intercourse, etc.

A peculiar case was that of an individual named Suydam, who voted at an election at Salisbury in 1843. The opposition protested on the ground that Suydam was a woman. An examination was ordered, and when Doctor Barry found a cleft scrotum with testicles in the sacks, it was decided that Suydam was entitled to vote. A Doctor Trocknoer protested at this decision and another commission of three doctors was appointed, who, with Doctor Barry, again examined Suydam. This second examination convinced all present that there were testicles in the cleft scrotum, and the election was therefore pronounced valid. Both the doctors and the public were much surprised, however, to find out a few days later that Suydam was the mistress of the candidate that "he" voted for, and that "he" menstruated every four weeks, and "he" subsequently married the candidate. On a third examination being made labial ectopic ovaries and not testicles were found to be present.

Fitch reports the following case:

CASE II.—H. A., twenty-eight years old, was arrested by the police for violating the law governing prostitution. On examination both male and female organs were found to be present. There was a capacious vagina four and one half inches long anteriorly and six inches long posteriorly. An os uteri with a profuse leucorrhæal discharge issuing from it, and two large and equal labia majora. Seven years previously she had given birth to a child. In the place of the clitoris was a penis which measured five and a quarter inches in length and three and five eighths inches in circumference. There was a glans, and under it a scrotum two and one eighth inches long, containing testicles. Apparently both sets of organs functioned, and the patient stated that sexual gratification was alike with both of them.

In 1896 I had occasion to observe a case which I

referred to Doctor Carl Beck for operation, and of which Doctor Beck published an account (1).

CASE III.—L. M. was baptized first as a girl, but a few years later was rebaptized as a boy. He was twenty-one years old when he came under observation, and was suffering from late manifestations of secondary syphilis. Examination revealed the presence of a penis two and one third inches long, with a glans and corpora cavernosa; the urethral orifice was indicated by a shallow depression. In the place of the scrotum were two labia majora of equal size, and containing no testicles. Between these labia was a vestibule with an apparent introitus vaginae with four orifices. The lowest and largest of these showed what were apparently remains of the hymen. A finger could be introduced into and passed up a short distance; it was therefore evidently the vagina. The two smaller lateral openings were the openings of the ejaculatory ducts; and the upper central one was that of the urethra. Since the age of fifteen the patient had had intercourse with women; he felt the sperma being ejaculated from the two lateral openings in the vestibule when he cohabited, and he stated that the penis was double its usual size when erect. While under treatment for syphilis a large and painful tumor developed in the right side of the abdomen, and symptoms of general peritonitis led to his transfer to the surgical department for operation. Examination showed that the tumor was a sarcoma of the right retained testicle; it formed a mass weighing three pounds.

The case here recorded is an addition to the bizarre array of organic and psychical phenomena that occur where the development of the sexual organs does not turn decisively either to the male or the female type of organism. It is not true hermaphroditism, which is so rare as to be almost unrecorded in the literature of the subject. But the combination of a general male type of body development, a very large penis with spongy and cavernous bodies, and distinct psychical inclination to the female sex, with a vagina, cervix, and occasional menstruation, seems worthy of record.

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154 WEST SEVENTY-SEVENTH STREET.

**Use of Pure Carbolic Acid in Chronic Middle Ear Suppuration.**—G. W. Walker (*Journal of Ophthalmology and Oto-Laryngology*, February, 1917) points out that the first consideration in the treatment of chronic suppuration of the ear is the correction of any possible cause existing in the nose and throat that might be a factor in aggravating the condition, and the careful cleansing of the external canal of any and all secretions. The existence of sequestra, or the presence of large masses of caseation or cholesteatoma in inaccessible localities does not furnish the greatest hope for the success of this method of treatment, but surprising results are sometimes obtained in those cases where surgical interference is indicated, but consent cannot be gained for the operation. Following the correction of any contributing condition existing within the nose or throat, pure carbolic acid is injected into the middle ear cavity, usually through the perforation in the drum, and in two minutes is followed by a free irrigation of the cavity with absolute alcohol. The external canal is lightly packed with gauze. A gleet like discharge, cared for by the lightly packed canal, usually follows the treatment and continues for several days, at the end of which time the ear becomes dry.



## THE VITAL STATISTICS OF OLD AGE.\*

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For the purposes of this discussion I shall set age sixty-five years as the threshold of old age. This is in general agreement with the best custom, for it is at this point that the rates of mortality and morbidity both show a decided increase. The age of sixty-five years is also the time when most superannuation allowances begin, whether such provision is made through state funds or voluntarily by private employers. According to the 1910 census there were in continental United States a little under four million persons aged sixty-five years and over. At the present time there are probably close to four and one half millions at these ages. They form 4.3 per cent. of the total population and it is interesting to note that this proportion is increasing slowly, having been 3.9 per cent. in 1890 and 4.1 per cent. in 1900. Of the total, 92.2 per cent. were white and 7.8 were colored, although all facts referring to the older ages of the colored population are subject to slight error. Thirty per cent. of the aged are foreign born. It is among the foreign born that the old form the highest proportion, nearly nine per cent., while among the native population of native parentage only 4.5 per cent. are found at these ages.

Of the four and one half million old persons, 70.7 per cent. are concentrated in the ten year period between sixty-five and seventy-four years and twenty-five per cent. more between the ages seventy-five and eighty-four. As we examine the later age periods, the numbers and proportions become rapidly smaller until in the age period ninety-five years and over there are only about 11,000 persons, forming 0.3 per cent. of the total population over sixty-five years. In 1910 there were 3,555 centenarians reported. Of this number more than three fourths were colored, which is far in excess of the relative proportion of colored in the population. This fact, combined with the results of several investigations made by census officials, shows very clearly that the stated number of centenarians is grossly exaggerated. Many pretend to have attained the hundred year mark who have no right to that distinction. In each succeeding census, however, the proportion of centenarians reported has become much smaller.

The statistics of old age given above do not apply equally to the two sexes, as is shown in the following table:

TABLE I.

NUMBER AND PERCENTAGE OF POPULATION AGED SIXTY-FIVE YEARS AND OVER IN EACH FIVE YEAR AGE PERIOD AFTER AGE SIXTY-FIVE, UNITED STATES, 1910.

Age period.	Males and females.		Males.		Females.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Total:	3,409,521	100.0	1,985,096	100.0	1,464,424	100.0
65-69	1,679,505	42.5	863,004	43.5	815,500	41.5
70-74	1,113,728	28.2	561,614	28.3	552,084	28.1
75-79	667,302	16.9	331,280	16.7	336,022	17.1
80-84	321,734	8.1	153,745	7.7	167,989	8.6
85-89	122,818	3.1	59,315	2.8	66,483	3.4
90-94	33,173	.8	11,153	.7	18,020	1.0
95 and over	10,916	.3	4,425	.2	6,521	.3

The entire group sixty-five and over is composed of about the same number of males and females. This is remarkable, in view of the fact that the pop-

ulation of the country has been increased rapidly in recent years through the immigration of males at the earlier ages. In the age period fifty to fifty-four years, there were, in 1910, 118 males for every 100 females. In the age period sixty-five to sixty-nine, there were 106 males to 100 females. Between seventy-five and seventy-nine years the relations were reversed and thereafter the number of females was greatly in excess of the number of males. After age ninety, for example, there were four females for every three males. The increasing proportion of females to males at the older ages is clearly the result of the much lower mortality of the females at the advanced ages. Table II presents some statistics of mortality by sex at these higher ages.

TABLE II.

DEATHS PER 1,000 LIVING, ORIGINAL REGISTRATION STATES, UNITED STATES, 1900 TO 1911, BY SEX AND BY AGE PERIODS SIXTY-FIVE YEARS AND OVER.

Age period.	Males and females.		Males.		Females.	
	Number.	Rate.	Number.	Rate.	Number.	Rate.
65-69 years	48.6	51.7	45.5	45.5	51.7	51.7
70-74 years	71.5	75.1	68.2	68.2	75.1	75.1
75-79 years	106.2	112.8	100.5	100.5	112.8	112.8
80-84 years	160.9	167.0	155.7	155.7	167.0	167.0
85-89 years	225.3	234.4	218.9	218.9	234.4	234.4
90-94 years	313.2	315.4	310.7	310.7	315.4	315.4
95-99 years	434.7	416.3	417.5	417.5	434.7	434.7
100 years and over	540.5	559.3	532.6	532.6	540.5	540.5

In 1914, the mortality rate in the registration area of the United States for persons sixty-five years and over was 78.6 per thousand living. In other words, one out of every twelve died in the course of the year. The situation is somewhat analogous to that found in the first year of life when one in every ten die. The probability of dying increases very rapidly with age. In the period sixty-five to sixty-nine years, during the triennium 1909 to 1911, the rate is 48.6 per thousand, or less than five per cent. Between seventy-five and seventy-nine it is 106.2 per thousand; between eighty-five and eighty-nine, 225.3 per thousand, or one out of every five persons living. Thereafter, the rates are based on such small numbers of living and dying that no significance can be attached to the figures except that the living and the dead tend to approximate one another in number. As I have already said, the death rates for the males are uniformly higher than those for females. This fact is notable throughout life, beginning with infancy and continuing without exception through all the age periods.

A more interesting picture of vitality is perhaps presented by the facts concerning the expectation of life at these older ages (Table III). According to the tables recently prepared by the Bureau of the Census, persons at age sixty-five years may expect an after lifetime of 11.6 years. This, of course, is an average and applies to no particular individual. At age seventy the expectation is decreased to 9.1 years; at eighty, it is only five and one quarter years; at ninety, only three years of after lifetime remain. Again the expectations are greater for females than for males.

TABLE III.

EXPECTATION OF LIFE IN YEARS, BY SEX, AT SPECIFIED AGES SIXTY-FIVE YEARS AND OVER, ORIGINAL REGISTRATION STATES, UNITED STATES, 1909 TO 1911.

Age.	Males and females.		Males.		Females.	
	Number.	Rate.	Number.	Rate.	Number.	Rate.
65	11.60	11.24	11.06	11.06	11.60	11.60
70	9.11	8.83	9.11	9.11	9.11	9.11
75	6.90	6.75	6.75	6.75	6.90	6.90
80	5.25	5.10	5.10	5.10	5.25	5.25
85	4.00	3.90	3.90	3.90	4.00	4.00
90	3.03	3.03	3.03	3.03	3.03	3.03
95	2.35	2.35	2.35	2.35	2.35	2.35
100	1.85	1.81	1.81	1.81	1.85	1.85

\*Read before the Medical Association of Greater New York, February 19, 1917.

The diseases and conditions which cause death at the later ages present a picture very different from that at any other age period. Certain of the causes are preeminently those of old age and certain others increase very rapidly in importance at these ages. Reference to Table IV shows that of the 245,635 deaths of persons sixty-five years of age and over that occurred in 1914 in the registration area of the United States, 49,414, or 20.1 per cent., were from organic diseases of the heart. This group of diseases stands first in the list of conditions causing death in old age. Cerebral hemorrhage and apoplexy together account for 30,887 deaths, or 12.6 per cent; Bright's disease is responsible for 28,544 deaths, or 11.6 per cent. of the total; cancer caused 20,014 deaths, or 8.1 per cent., and pneumonia, all forms, almost as many as cancer, 19,155. Together these five causes are responsible for 60.2 per cent. of all the deaths occurring after age sixty-five years. Tuberculosis, which is, of course, most prominent in the adult working periods of life, plays, nevertheless, an important part in the later periods. Thus 2.3 per cent. of the deaths are from various forms of tuberculosis. It is an interesting fact that the death rate from tuberculosis per 100,000 living at these ages is almost as high as it is in the age period twenty-five to thirty-four. Its relative importance is overshadowed only by the increased mortality from the other causes. Suicide shows its highest rate in old age, thirty-six per 100,000 living after sixty-five die by their own hand. In 1914 about five per cent. of all the deaths after sixty-five years were assigned to "senility," but many of these deaths are clearly chargeable to more definite conditions such as Bright's disease, heart disease, and arteriosclerosis. It is encouraging to find that physicians are beginning to realize the importance of making more definite statements of causes of death on their certificates as is shown by the declining rate for senility.

TABLE IV.  
DEATHS AND DEATH RATES PER 100,000 LIVING, CHIEF CAUSES OF  
DEATH AT AGES SIXTY-FIVE YEARS AND OVER, REGISTRATION  
AREA OF THE UNITED STATES, 1914.

Cause of death and sex:	Ages 65 years and over.		65 to 74 years.	
	Deaths.	Per cent. of all causes.	Deaths.	Per cent. of all causes.
All causes—total	245,635	100.0	121,672	100.0
Males	128,507	52.1	65,438	53.8
Females	120,038	48.9	56,844	46.2
Tuberculosis—all forms	5,647	2.3	4,132	3.4
Males	3,156	2.5	2,051	1.7
Females	2,491	2.1	1,570	1.3
Cancer—all forms	20,014	8.1	12,673	10.4
Males	9,070	7.2	5,898	9.0
Females	10,944	9.1	6,785	12.1
Cerebral hemorrhage, apoplexy	30,887	12.6	15,377	12.6
Males	15,375	12.0	8,139	6.7
Females	15,512	12.0	7,238	5.9
Bright's disease of heart	40,414	16.4	25,266	20.8
Males	23,524	20.3	13,650	11.2
Females	23,890	19.9	11,616	9.6
Disease of arteries	11,076	4.5	4,038	3.3
Males	6,086	5.0	2,477	2.0
Females	5,100	4.1	1,561	1.3
Pneumonia—all forms	19,155	7.8	9,276	7.6
Males	8,774	7.0	4,614	3.8
Females	10,381	8.6	4,662	3.8
Senility	2,544	1.0	1,212	1.0
Males	16,207	12.0	8,592	7.0
Females	12,337	10.3	7,275	5.9
Suicide	12,762	5.2	4,083	3.4
Males	3,623	4.5	1,069	0.9
Females	7,139	5.9	440	0.4
Senility	1,118	.5	81	.1
Males	947	.8	616	.5
Females	171	.1	108	.1

Summarizing the above facts we may say that after sixty-five years we are concerned not so much with infection or with external agencies, but rather with the breakdown of the internal organism. The vital organs, including the cardiovascular and renal systems, already impaired by normal function before the beginning of the period, are subject to rapid degeneration throughout the later years. It may very well be that these degenerative processes are accelerated by earlier infections, but the importance of the bacterial invasion is now overshadowed by the inability of the body to resist decay.

In conclusion, it may be of interest to refer briefly to a few figures indicating the economic status of persons at these advanced ages. It is estimated that one and one quarter million persons in the United States who have reached the age of sixty-five are in want and are supported by charity, public and private. This means that twenty-eight per cent. or, in other words, more than one out of every four, are dependent upon public or private charity. In Massachusetts, where an excellent census was recently completed (1915), it was found that close to 35,000 persons out of a total of 190,000 were the recipients of public or private relief. This constitutes 18.2 per cent. of the total population sixty-five years and over, but this does not include a very large number who received assistance or maintenance from relatives and other unregistered sources.

The economic disability of the aged thus seriously complicates the medical problem. This makes the interest of the community all the more acute. In some foreign countries this interest is expressed in terms of old age pensions or other provision by the state or through agencies encouraged by state subsidies. As interest in the problems of old age in our own country increases, this matter will engross our attention also and will offer for solution a problem not only of the greatest complexity, but one which will give the greatest pleasure in its solution. In the care of the aged we express our altruism in its highest form.

## HYDROCEPHALUS, SPINA BIFIDA, AND DOUBLE TALIPES CALCANEUS OCCURRING IN THE SAME FETUS.\*

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This case is reported on account of the rareness of these three deformities occurring concomitantly in the same fetus and especially on account of the extreme degree of the spinal defect, which a glance at the accompanying radiograph will demonstrate. Abnormalities, such as here presented, afford an opportunity for interesting speculation as to the embryological factors involved.

CASE.—The mother, F. L., age twenty-one years, white, primipara, gives history of no other illness besides malaria; has never had any symptoms suggestive of lues or tuberculosis; during pregnancy was in good health, suffering no fall or other injury; in July had pains which lasted all day her physician was called and she was told

\*Read before the George Washington University Medical Society.

that she was in labor; in August there was a repetition of the same kind of pains which again lasted throughout the day, at neither time, however, was there any hemorrhage. The father, D. L., age twenty-seven years, white, apparently in good health, denies ever having had any venereal disease.

The fetus, male, stillborn September 7, 1916, size of a full term child, occipital frontal circumference of head 52 cm., occipital mental circumference 46 cm., vertex coccygeal length 32 cm.; over lower lumbar region typical swelling of spina bifida; feet in position of talipes calcaneus. The accompanying radiogram shows very well the total absence of the neural arch in the lumbar region of the cord with a kyphotic bowing of the vertebral column.

As to the incidence of these three abnormalities occurring in the same fetus, I was able to find one



FIG.—Radiogram of fetus showing A, kyphotic bowing of vertebral column, and B, absence of neural arch.

case report in a survey of the literature extending back for ten years, that of Davidson's (1). His case is of interest in that an attempt is made to establish a causal connection between the mother's falling downstairs during the fourth month of pregnancy and the occurrence of the deformities. There are numerous case reports, however, of the occurrence of two of the malformations. Bruce's case (2) of hydrocephalus and spina bifida is of interest in that the child with such gross defects lived to be six years old. The frequency of the occurrence of one of these abnormalities is given as follows: E. S. Gushee, in the study of 91,600 deliveries at the New York Lying-In Hospital finds hydrocephalus in the ratio of about one

in 1,000. J. B. Bryant says that spina bifida with tumor occurs about once in eight hundred deliveries. Talipes calcaneus occurred in the Hospital for Ruptured and Crippled, New York City, forty-seven times in 2,103 cases of congenital club foot or, as will be seen, in 2.2 per cent. of the cases (3).

Concerning the etiological factors involved in the production of these malformations much has been written. There is undoubtedly a cause and effect relation between the three deformities exhibited in this case. N. Sharp (4) states that the majority if not all of the cases of spina bifida are caused by pressure of an excessive secretion of spinal fluid. The excessive secretion in hydrocephalus of course is well known. This statement of Sharp's seems plausible reasoning *a posteriori*, but I do not think that other errors in embryological development can be neglected as contributing causes in certain cases of spinal defect. Joseph Barnet (5) points out times when accidents are most likely to occur in the osseous development of the spine. He well says that "from the time that the differentiation of sclerotomatous cells begins, any pathological factor may operate to produce any degree of defect." The normal formation of the neural arch enclosing the medullary tube takes place by the growing lateroposteriorly of processes of sclerotomatous tissue from the primitive vertebrae. These processes, known as the vertebral bows, are destined to meet dorsally to form a closed membranous canal, which is chondrified at the fourth month. In the case here presented it is probable that an active "pathological factor" exerted its influence as early as the second month, causing an absolute inhibition of the growth of the vertebral bows in the lumbar region of the spine. The neuropathology resulting from the gross osseous defect of the neural canal makes talipes a sequence to spina bifida. The feet continue to maintain their intrauterine position. Very often in association with spina bifida there is even complete paralysis of the lower extremities.

#### CONCLUSIONS.

These three conditions are probably associated more frequently than my review of the literature will admit, as they are linked together on a cause and effect basis.

The extreme degree of defect shown in the radiogram is worthy of note owing to the rareness of such an occurrence.

My thanks are due to Dr. L. K. Beatty, obstetrician to the Casualty Hospital, this city, for affording me the opportunity of studying this case and also to Dr. John H. Selby for his kindness in making radiograms.

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1344 R STREET.

**Twenty-four Syphilitic Chancres in a Single Patient.**—Butte and Clément Simon (*Presse médicale*, March 8, 1917) report a case in which twenty-four chancres were found, disseminated on the prepuce and glans penis.



## LESSONS FROM THE PAST AND POSSIBILITIES FOR THE FUTURE.

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An unusual opportunity was afforded all investigators of infectious diseases the country over by an epidemic of grippé during the past year, an epidemic almost as widespread and as fatal as that of 1889-1890. The latter epidemic taught that the disease was manifested by involvement of the respiratory, the gastrointestinal, and the central nervous systems, any one system frequently showing the predominant signs of infection. It taught that those in infancy and the old age period were especially susceptible to fatal consequences from central nervous system and respiratory system involvement, and that those contagious diseases to which grippé was added later were more generally fatal whereas the reverse did not hold true. An article (1) appearing in 1890, in the light of the epidemic of last year, should be held as classical with the addition of a few observations of later epidemics. Of such observations the following three are essential: 1, the disease was especially rural; 2, the manifestations of the disease in members of a family were extraordinarily varying; 3, it stirs up previously latent infections, the deaths of the middle age period from such diseases as tuberculosis and heart, kidney, brain, and general arterial disease being advanced during and following any epidemic of grippé. There is one point to be added which as yet has only been touched upon cursorily. It is that grippé has but one rival, syphilis, in simulating all diseases. While more fully treated in continental literature, there is a wealth of literature in this country directing attention to the fact that both sporadic and epidemic forms of grippé, simulating typhoid fever, scarlet fever, diphtheria, membranous croup, measles, meningitis, encephalitis, myelitis, mumps, infectious diarrheas, and even chickenpox, are observable during and following local or general epidemics of the disease. A therapeutical observation as superficial is that the salicylates used symptomatically have shown the same specific action as against true articular rheumatism.

There are great possibilities for the application of these lessons of the past. Ample time was given in 1914 with the commencing frequency of mild cases of grippé to find that the predominant type was a streptococcus infection presenting predominant respiratory signs among the adults and infants, leaving the latter frequently as carriers with purulent nasal discharges with streptococcal impetiginous lesions of the face and head; frequently an otitis media as well became chronic. Following these manifestations, older children in affected families and neighbors' children began to have sore throats of milder type with here and there among the susceptible the skin type with varying eruptions called by some scarlatinal, that of measles, erythema contagiosa, stomach rash, and even Duke's disease. With an almost complete absence of fatalities in all age periods during the latter months of 1914 and the whole of 1915, the year 1916 presented a similar picture though more widespread through neighborhoods and with increasing

fatalities from pneumonias in the very young and later adult life. Diphtheria, measles, and scarlet fever became epidemic generally over the country, especially in rural communities. Grippé became prevalent in cities. In the late spring, deaths in the rural communities in younger children were due to septic sore throats, meningitis, and bronchitis. In the same family in an isolated community, one of these deaths was followed by the contraction of malaria by the older child and an ensuing dragging leg and a sudden septicemia in a young adult with meningeal symptoms which were recognized as due to poliomyelitis when death occurred, from the illness of the previous individual, now recognized by the leg paralysis. During and following a period of extreme humidity, typical abortive grippé cases became abortive poliomyelitis from pressure signs on the brain and cord; temporary or more permanent paralyses in the younger or older more susceptible nerve types followed. As previously manifested, among these were to be seen the pleomorphic rash, the characteristic tongue and throat, and the characteristic spinal fluid findings of grippé. The early fall saw in families adults with mild attacks of grippé and children with typhoid, scarlet fever, measles, mumps, and chickenpox which, from the onset, character of the lesions, family history, and pressure paralyses, were frequently called poliomyelitis. Deaths occurred from diphtheria in spite of early active doses of antitoxin where initial and continued cultures showed the streptococcus only and where the history, signs, and the presence of a family streptococcus nasal carrier were corroborative. During this period there has been present true diphtheria, scarlet fever, and measles. Frequently the carriers are our previous carriers with signs of an acute grippé, but carrying the characteristic signs of carriers.

The opportunity now open is to recognize control of grippé as the greatest public health problem of today. Whether a Pfeiffer bacillus, a streptococcus or, as conceivable, a pneumococcus, is the predominating organism marking the earlier milder frequent cases, we must recognize its rural incidence, its general start in adults, and from mild, family to neighborhood to community incidence recognize its numerous manifestations as primary infections leading to eventual fatal epidemics, and the fact that as a stirrer up of previously latent infections, it carries along with it later, primary cases of those other infections as well as complicates those infections secondarily. We must recognize fatalities in epidemics not clinically as diphtheria dying in spite of antitoxin, not as scarlet fever in the adult dying from pneumonia or septicemia, not as measles in the young adult dying within a few days of onset from meningitis or septicemia, not as infantile paralysis of bulbar type in spite of early convalescent serum; we must find out by better diagnosis, by better family and neighborhood history whether we are not dealing with an increasing virulent grippé, saving some lives and more disabilities from aroused previously latent infections in all age periods. Not the least of these is already recognized in the guarding against a previously latent tuberculosis becoming active. This should be extended to all acute and even chronic

infections. The degenerative processes of all ages with decreased fatalities of middle age after epidemics are included. We need further the cooperation of all specialists not only to explain the coincident increased infections of various organs, but also to prevent future carriers among their patients. The first step should be, when a sporadic case occurs, to find the one who gave rise to that infection and isolate him as long as he carries the marks of infection. The second is to guard the patient's visitor, whether layman, minister, nurse, or physician, from carrying the infection outside and contracting a mild infection himself. Eventually, when the patient is well, we must make sure by inspection that he is not a carrier. The signs of a carrier are so simple and easy to determine by inspection, that the laboratory is used only for confirmation of final diagnosis if it rests between diphtheria and grippé. A rational code for the public health requires the recognition of the danger of the live carrier of these diseases, not the one dead of the disease; as a source of infection he may by daily contact simulate a mild milkborne spread of the disease, or he may operate in different parts of a town when allowed to leave the premises for fear of his contracting the disease. Quarantine must be made a matter of isolation of patient and carrier from human and raw food contact. Insects do not enter into consideration in this class of disease. Physicians and nurses must be educated as to how infection is carried by them. The mask of the surgeon at a truly aseptic operation protects the operation wound from any nasopharyngeal infective germs that the surgeon may carry. "Shut your mouth and save your life" works both ways. Both through the press and the practising physicians we must educate the appreciative public. The Board of Health works with the ignorant public through school physicians, nurses, and teachers regarding those attending school and through district nurses and department physicians with the home life directly, as in neighborhood work and individual cases. Yet all these forces can only slightly impede the progress of grippé during its height. Extra effort should be brought to bear on the receding wave this year to render each future wave less widespread and less virulent. It seems possible that a certain diplostreptococcus may have caused previous epidemics as well as the last one. For the immediate future until a specific antistreptococcal serum can be employed the profession may be assured that the salicylate when properly used as in true rheumatism will give as good results. There is clinically a very similar picture of absence of suppuration on the part of all organs involved that there is in true articular rheumatism. Abortive cases are the rule when treated early, whether they are laryngeal, pneumonic, gastroenteric or encephalomeningomyelitic as well as the usual pharyngeal. Stock antistreptococcal bacterins have been helpful even in advanced cases.

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36 HIGH STREET.

## SPORADIC LEPROSY IN CONNECTICUT.

By M. J. MORRISSEY, M. D.,  
Hartford, Conn.

In view of the infrequency of leprosy in Connecticut, and because records of sporadic cases will be important in connection with the discussion concerning a national leprosorium in the next session of Congress, I believe a report of the following case is of interest. The patient was referred to me last fall by Dr. Thomas F. Welch, of Hartford, who first recognized the case as one of leprosy. Dr. John E. Lane, of New Haven, reported a case recently observed by him in that city (1). Another case was seen at the Hartford Hospital about three years ago.

CASE.—The patient, a man forty-four years old, born in Sicily, with a wife and six children emigrated to this country ten years ago, and had lived in Hartford ever since. He presented the tuberculous type of the disease, which began three years ago, first on the shins, later developing on the face, hands, and forearms, progressing steadily until at present his whole body is pretty well covered with tubercles, and his face presents the classical leonine expression, owing to numerous tubercles on the eyebrows, *alae nasi*, external ears, and lips. The backs of the hands are covered with mahogany colored tubercles, many of which are ulcerated, and there is also a large plateau like plaque on the roof of the mouth. Disturbances of innervation are marked in the form of hyperalgesia and analgesia, particularly on the forearms. Doctor A. B. Landry, of the Hartford Dispensary, made several biopsies, and from these sections and numerous smears from the nose, large numbers of Hansen's bacilli were demonstrated. Doctor Griswold, of the Hartford hospital, also corroborated the findings of Doctor Landry. The patient was asked to report to the city hospital for further observation and isolation, and being granted forty-eight hours to set his house in order, departed it is said for Italy.

It is a sad commentary on twentieth century civilization that leprosy patients instinctively flee the authorities, so badly have they been cared for in the past by almost all communities. The disposition of these cases is as much of an enigma as ever in states where they are only occasionally seen. Let us hope that soon there will be a national leprosorium where incarceration will mean humane treatment and sympathy for these unfortunates. Three cases of so rare a disease in Connecticut, occurring in three years in two contiguous counties, seems to me worthy of note, and also suggests the possibilities of other sporadic cases roaming around at large. This patient had been treated in different ways by various doctors, mostly for syphilis, before his condition was finally correctly diagnosed as leprosy.

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18 ASYLUM STREET.

**Tetanus Prophylaxis in Frostbite.**—A. Lumière and E. Astier (*Presse médicale*, December 14, 1916) state that among ninety cases of tetanus under observation five had followed frostbite. A special affinity of the tetanus organism for the ulcerating wounds caused by exposure to cold apparently exists. Prophylactic injections of tetanus antitoxin should, therefore, be regularly given in cases of severe frostbite.

# Editorial Notes and Comments

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*A Weekly Review of Medicine*

EDITORS

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Address all communications to  
A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

Subscription Price:  
Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MAY 19, 1917.

### THE OBLIGATION OF THE HOUR.

Having set so admirable an example by furnishing the first organized American forces to go to the front, it is incumbent upon the physicians of the United States to come forward and offer their services to the medical department of the army. As organized before the war our army required seven medical officers for each thousand combatants. This was the figure which was accepted generally by military authorities before the present war. We are told that the British forces have increased that number to nineteen medical officers for each thousand fighting men and our own army has agreed to an organization calling for ten medical men for each thousand fighters. It is highly probable that when we get into active service we shall be compelled to adopt the British ratio. This means that we shall need three or four times as many medical officers as we had hitherto reckoned on. There will be work for all. The younger men will be wanted in the field and at the front. The older men and the specialists will be wanted in the base hospitals and in the convalescent hospitals.

The navy as well as the army stands in need of medical officers. Some time ago the Surgeon General of the Navy sent an invitation to eight thousand of the men who had recently graduated from the medical schools of the better class inviting them to join the navy as surgeons. Something like eighty responses were received and eventually only forty joined the service notwithstanding the unusual attractions which that service offers.

One of the most commendable activities of the many being carried on by the General Medical Board of the Council of National Defense is the systematic organization of county committees of medical defense through which every individual practitioner can be communicated with personally. But every possible channel must be used if we hope to convince the members of the medical profession of the urgency of the need of their services which now exists. The Council of Medical Defense and the Surgeon General's office are in daily receipt of letters from physicians who speak of making preparations which would make it possible for them to volunteer some months hence. This is not sufficient; there is need and urgent need for medical men now. These men must be taught the purely military aspects of their duties before they can do really effective work. To learn these duties requires time, and time is the most important factor in this emergency. This fact seems to have been lost sight of by Congress, for, up to the present time, no provision has been made by Congress for the instruction of volunteer medical officers. For this purpose camps of instruction should be established similar to those which are now in full and enthusiastic operation for the training of line officers.

### THE TREND OF INDUSTRIAL HYGIENE.

Out of the great mass of investigations and study carried on by Federal, State, and independent workers in respect to the hygienic conditions and factors which influence the wellbeing of the worker there has finally been evolved much definite, dynamic, and constructive legislation. Yet most of the legislation has concerned itself with the extra-personal factory conditions of the worker and thus far very little with the personal hygienic conditions with which the worker must contend. The disparity between the two sides of this question was due almost entirely to the difficulty encountered in the enactment of laws affecting the hours of laborers generally and of women and children particularly.



After much conflicting litigation, however, the courts have finally decided that the regulation of the hours of labor was within the police power of the State, and that the right was no longer an open question.

The question must not be closed, however, after the hours of labor permissible have been settled. From the broader point of view every consideration entering into the physical and even mental health of the worker must receive individual treatment under industrial hygiene. Worry and high tension or high pressure labor or associated effects are quite as important as purely physical conditions. Health conditions in a trade are not satisfactory unless the psychical life of the worker has been taken into consideration and provided for. Efficiency methods that increase the output or the value of the product without regard to the worker and to the high pressure and speeding up entailed are at best only onesided. In a survey of the garment industry of New York, Schereschewsky (*Public Health Bulletin No. 71*) found that it was not entirely the sanitary conditions or the hours of labor that were the chief contributing factors in the extremely poor physical conditions among the workers, but as well the psychical stress induced by speeding up methods and uncertainty of occupation. Similarly, Robinson and Wilson (*Public Health Bulletin No. 72*) consider that speeding up does more harm to the health of the employee than any other single factor associated with the industries. While speeding up may have a temporary effect to increase the output, it reduces this finally because of the deleterious effect on the physical integrity of the worker. It has been the experience in England that the abrogation of the usual working restrictions, while at the beginning it increased the output, really reduced it in the long run, and that on the reestablishment of normal pressure the output again increased.

Uncertainty of occupation in itself tends toward a speeding up by the worker in order that he may get as much work in during the busy season to tide him over the slack period. Most of the industries are seasonal in character, and as a result uncertain. And although it would seem that at least in the unskilled trades this feature might be adjusted so as to give occupation all the year round in any industrial community, investigations have proved that this cannot be easily accomplished. The switching of workers from one trade to another to take up seasonal slack is an ideal yet to be reached. It needs further study to reveal trade adjustment possibilities and industrial legislation. Thus far Schweitzer (*Bulletin of the Department of Immigrant Aid*, Council of Jewish Women, October,

1916) found that in so far as the industries employing women were concerned trade interlocking was not feasible because of seasonal coincidence or seasonal overlapping of the trades. Schweitzer's exhaustive statistical inquiry was unable to find within the trades a solution of the periods of idleness with their hardships and dangers. On the whole busy seasons occur during the same periods, at each end of the year with a rather irregular slack period embracing the months between May and September. With the solution of the purely sanitary problems and the working periods the road for legislation in the direction of this broader phase of industrial hygiene will be quite clear.

#### WAR AND THE NATION'S HEALTH.

The forefront and the rearguard as well to the medical men! This it would seem is to be the watchword of the military campaign of our country. It is no caprice of fortune that our medical units are the first to be forwarded for actual service, or that our medical force has for long participated individually in events abroad. The practical common sense, moreover, which has the broader constructive attainment of efficiency as its purpose and responsibility must literally surround all military activity with well directed effort which shall go straight to the mark, and this chiefly through medical service. For the conservation of men is the vital element at the front, but none the less so among the unmeasured forces left behind. The health and fitness of the soldier need no brief to support their claim. There sounds, however, a timely warning to allow no neglect of the men at home, those who shall be left not for a reserve alone, but those who are to make up the ranks of active citizens in the work of the nation during war and subsequent peace.

To this end the suggestion of Mr. Rittenhouse, commissioner of Public Service and Conservation of the Equitable Life Assurance Society of the United States, reported in the *New York Times*, Sunday, May 13th, points out the magnitude of the task which the medical profession is perhaps unwittingly assuming as it enters upon its service to the Government. He calls attention to the number of rejections which will follow examinations for military service, revealing the physical unfitness of a large proportion of our male citizens. We shall have then a large body of men, young men, known to be low powered physically and thus presenting to the Government and its medical service a very practical problem. Should they not, he asks, be given that scientifically reconstructive attention which shall en-

able them to become physically fit and strong? Instead of allowing these men, whose condition will now be known, to drift into greater deterioration, should they not be redeemed to a standard of efficiency which will fill our civil ranks with able-bodied men, preserving these to the life of the nation, besides thus securing a reserve to supply the places of those who will be sacrificed at the front or who will return broken in strength?

This is surely a proposal in the direction of that plain and practical handling of things which ought to characterize preparedness for actual service and the husbanding and increasing of forces at home. Already such a spirit is at work in instruction in our schools, in the various measures which direct to public health and emphasize its claims to the individual mind, though these means do not reach the practical comprehensiveness and directed effort of the plan here suggested.

One phase of the subject must not, however, be lost sight of. It cannot be too strongly nor too often insisted upon as we harken to the common cry of the breakdown in health due to the strain of activity of modern life. War statistics themselves help to confirm what clinical experience proves to us again and again. Recognition of the benefit in health derived from exposure to the stimulating hardships and exacting service of the soldier's life lifts his protest against the reiterated theory that overwork is responsible for all the present breakdown and physical impairment. When the war shall so far have swept through our national life, in the backwash which will inevitably follow active forward participation, there must come such a renewal of interest, such a quickening of the pulse of living, as France and England have already felt, and then we shall know more of the saving health of a determined interest. Not alone the soldier at the front will realize free health giving activity, but the population at home will know it in so far as they allow themselves to expand toward this opportunity for service. By all means therefore let the medical profession find and make this wider opportunity to serve with the Government in the preservation and building up of physical ability. But let them still more train themselves and their clientage to receive the new baptism of life and health which lies for individual and the nation in this unexampled opportunity for service that lies outside themselves.

We will all then receive a full measure of the benefits born of the suffering and sacrifice of war. And no longer will it be said of us as a people that we live under the malevolence of force without direction, noise without significance, and speed without accomplishment!

## THE SALVARSAN SITUATION.

The Public Health Committee of the New York Academy of Medicine has adopted a resolution petitioning Congress to "take such means as in the judgment of Congress seem fitting and proper to enable this country to supply salvarsan or its equivalent to the medical profession." A committee of the American Medical Association has requested Congress to take steps to revoke or suspend this patent on the ground that the patent is not being operated and that the citizens of the United States are being deprived of the use of the drug by reason of the existence of the patent.

Salvarsan was invented by Professor Paul Ehrlich, working in the laboratories of the Speyer House in the Royal Institute for Experimental Therapy, at Frankfurt, Germany. The drug itself and its method of preparation were patented and the name salvarsan copyrighted. The Speyer House, an institution founded and supported by the Speyers, the German-American bankers, in memory of their mother, made a contract with the Farbwerke of Hoechst under which a royalty is paid to the Institute on all of the drug manufactured. This royalty is being used to continue and expand the work of the Institute in the experimental study of therapy.

Salvarsan was patented in all civilized countries of the world. Some time after the outbreak of the European war the English and the French governments, realizing the need for the drug, issued licenses for its manufacture, requiring the licensees to give an accounting to their respective governments regarding the amount of the drug made, presumably with a view of having a settlement between the governments and the German owners of the patents after the war. A similar preparation has also been placed on the market in Canada under the name of diarsenol. The French preparation, made by Poulenc Frères, is known as galy; the British, made by Burroughs Wellcome & Company, is known as kharsivan, and the Japanese preparation, made by Sankyo & Company, is known as arsaminol. Dr. Jokichi Takamine, who is interested in Sankyo & Company, has offered the Government to bring Doctor Hata to the United States and manufacture arsaminol under his supervision for Government use, if asked to do so.

Dr. Jay F. Schamberg and men associated with him in the Philadelphia Polyclinic Hospital undertook the manufacture of a substitute for salvarsan in 1915, which he called arsenobenzol, using the information contained in the United States patent claims. At this time the supply of salvarsan was practically exhausted, and the American representatives of the patentees on humanitarian grounds did

not interfere with the production and sale of arsenobenzol by Doctor Schamberg and his associates.

Last fall the patentees set out to manufacture salvarsan in the United States, but have been confronted with a number of unforeseen difficulties; the scarcity of the coaltar intermediates, which constitute the crude material, being only one of the numerous difficulties which had to be overcome. The American agents of Farbwerke-Hoechst have issued a statement to the effect that a laboratory is now in course of construction and they expect to have American made salvarsan on the market within sixty days. This product will be offered at a reasonable margin of profit, which will make the price probably less than it was before the war, on account of saving the thirty per cent. import duty. They will also furnish all the salvarsan which will be required by the Government at the cost of production, or, if desired, they will turn over their laboratories and processes to be operated by the Government.

### THE EYE AND ITS NEIGHBORS.

Though certain enthusiastic supporters of the focal infection theory may at times go to extremes in their zeal to prove a point, the fact remains and seems to be gathering strength that focal infection is an established phenomenon to be reckoned with in a great many pathological conditions as regards both etiology and treatment. This theory is gradually leading to a change of views in the causation and therapy of a large class of ocular affections.

The proximity of the eye to the accessory sinuses and to the nose proper, and their close intercommunication through the bloodvessels, lymphatics, and the nerves, serve as causes for the extension of diseased processes from one organ to another. Even the comparatively distant adenoids have been very properly accused of causing epiphora through abolition of nasal breathing, thus preventing the physiological evaporation of fluids from the nasal chambers. Adenoids play an important rôle in the etiology of conjunctivitis and keratitis of phlyctenular origin, as their removal seems to assist greatly in the cure of these conditions.

F. Stauffer (*Annals of Ophthalmology*, January, 1917) gives a formidable list of eye diseases which he believes are caused by focal infection from the nose and throat, viz.: "phlyctenular keratitis and conjunctivitis, sclerosing and interstitial keratitis, scleritis and episcleritis, iritis, uveitis, choroiditis and retrobulbar neuritis, and last but not least, reflex asthenopia." Though this may seem to drive the point a trifle too far, there is no doubt that a

careful and painstaking search will establish a causative relation between most of these conditions and the nearest focal infection either in the nose, especially in the sinuses, or in the mouth and throat. Reflex asthenopia claims our special attention, by reason of its frequent occurrence, and the brilliant results obtained when recognized and properly treated. We have all seen patients presenting symptoms of "pain in the eyes," such as headache, blurred vision, inability to concentrate the mind, and what not. These are usually treated symptomatically but ineffectually by the family physician, until referred to an ophthalmologist, who finds some refractive error and corrects it with glasses. These, however, afford but temporary relief, and eventually the patient is taken in hand by the rhinologist, who gives him permanent relief by correcting a deflected septum, an hypertrophied turbinate that may be pressing on the latter, or treating a chronic sinus condition.

The invasion of the nasal inflammation or infection into the eye is effected primarily by direct continuity of the epithelium of the nasal mucous membrane to the conjunctiva. A well known example of this is acute coryza, which invariably causes profuse epiphora, or, better still, the disturbance of the conducting apparatus of the tears by obstruction of the lacrimal duct, which is almost always due to diseases of the nasal mucous membranes. Influenza and diphtheria, by extending through the lacrimal duct, invade the conjunctiva of the eye frequently (Weeks). Again, the invasion may be effected through the absorption into the general circulation of bacterial toxins, and, third, through disturbances of the vasomotor balance, as by a mechanical reflex irritation from nasal deformities or pressure. Dental diseases, such as pyorrhœa alveolaris, alveolar abscess, and the like, are held responsible for a large class of ocular infections as produced through focal invasion. How the infection travels in these cases is still somewhat uncertain. Some assume that it passes through canals in the bone, subperiosteal tissue, or lymphatics (Lelongt), or venous, osseous canals and nerves (Polet); or there may be an hematogenous extension, directly through the blood (Finnof). At the same time there is evidently a selective action of the bacteria which may show a special affinity for certain portions of the eye.

All this is necessarily of great importance in the treatment of ocular infections, and it devolves upon the general practitioner, as well as on the eye, ear, nose, and throat specialist, to weigh all the above possibilities that are likely to be encountered in arriving at a diagnosis and instituting treatment.



## News Items

**Changes of Address.**—Dr. Samuel Lloyd, to 40 East Forty-first street, New York.

**Health Department Employees Offer Services for War.**—Seven hundred and fifty-seven men and 656 women employed by the Department of Health of the City of New York have volunteered for war service. Of these 145 are physicians and 417 are nurses.

**New York Physicians' Association.**—A regular meeting of this association will be held in the Chemists' Club, 50 East Forty-first Street, Thursday evening, May 24th. The paper of the evening will be read by Dr. Irving D. Steinhardt, on Sex Hygiene and Its Teaching.

**Pathological Laboratories Placed at the Disposal of the Government.**—The National Pathological Laboratories of New York, Chicago, and St. Louis, have placed their laboratories, with a trained staff of technicians, at the disposal of the United States Government during the war.

**Campaign for Albany Hospital Unit.**—The Albany Hospital and the Albany Medical College have united in an effort to form a base hospital medical college unit, and have submitted a plan which has been approved by the Government. The governors of the hospital have undertaken a campaign to raise \$300,000 for the unit, and for the tuberculosis work and general development of the hospital. The work of organizing the unit is under the direction of Dr. Arthur W. Elting.

**Kansas Medical Society.**—Dr. Charles S. Huffman, of Columbus, was elected president of this society at the annual meeting held in Salina, on May 4th, and other officers were elected as follows: Dr. T. D. Blazedel, of Hutchinson, first vice-president; Dr. E. E. Morrison, of Great Bend, second vice-president; Dr. H. E. Haskins, of Kingman, third vice-president; Dr. J. F. Hassig, of Kansas City, secretary; Dr. L. H. Munn, of Topeka, treasurer. Next year's meeting will be held in Kansas City.

**More Ambulances for France.**—Funds for forty-five ambulances for the American Ambulance Service in France were raised during a two days' fête in honor of the two ambulance units from the University of California which passed through New York last week. The American Millinery Trade have organized a branch of the American Ambulance Corps with twenty-one subcommittees and have undertaken to collect \$64,000 with which to equip two complete units of twenty ambulances each for service at the front.

**The Association for the Study of Internal Secretions** will meet in New York city on June 4th and 5th. On the first day an afternoon clinic will be held at Randall's Island by Dr. L. Pierce Clarke and Dr. Walter Timme. That night a dinner will be given at the Hotel Manhattan. Applications for tickets at \$5.00 each may be sent in to Dr. H. Eichhorn, 231 East Eleventh street, New York. A permanent organization of the society will be established at this time. On Tuesday morning and afternoon clinics will be held at Randall's Island by Dr. W. S. Bainbridge, Dr. L. Pierce Clarke, Dr. Walter Timme, and Dr. Mary Sutton Macy. Luncheon will be served gratis to all members, tickets for this luncheon being distributed at the dinner Monday night. All those desiring to be present should make application as soon as possible to Doctor Eichhorn.

**War and Medicine.**—At a meeting held at the Academy of Medicine on May 15th, some of the medical aspects of war were discussed. Colonel Charles Richard, Department Surgeon, U. S. A., clearly emphasized the seriousness of the situation and urged all physicians, especially the younger men, to come forward and offer their services. Dr. Maurice Fishberg discussed the tuberculosis problem in war and pointed out that camp life often had a salutary effect on the disease. Dr. George Bachr and Dr. Harry Plotz described their experiences in the Balkans with especial reference to typhus fever and other infectious diseases prevalent there. Colonel W. S. Terriberry, chief surgeon, N. G. N. Y., spoke of the relations of the civil practitioner to military service and pointed out that every specialist, laboratory worker, and clinician could be of service in his branch of practice.

**The Pure Food Campaign.**—At a stated meeting of the Medical Association of the Greater City of New York, which will be held in Du Bois Hall, New York Academy of Medicine, Monday, May 21st, at 8:30 o'clock, the evening will be devoted to a discussion of the campaign for pure foods being waged throughout the country. The speakers will be Dr. Harvey W. Wiley, of Washington, D. C.; Mr. Harry P. Cassidy, of the Bureau of Investigation of the New York Tribune; Mr. Alfred W. McCann, of the New York Globe, and Professor Lewis B. Allyn, food editor of McClure's publications.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, May 21st, Clinical Association, Medical Society of the Woman's Hospital, Society of Normal and Pathological Physiology, Blockley Clinical Society; Tuesday, May 22d, Academy of Stomatology, West Philadelphia Medical Association; Wednesday, May 23d, County Medical Society; Thursday, May 24th, Northwest Branch of the County Medical Society, Pathological Society; Friday, May 25th, Northern Medical Association, Neurological Society, South Branch of the County Medical Society, Medical Club (directors).

**National Associations to Meet in New York.**—The following medical societies will hold their annual meetings in New York preceding the scientific assembly of the American Medical Association: American Academy of Medicine, June 4th and 5th; American Association of Anesthetists, June 2d; American Association of Industrial Physicians and Surgeons, June 4th; American Medico-Psychological Association, May 29th to June 1st; American Proctological Society, June 4th and 5th; American Radium Society, June 4th; American Society of Tropical Medicine, June 4th and 5th; American Therapeutic Society, June 1st and 2d.

**Connecticut State Medical Society.**—The 125th annual meeting of this society will be held in New Haven, May 23d and 24th, under the presidency of Dr. Samuel M. Garlick, of Bridgeport. All meetings of the council and house of delegates will be held at the Hotel Taft, which is headquarters for the society, and the annual banquet will be held in the Palm Room of this hotel, Thursday evening, May 24th, to which delegates from other States are invited. Tickets may be obtained from the Committee of Arrangements, which is composed of Dr. F. N. Sperry, Dr. F. G. Beck, and Dr. C. W. Comfort. Complete programs may be obtained from the secretary of the society, Dr. Marvin McR. Scarbrough, 105 College street, New Haven.

**An Addition to the Academy of Medicine Planned.**—The trustees of the New York Academy of Medicine have had plans drawn for an extension to their present building on the adjoining lot, 15 West Forty-third street. These plans are now on exhibition at the academy where a notebook is provided for criticisms and suggestions from the Fellows of the Academy. It is suggested that the property at 10 West Forty-fourth street be sold to help meet the expense of erecting the new addition which will add vastly to the library space, and provide committee rooms and other facilities in which the academy is now deficient. This will be put to the vote by the trustees shortly, at a stated meeting of the academy or possibly a special meeting will be called for the purpose.

**American Radium Society.**—The second annual meeting of this society will be held in the Hotel Vanderbilt, New York, Monday, June 4, under the presidency of Dr. W. H. B. Aikins, of Toronto. The program for the morning session consists of the presidential address, a paper by Dr. F. E. Simpson, of Chicago, on Radium in Dermatology, and a paper on Radium in Gynecology, Dr. John G. Clark, of Philadelphia. The program arranged for the afternoon session is as follows: Physics of Radium of Most Value to the Radiologist, by C. H. Viol, Ph.D., of Pittsburgh; Radium as an Aid in General Surgical Practice, Dr. John M. Lee, of Rochester, N. Y.; New Instruments and Methods for the Application of Radium to the Rectum, Urethra, and Bladder, by Dr. Hugh H. Young, of Baltimore; Histological Findings in Radiumized Tissue, by Dr. Henry Schmitz, of Chicago. Each paper will be discussed and there will be a general exhibition and discussion of pictures and specimens. The meeting will be brought to a close with an informal dinner at the Hotel Vanderbilt, at 7:30 o'clock.

**Personal.**—Dr. Charles P. Gray, first lieutenant, Medical Corps, Seventh N. Y. Infantry, has been officially designated to take care of all persons requiring the services of a medical officer, whom he will be called upon to attend by the officer in charge at the State Arsenal.

Dr. Edward Wallace Lee has been commissioned a major in the Medical Section of the Officers' Reserve Corps, U. S. A.

Doctor Bainbridge, Doctor Meeker, Doctor Lynch, Doctor Foote, and Doctor Frink, of the Naval Reserve Corps, are stationed at the Brooklyn Navy Yard.

Dr. Jerome Wagner, of the Medical Reserve Corps, is stationed at Governor's Island.

Dr. Charles Brookover, of the University of Kansas, has been elected professor of anatomy and director of the department at the University of Louisville.

Dr. Christian B. Longenecker has been appointed editor of the *Weekly Roster*, which is the official bulletin of the medical organizations of Philadelphia and vicinity, succeeding Dr. A. B. Hirsh, who founded the *Roster* twelve years ago.

Dr. B. Franklin Royer, of Harrisburg, chief medical inspector of the State Department of Health, has been appointed a captain in the Medical Officers' Reserve Corps of the United States Army.

D. Judson Daland has been elected emeritus professor of clinical medicine in the Philadelphia Polyclinic and College for Graduates in Medicine.

Dr. David D. Brough, for twenty years medical inspector in the Boston Health Department, has been appointed deputy Health Commissioner, to fill the vacancy caused by the death of Dr. Thomas B. Shea.

Dr. John T. Powers has resigned as resident physician at Girard College, Philadelphia, and will be succeeded by Dr. George A. Brown.

Dr. G. E. Burget, of Chicago University, has been appointed professor of physiology in the medical department of the University of Oregon.

**The Officers' Training Camps.**—At each of the sixteen officers' training camps in different sections of the United States the student officers began to arrive on May 13th, all being required to report by midnight of May 14th. At Fort Meyer, Va., cantonments have been prepared in double rows along the south side of the parade line. Most of these are of plain pine, about thirty feet wide and 100 feet long, with tarred paper roofs. No provision is made for ventilation in the roofs or near the floor, so as to provide circulation of air. Unless this is done they will be almost uninhabitable in hot weather, but Major P. M. Ashburn, the senior medical officer assigned to the camp, has already recommended that such ventilation be provided. On arriving in camp each student officer is assigned to quarters, which consist of a single cot with bedding, fifty-eight of these being in each of the dormitories. He is enrolled, given a card of identification, and sent at once to the hospital for examination. The hospital for the camp was established temporarily in the Y. M. C. A. building. This examination was conducted under the direction of Major Ashburn, assisted by nine medical officers detailed from the Army Medical School, and twenty-five hospital corps men, detailed from the post hospital. These were ranged about one side of the gymnasium, so that the candidate moved rapidly from one to another, each individual doing only one thing. Behind a line of tables extending around one side of the gymnasium stood the hospital corps men sterilizing thermometers and syringes, and preparing pads for application to the vaccinated arms. These pads consisted of gauze held on by two strips of adhesive plaster. As the candidate entered the door of the gymnasium he found himself facing the hospital sergeant seated at his desk. The sergeant asked: "Have you had smallpox? Have you had typhoid or paratyphoid? Have you received typhoid or paratyphoid inoculation?" He noted the answers on a medical history slip which he returned with the identification card. The candidate moved on, took off his clothing down to the waist, and passed down the line from one surgeon or hospital corps man to another. One thrust a thermometer into his mouth, another took it out and recorded the reading on the medical history

slip; the next sterilized his arm, the next scarified it, the next, a medical officer, applied glycerized vaccine lymph to the scarification, a corporal covered the vaccinated spot with a gauze pad, a private sterilized a spot on the left breast with iodine, a medical officer injected half a c. c. of antityphoid serum, which had been prepared in the Medical School, and the final papers were checked up by a hospital steward and Major Ashburn. About 200 candidates who had not undergone a general physical examination before arriving were then sent upstairs where they were then given an exhaustive physical examination by Major Arthur N. Whaley, assisted by student officers of the Army Medical School. The work went on rapidly and uninterruptedly all day. During the rush hours as many as 300 men were passed in an hour's time. The men as a whole were in fine physical condition and most of them were excellent specimens of physical development. A number fainted and there were generally from one to six candidates lying on gymnasium mats on the floor recovering from faintness. So far only the two medical officers named have been detailed to this particular camp, though according to the new plan of ten medical men to each thousand, there should be twenty-five. No such number would be required at the camp under present circumstances, but presumably some additional medical officers will be detailed to carry on the additional examinations required. The same procedure was carried on simultaneously in the other fifteen camps.

**Annual Meeting of the American Medical Association.**—The sixty-eighth annual session of the American Medical Association will be held in New York city, June 4-8, 1917, under the presidency of Dr. Rupert Blue, Surgeon General of the United States Public Health Service. The House of Delegates will convene at 10 a. m., June 4th, in Hosack Hall, Academy of Medicine Building, 17 West Forty-third Street, and an open meeting of the Scientific Assembly will convene at 8:15 p. m., June 5th. The fifteen various sections will meet at 9 a. m., June 6th, and subsequently thereafter according to their respective programs. The Registration Department will be open from 8:30 a. m. until 5:30 p. m., June 4th-7th, and from 8:30 a. m. until noon on June 8th. The Scientific Exhibit, Registration Bureau, Information Bureau, Commercial Exhibit, and Branch Post Office will be located at the Hotel Astor. The sections with their respective chairmen will have their hotel headquarters and meeting places as follows: Practice of Medicine, Dr. Henry A. Christian, the Biltmore; Surgery, General and Abdominal, Dr. William D. Haggard, the Waldorf-Astoria; Obstetrics, Gynecology, and Abdominal Surgery, Dr. W. H. Longyear, the Waldorf-Astoria; Ophthalmology, Dr. William Zentmayer, Astor; Laryngology, Otolaryngology, and Rhinology, Dr. Francis P. Emerson, Astor; Diseases of Children, Dr. J. P. Sedgwick, McAlpin; Pharmacology and Therapeutics, Dr. Albion W. Hewlett, Manhattan; Pathology and Physiology, Dr. James Ewing, McAlpin; Stomatology, Dr. Arthur D. Black, Astor; Nervous and Mental Diseases, Dr. Bernard Sachs, McAlpin; Dermatology, Dr. Henry R. Varney, Manhattan, meetings in DuBois Hall, Academy of Medicine; Preventive Medicine and Public Health, Dr. Otto P. Geier, Biltmore; Genitourinary Diseases, Dr. Hugh Cabot, Waldorf-Astoria; Orthopedic Surgery, Dr. E. W. Ryerson, Waldorf-Astoria; Gastroenterology and Proctology, Dr. Dwight H. Murray, McAlpin.

The Scientific Exhibit will be housed at the Belvedere, the summer roof garden of the Hotel Astor. The Commercial Exhibit, which includes displays of 100 well known firms for inspection and demonstration, will be held in the grand ballroom of the Hotel Astor.

Clinical sessions will be held at the various hospitals on Monday afternoon, Tuesday morning, and Tuesday afternoon. Dr. Wendell C. Phillips, is chairman of the General Clinical Sessions Committee, and Dr. Samuel G. Gant is secretary. The Committee on Preventive Medicine and Public Health and the Committees on Allied Topics have arranged a series of demonstrations, moving pictures, and exhibits, to which the guests of the clinical sessions are invited. Dr. Wendell C. Phillips is chairman of the local Committee on Arrangements, Dr. Floyd M. Crandall is secretary, and Dr. Alexander Lambert is treasurer. The headquarters of the committee are the Academy of Medicine Building, 17 West Forty-third street, New York.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By LOUIS T. DE M. SAJOURS, B. S., M. D.,  
Philadelphia.

(Continued from page 899.)

Among the instances of increased drug cost resulting from the war, one of the most burdensome has been that relating to the belladonna group of drugs and their alkaloids. In the case of belladonna leaves, scarcity was especially great in the latter months of 1914, and since that time the price has receded about one third and remained fairly steady. This is an exception, however, in the group referred to, and even in the case of belladonna root, a rise to about three times the price of October, 1914, has taken place. Hyoscyamus, obtained from England and Germany, has risen to a price about fifteen times that prevailing before the war, the English supply having given out soon after the start of the conflict. Stramonium, the common Jimson weed, however, has remained relatively inexpensive, increasing in price but slightly as a result of the war and being even now one fourth cheaper than in the closing months of 1914.

Turning to the alkaloids of this group, we find atropine sulphate selling at several times the price already high in 1914. Hyoscyamine sulphate, on the other hand, has declined since that period, and is obtainable at a cost about one third that of the corresponding salt of atropine. Scopolamine (hyoscine) hydrobromide has receded less from the high prices of the fall of 1914 than hyoscyamine sulphate, and is now but one fourth more expensive than atropine sulphate. The hydrobromide of homatropine, the rapidly acting mydriatic and cycloplegic, has likewise risen in value because of the war, and certain of the related unofficial mydriatics are now practically unobtainable.

In considering the possibilities of expense reduction in relation to this group of drugs, one outstanding fact to be noted is the relative cheapness of stramonium as compared to belladonna, the leaves of the former being at present only about one seventh as costly as belladonna leaves. The difference between the two drugs as regards official alkaloid requirements is but slight—0.3 per cent. total alkaloids in the case of belladonna and 0.25 per cent. in stramonium. As for the nature of the alkaloids, evidence from various sources serves to show that the drugs are also practically, if not quite, identical in this respect. In both the chief factor in the pharmacological action consists in a mixture of atropine and hyoscyamine in varying ratio. Less conspicuous in its action is the additional small proportion of scopolamine (hyoscine) contained in each drug. According to some, stramonium at times contains a larger ratio of scopolamine than belladonna, but as a matter of fact the amount of it in each is so small as to be practically inconsequential,

except perhaps in a few cases in which the least possible trace of a sedative action might be considered prejudicial. According to Kraemer, three fourths of the alkaloidal content of hyoscyamus is hyoscyamine, thus leaving but one fourth to be credited to scopolamine. Since both stramonium and belladonna are known to be less sedative than hyoscyamus, the ratio of scopolamine in each is manifestly even less than in the latter drug. One fourth of the alkaloid content of a ten minim dose of tincture of stramonium would be but 1/1600 grain, and since the scopolamine actually makes up considerably less than one fourth of the total alkaloidal content of stramonium and belladonna, it will readily be seen that differences in scopolamine content between these two drugs cannot be great enough to have any marked practical bearing. The similarity of these agents is also shown by the proposals made at various times to dismiss stramonium from the Pharmacopoeia on the ground that it is superfluous. As early as 1892, Hale White stated: "There is no reason why stramonium should not be employed for the same purposes as belladonna." In substituting the stramonium preparations for those of belladonna leaves, the slight difference in percentage of total alkaloids may be worth noting; the dosage of stramonium should, to be precise, be made one fifth larger than that of belladonna.

Hyoscyamus at present prices, and even under ordinary conditions, is disadvantageous from the expense standpoint. Weight for weight, it is now about twenty times as costly as stramonium, and taking into account the difference in alkaloid percentages—0.065 instead of 0.25 per cent.—about eighty times as costly, dose for dose. A very inexpensive yet efficient substitute for hyoscyamus could probably be made up by carefully incorporating a small amount, say 0.05 per cent., of scopolamine with stramonium in its preparations and diluting the latter enough to correspond with the normal alkaloidal strength of hyoscyamus. Even at pre-war prices such preparations would be several times cheaper, dose for dose, than the true hyoscyamus galenicals.

The increased expense now attending the use of atropine could at times doubtless be avoided by its use in the form of the crude drug preparations, especially those of stramonium. Atropine still embodied in this drug is only about one tenth as expensive as atropine sulphate. Substitution of tincture of stramonium by the mouth for atropine by the mouth would in many instances be feasible, as would also at times the exhibition of stramonium to keep up an action begun by hypodermic injection of atropine. Absorption of the crude drug would be increased by its administration in free dilution and, where possible, on an empty stomach. In case of a marked scarcity of atropine, hypodermic injection of the fluid extract of stramonium (N. F.), suitably diluted, might become expedient.

(To be continued.)



**Syphilis of the Nervous System.**—John A. Fordyce (*Journal of Cutaneous Diseases*, October, 1916) is of the opinion, as the result of studies carried on in his clinic, that twenty to twenty-five per cent. of all syphilitics are candidates for nerve syphilis. The standards adopted for the diagnosis of nerve syphilis are: the amount of cells in the spinal fluid over five per cubic centimetre; globulin content in the same as demonstrated by the Pandy test; positive Wassermann reaction in the spinal fluid in amounts of two c. c. of fluid; and, lastly, the color changes elicited by the Lange test.

The best treatment for nerve syphilis is prophylactic; that is, a vigorous and thorough treatment of secondary lues, using both salvarsan and mercury. It has been learned that when salvarsan alone is used, neurorecurrences are apt to follow. It is a good plan to examine the spinal fluid at the end of the treatment of secondary lues; and one year after the blood Wassermann has been negative to give a provocative injection of salvarsan and then examine the spinal fluid. The course of procedure recommended by the author is as follows: In patients with a negative blood and a positive spinal fluid, give a provocative salvarsan injection and test the blood at stated intervals. If the blood remains negative, subarachnoid treatments may be given at once. When blood and spinal fluids are both positive, two or more injections of mercury should be given, followed by two or three intravenous salvarsan injections, then followed by intraspinal injections as well as intravenous injections of salvarsan.

The intervals between the treatments are regulated by the degree of reaction produced in the patient. When subdural injections are well borne, they may be given in a series of four to six, one to two weeks apart, with a rest period of four to six weeks. Frequently tabetics are met with in whom the treatment cannot be given any oftener than once a month. The method of intraspinal medication used consists of the direct addition of salvarsan to human serum. It is important to obey two laws in this therapy. First, there must be absolute asepsis, and second, the salvarsan solution should be nearly neutral. The blood is obtained from a vein of the arm, it is centrifugated, the serum pipetted off; and then centrifugated again to insure complete removal of any red cells. To eight or ten c. c. of this serum, 0.00005 to 0.0005 gram of salvarsan is added. The mixture is incubated at 37° C. for forty minutes and is inactivated at 56° C. for a half hour.

A safe dose for tabetics is 0.00005 to 0.0001 gram; while a safe dose for paretics is 0.00025 to 0.0005 gram. The reaction following the intraspinal method depends upon the medicinal substance employed, and also upon the trauma of the injection. The untoward symptoms following the puncture are headache, which may last for several days, and rarely vomiting. The symptoms referable to salvarsan are in tabetics an exacerbation of the lancinating pains. Among the more severe symptoms are bulbar involvement, irregular breathing, and loss of consciousness. The results of this treatment may be classified as biological and clinical. Of the laboratory findings the increased cell count becomes normal the earliest, then comes the Wassermann reac-

tion and lastly the globulin increase. The clinical results may be summarized as follows:

In active progressive tabes the lancinating pains are ameliorated or disappear entirely. The ataxia is markedly decreased and in some cases made to disappear. Disturbances of sensation are positively or completely cleared up. The general condition of the patient is improved. There has never been noted a return of the absent reflexes.

The results in paresis depend upon the type. In that type where the most marked changes are in the meningovascular structures, with a high cell count, a rather sudden onset, and marked mental disturbance, good results may be obtained. Where the parenchymatous tissue is chiefly involved, with low lymphocytosis and an insidious onset, only temporary improvement can be expected with certain relapse.

**The Symptomatology and Treatment of Arteriosclerosis.**—Willard C. Stoner (*American Journal of the Medical Sciences*, May, 1917) accepts Allbutt's clinical classification of hyperpiesia, or high pressure arteriosclerosis; involuntary or crescent (senile); and infectious or toxic arteriosclerosis. Advanced arteriosclerosis has no treatment, but the state of high blood pressure, which may be regarded as presclerotic, has. Blood pressure is a very changeable thing; its determination can never be made definite; our means of estimating are only approximate at best; it is a minor consideration, and the condition of the patient as a whole is our chief concern. The patient must be taken from all strenuousness of life and disciplined in a régime which is favorable for improvement, for the problem is one of management rather than of a particular drug. The diet must be restricted, particularly in respect to meat, condiments, stimulants, sugars and fats. If obese much relief may be given by a reduction of weight. Overeating is a factor of no small importance in producing cardiovascular disease. The problem of the dietary is more or less an individual one, but careful management with proper exercise, the best of which is walking, will do much for early cases of hyperpiesia. In more advanced cases a period of rest in bed is essential, with warmth, passive exercises, and baths, while a mild and equable climate with moderate elevation is desirable. Excessively hot baths are generally not beneficial; the desirable one seems to be neutral at about 33° or 34° C., gradually brought to 40°. Nearly all baths affect the cardiac mechanism and should be given cautiously. The advantages of treatment, aside from careful regulation of the diet, encouragement of elimination, and gradation of activity, are probably overestimated. Authors disagree on several matters, such as the value of warm or hot baths, and the use of high frequency currents. The radium bath is claimed to lessen the viscosity of the blood, encourage uric acid elimination, increase diuresis, and so lower the blood pressure. Electric light baths should be used in the same careful way as tub baths. The consensus concerning electricity seems to be that the high frequency current lowers peripheral resistance and so the blood pressure. The liquid intake depends on

the individual, but generally should be restricted in the hyperpnetic case to one, one half, or two litres daily. Venesection is of value in high tensioned cases, is of value in warding off a crisis, and may be repeated at intervals in certain selected cases; it is contraindicated in cases of high pressure with kidney involvement when there is a degree of anemia, and in the decreescent form with low blood pressure. As long as we are unable to prove that high pressures may be due in part at least to toxin irritating the vasomotor centre it seems rational to give vasodilators, such as nitrites, even over an extended period of time, if pressures are lowered and the patient is made more comfortable without untoward signs, such as edema or a failing myocardium. Nitroglycerin in drop doses has a definite place in relieving cardiac or anginoid pains. We should watch not only the systolic but the diastolic pressure when administering such drugs. Iodides have value if given intensively over a period of time with alkalies; in what way this result is obtained is uncertain. For a failing heart no drug is superior to strychnine. Aspirin and sodium salicylate have some value. When unable to relieve peripheral resistance against a failing heart, with the diastolic pressure rising and the pulse pressure lessening, digitalis is indicated. At best drug therapy is only an adjunct in the treatment in these cases. The principle to be adhered to is to treat not the sclerosis, but the morbid changes. In the senile type there is nothing to treat. On general principles tonics are indicated, and if hyperpiesia should develop the cases should be treated as the hyperpnetic.

**Acute Poliomyelitis.**—G. Wilse Robinson (*Journal of the Kansas Medical Society*, March, 1917) contends that patients should be isolated during the acute primary stage of the disease just as for other infectious diseases. The mucous membranes of the nose and oral cavity should receive careful attention to prevent the spread of the virus and all discharges from the nose or mouth should be carefully caught and disinfected at once. For such disinfection a 0.2 per cent. solution of potassium permanganate, chlorine water, or peroxide of hydrogen are satisfactory. The fever during the acute stage should be controlled by hydrotherapy and the same measures will suffice largely for the control of convulsions if present. For the latter lumbar puncture may also be required, combined with extreme quietude. Serum treatment should be begun at once if the patient is seen early or if the paralysis seems to be progressing. Drug treatment is largely symptomatic and the administration of aspirin is often followed by considerable relief from the pain. In some cases morphine may be needed. Hexamethylenamine has been advocated, but its value has not been proved. If used it should be given in large doses and then has the disadvantage of being likely to cause hematuria. Another method of controlling the pain is the placing of the affected parts in suitable positions of rest and maintaining them thus by suitable means. Prolonged rest in the early stage is of the utmost importance, along with the maintenance of proper posture. Too early attempts at movement may light

up the disease and cause a relapse. After the passage of the acute stage the treatment should resolve itself into the proper support of the damaged muscles and their reeducation. For the support of the extremities the most satisfactory means is the fitting of a celluloid splint, which can be removed for the purposes of reeducating the muscles and restoring their functions and power. The patient should be up and walking as soon as possible, aided if necessary by a suitable splint, after the passage of the acute stage. This helps in the restoration of function and prevents atrophy from disuse of the normal muscles.

**Treatment of Chronic Specific Urethritis.**—S. R. Thompson (*Charlotte Medical Journal*, April, 1917) divides the treatment into dietetic, hygienic, and constitutional. Liberal diet, plenty of water, and free evacuation of the bowels daily are of the greatest importance. Of the urinary antiseptics, urotropin, methylene blue, salol, benzoic acid, and the benzoates are the best. Vaccines, with the exception of autogenous vaccines, are of little value, and phylacogens are still less scientific. Locally, the use of sounds and irrigations with potassium permanganate, silver nitrate, bichloride, or other germicidal agents is advised. The high frequency electric apparatus and local endoscopic applications have been abandoned. If the seminal vesicles are involved, they should be emptied every third to fifth day. If the symptoms fail to subside under this treatment, one of three surgical procedures should be performed: 1. The vas deferens should be opened and five c.c. of a five per cent. solution of collargol or argyrol injected into the seminal vesicle; 2, seminal vesiculectomy; 3, seminal vesiculotomy.

#### **Treatment of Facial Wounds by Autoplasty.**

—H. Morestin (*Bulletin de l'Académie de médecine*, March 13, 1917) points out that wounds of the face by war missiles often result in such loss of tissues that surgical repair seems at first almost impossible. Although the early unfavorable impression is partly removed during healing, the final scar formation generally gives rise to startling and complex deformities. In spite of marked disturbances of the soft tissues, however, Morestin finds the actual loss of skin to be slight or even nonexistent. Restoration of the lips and cheeks can be obtained with relative ease providing certain principles are followed. The first of these consists in a very careful excision of all scars. Efforts are made to find and dissect up all tongues of skin and all irregular flaps carved in the tissues at the time of injury. Softened by removal of all scar tissue, they are returned to their normal places, a result not to be expected immediately but secured by repeated attempts at restoration, if necessary, the whole procedure being rather different from ordinary forms of autoplasty and being compared by the writer to the solitaire card games. In many cases such an autoplasty, carried out in one or more sittings, is sufficient to insure adequate restoration, though sometimes a small flap autoplasty is required in addition. Other restorative procedures such as transplantations of fat, cartilage, or bone may also be necessary.

**Head Colds from the Standpoint of the Internist: Their Results and Treatment.**—Thomas F. Reilly (*American Journal of the Medical Sciences*, May, 1917) says that there is no sound basis for believing that any of these colds may be aborted, although many have fond delusions of so doing. When the patient comes on the first day of the disease diet should be restricted, he should get up from the table hungry, although he is apt to have a large appetite. Purgation early and often should be practised during the first few days, not simply one cathartic at the commencement, but one repeated on alternate days if the cold does not clear up promptly. A hot mustard foot bath is particularly valuable on the first and second day of the cold. Tobacco must be interdicted for a few days at least, and alcohol is absolutely contraindicated. A hot lemonade is quite as efficacious to induce a sweat and is safer. Reilly has never seen any good follow the use of quinine, and has seen it do harm. He doubts if the benefits given by Dover's powder equal its disadvantages. Rhinitis tablets alleviate the most prominent symptoms of coryza for the first day or two and then the disease runs its course. To obtain good results they must be given within the first twelve hours and repeated every half hour or so until the physiological result is produced. It is useless in the moderate and descending types of the disease. When the profuse watery discharge is very troublesome a powder consisting of two drams of bismuth subnitrate, one dram of starch, one half dram of gum arabic, with two drams of menthol, or ten grains of antipyrin may be snuffed up, and usually gives considerable relief. He has not been successful in the use of vaccines. Most patients do not consult a physician until after the second day. The same hygienic advice should be given, and treatment begun by cleansing the nose with an alkaline spray under fifteen or twenty pounds air pressure. If there is much headache or face pain an adrenalin spray of one to 10,000 may be employed, but this is not usually necessary. Ordinarily after the alkaline spray the following spray is used:

R Acidi carbolici, ..... ℥x;  
Iodine, ..... }  
Kalii iodidi pip, ..... āā gr. vj;  
Aque menth., ..... āā ℥ss;  
Glycerini aquæ, ..... q. s., ad. ℥ijj.

This is sprayed until it reaches the throat. After this an oil spray of the following composition is employed for about ten minutes:

R Ol. cloves, ..... ℥x;  
Camphomenthol, ..... gr. xxiv;  
Ol. pini sylvestris, ..... ℥xx;  
Liq. petrolati, ..... q. s., ad. ℥ijj.

These measures are not expected to destroy all of the germs, but to lessen their virulence and to provide drainage. When the infection has reached the bronchi expectorants alleviate symptoms and hasten recovery. If the nose is treated in addition in the way outlined the patient recovers in a little over half the time required when only internal medication is employed, and is able to attend to his business during the attack.

Reilly finally emphasizes the following conclusions: 1. That there is a special type of head cold which precedes by from four to eight days most, if

not all, cases of so called muscular rheumatism, lumbago, etc., and that this is more satisfactorily treated by treating the original site of infection in the nose than by the usual methods. 2. That bronchitis following such head colds is likewise more satisfactorily treated by taking care of the original source of infection in the nose. 3. That this field of nasal treatment is quite as much the province of the internist as the use of the stomach pump in gastric lavage. 4. That a fair proportion of postoperative pneumonia is due to infection of the patient by the anesthetist who is suffering from a severe head cold himself.

**Pituitary Extract in Pregnancy and Labor.**—Kennedy C. McIlwraith (*Canada Lancet*, April, 1917) considers that pituitrin is of little service in inducing labor, and the further the patient is from term the harder is the induction of labor, although the susceptibility to the drug varies greatly in different women. During labor its effects are satisfactory, especially in multiparæ where there is no obstruction and where there is uterine inertia, but in primiparæ it frequently has the same effects as using the forceps prematurely, and in contracted pelvis its action is disastrous. When it is used to hasten the expulsion of the placenta the danger of causing retention must be borne in mind, and as a post partum measure its use is not as satisfactory as that of ergot. It acts well in labor when used in conjunction with morphine and hyoscine. Where the susceptibility of the patient is not known the initial dose should be small, beginning with one fourth c. c., increasing if necessary. While its use would seem to be risky in the presence of high blood pressure McIlwraith has never seen any untoward effects from it, and the serum rash which sometimes follows its use usually yields readily to saline purgation.

**Treatment of Anorectal Varices in Pregnancy.**—F. Martinez Suarez (*Revista de Medicina y Cirugia Practicas*, February 14, 1917) divides the treatment into hygienic and curative. As to prophylaxis he advises the taking of olive oil before each meal and the use of medicated toilet paper after defecation followed by gentle washing with warm water and absorbent cotton. Too long walks must be avoided and when sitting the patient must try to rest the weight on one buttock rather than on both. If there is prolapse of the hemorrhoidal masses at defecation they should be bathed with a boric or carbolic solution and reduced with the aid of sterile gauze and the left lateral position assumed on the bed for twenty minutes. Irreducible masses must be treated by rest in bed with the application of very hot fomentations of thymol one in 1,000, boric acid two per cent., or formal one in 1,000, followed if pain persists by the following ointment:

R Zinci oxidi, ..... 2.0;  
Adrenalin 1 in 1,000, }  
Orthoform, ..... āā 1.0;  
Stovaine, ..... }  
Petrolati, ..... 30.0.

Careful injection of four or five minims of a one per cent. solution of phenol in glycerin may cause shrinking of the varices, while in severe cases dilatation of the sphincter may be required to relieve the strangulation.



**A New Method of Reducing Fracture of the Clavicle.**—Giovanni Onano (*Gazzetta degli Ospedali e delle Cliniche*, February 7, 1917) describes a new method of treatment which consists in carrying the hand of the affected side over to the shoulder of the opposite side and fixing it there with the elbow flexed at an acute angle. Fixation can be maintained by any simple bandage without the discomfort or complication of adhesive straps or other old method. The raising of the arm of the affected side with acute flexion of the elbow abducts and rotates externally the head of the humerus and provides the extension of the fragments which is so necessary and so difficult to obtain by other methods. Other advantages are complete reduction, immediate relief of pain, absolute immobilization, absence of interference with callus formation, while its simplicity makes it suitable for any emergency.

**Treatment of Epistaxis.**—R. A. Black (*Medical Summary*, March, 1917) advises the preliminary application of ten per cent. cocaine with adrenalin which may alone arrest the hemorrhage or at least allow of further inspection and treatment. Twenty per cent. silver nitrate solution may then be tried, followed, if necessary, by the galvanocautery or chromic acid, pure carbolic acid or tincture of iron. If these measures fail to stop the bleeding, cocaine should be applied and the nose should be packed, preferably saturating the gauze with petroleum or other ointment to prevent sticking. This packing is removed in twenty-four hours and repeated if necessary. Morphine hypodermically may be required to quiet the patient and the circulation, while an infusion or enema of saline is useful if the hemorrhage has been severe. If the epistaxis is due to a general disease that must be treated and measures taken to increase the coagulability of the blood such as the administration of large doses of calcium lactate or the injection of horse serum or of coagulose.

**Treatment of Pyelitis in Women.**—Charles H. Harris (*Texas State Journal of Medicine*, April, 1917) recommends preventive treatment, especially during pregnancy. The urine should be examined frequently and all vesical irritation should be noticed, as the bladder is often a signal station for trouble above in the urinary tract. In the mild or chronic cases the causative element should be removed. These may be stones, twisted ureters, or strictured ureters. The pelvis of the kidney should be irrigated three times a week, and autogenous vaccines should be administered. Acute cases may require opium. Drainage, however, is the essential procedure. The ureter should be catheterized and the pelvis flushed with either of the following silver salts: cargentos, four per cent.; argyrol, four per cent.; silver nitrate, one per cent. Urogenous cases require attention to the bladder, and, if cystitis exists, the bladder should be irrigated twice daily with mild boric acid solution or potassium permanganate, followed by instillation of argyrol. Where the kidney is threatened a loin incision should be made and the pelvis opened for continuous drainage. If the infection is hematogenous, the tonsils, teeth, and accessory nasal sinuses should be examined.

**Serum Therapy in Acute Poliomyelitis.**—George Draper (*Journal A. M. A.*, April 21, 1917) draws attention to the great variability in the severity of this disease in different epidemics and in the same epidemic but in different localities and to the fact that it is becoming more and more evident that a very large proportion of patients never manifest paralysis. These two facts make the determination of the value of any therapeutical measure a matter of great difficulty, and statistical methods are of very little value. An effort is made by the author to arrive at some conclusion with regard to the value of the use of human serum from recovered cases on the basis of the study of each individual case. The result seems to indicate that the early administration of such serum is of some value in preventing paralysis in those types of the disease in which this is known to be prone to develop. There seems to be very little reason to believe that serum has any material value when given after the very earliest stages of involvement of the central nervous system. It is also possible that the injection of serum in any but comparatively small amounts, and always such as are less than the volume of spinal fluid withdrawn, may tend to provoke paralysis through its capacity to set up marked meningeal irritation and congestion. The analysis here presented, though very careful and covering a fairly large number of cases, is regarded as quite inconclusive.

#### **X Ray Treatment of Meningoencephalic Fibrous Deposits Following Cranial Traumatism.**

—G. Bonnus, M. Chartier and F. Rose (*Bulletin de l'Académie de médecine*, March 27, 1917) state that they divide their cases into three groups. The first group comprises patients suffering from pain at the site of a trephining operation, radiating to neighboring regions or extending over the entire half of the cranium, with reflex hemifacial vasomotor disturbances, dizziness, dazzling, pupillary inequality, etc., all referable to irritation of the dura. Cases of pain in the absence of operation, e. g., following tangential injuries or simple contusions, are also included. In three out of fourteen cases in this group the symptoms disappeared after x ray treatment, and in all the remainder they were markedly improved, especially as regards the localized or radiating pains and the congestive phenomena. The second group includes five cases of Jacksonian epilepsy in which appropriate surgical treatment had already been applied without result. In one purely motor and one purely sensory case, as also in a case of reflex epilepsy, the treatment was completely successful; in two combined sensory and motor cases the motor disturbances disappeared completely and the sensory almost completely. The third group comprises two cases with marked spastic conditions due seemingly to irritation of nerve centres. In both the results were very favorable. one patient, immobilized in bed for two years, being enabled to walk, while in the other, spasticity was considerably lessened. The x ray technic was the same in all cases, a one millimetre aluminum filter and hard rays being used, with a dose of one to one and a half H. units, calculated for a depth of two centimetres.

# Miscellany from Home and Foreign Journals

## Relation of Eustachian Tube Obstruction to Local and Systemic Conditions and to Hearing.

—(Larence E. Ide (*Laryngoscope*, January, 1917) states that when Eustachian obstruction accompanies an attack of influenza, ulceration of the lining of the tube often occurs. If left uncared for, cicatricial tissue, during the process of healing, results in contraction of the lumen of the tube. The presence of adenoids determines an increase in and swelling of the lymphoid tissue surrounding the proximal end of the Eustachian tube, with consequent closure of the tubal opening. Perhaps fifty per cent. of all adults have remnants of adenoids, which in many cases swell and harbor infection whenever an attack of "cold" or influenza supervenes. Hypertrophied or diseased tonsils are important offenders. Directly or by continuity of tissue and through lymph vessels and blood vessels, as well as reflexly through nerves, pathological conditions of the teeth and jaws tend to affect the Eustachian tubes. Of all the cases investigated by the author, sixty-five per cent. were associated with nasal obstruction and diseases of the teeth, tonsils, and adenoids. The writer believes it possible to find the cause of Eustachian obstruction outside the ears in a large percentage of cases, and that the condition proves rebellious to treatment only because neighboring structures, as above mentioned, are involved.

## Periodental Gingivitis in Vincent's Angina.

—Frank E. Taylor and W. H. McKinstry (*British Medical Journal*, March 31, 1917) have examined about 300 cases of ulceromembranous inflammation of the mouth and have found the fusospirilliform organisms of Vincent in all. In addition to the diffuse form of inflammation due to this organisms, which has been described by Vincent, the authors noted the frequent occurrence of cases in which the infection was limited to the gums close to the necks of the teeth and have come to regard this as a clinical entity. In a series of seventy cases of Vincent's angina examined this marginal gingivitis was found in every case, while in 150 cases of this form of marginal gingivitis the characteristic lesions of Vincent's angina were present in only seventy. The histories of such cases showed the same sequence of events as characteristic of all. First there was infection of the gums and later involvement of the throat. The infected gums often caused no symptoms other than more or less free bleeding when the toothbrush was used. This often lasted for days or weeks before tonsillar or pharyngeal infection developed, and in some cases even for months or years. The condition of the gums was often confused with pyorrhea, though it differed from it in never showing any pus cavities or pockets and in yielding rapidly to treatment. In some cases there was a history of frequent attacks of sore throat and examination of these showed old scars in the tonsils or on the pharynx. The diagnosis of this form of gingivitis was made by the results of microscopical examination of smears.

**Variations in Pulmonary Resonance.**—George C. Shattuck (*Boston Medical and Surgical Journal*, April 26, 1917) states that slight differences in pulmonary resonance below the clavicles in front and at the apices and bases behind, which are common in chests that can properly be regarded as negative from a clinical standpoint and ordinarily are disregarded, are important when, for other reasons, the existence of pulmonary disease is suspected. Under such conditions they may lead the examiner to believe the disease is more extensive than it is, or they may be a factor in causing him to make a diagnosis of phthisis when it does not in fact exist. The variations of resonance discussed here are slight, and the importance of well marked dullness for diagnosis is not in question.

**An Anomaly of the First Rib.**—A. Clerc, R. Didier, and J. Bobrie (*Bulletin de l'Académie de médecine*, March 27, 1917) report the case of a man of thirty-one years exhibiting a swelling below the left clavicle, with slight functional inefficiency of the left arm dating back to childhood, and neuralgic pains implying pressure on the brachial plexus. A cervical rib was suspected, but x ray examination showed a long, thin rod of bone passing obliquely outward from the spinal column and terminating behind the middle of the clavicle. This bone, though straight, was attached to the first dorsal vertebra and, as the operation showed, was fixed at its anterior pointed end to the second rib by fibrous tissue and small mass of muscle tissue. The case is held to show that it is frequently impossible for the practitioner to distinguish a cervical rib from a first rib anomaly, the pressure disturbances being the same. Even x ray examination is not always sufficient. Operative treatment is, however, indicated in either case.

**Epidemic Influenza with Throat Signs.**—A. Geoffrey Shera (*Lancet*, March 24, 1917) states that he studied some 500 patients during an epidemic of influenza and in every case observed characteristic throat signs. In the initial stages there was a vesicular eruption on the soft palate, fauces, and posterior pharyngeal wall with erythema of the mucosa. These local phenomena were generally followed by neuralgias or other nervous manifestations. The clinical types of the disease were exclusively the catarrhal and nervous, with no cases of the abdominal form. Some complication occurred in forty-two per cent. of the cases, the commonest having been some form of neuralgia, which occurred in seventy-five per cent. of the cases with complications. Vertigo, seventh nerve paralysis, melancholia, and persistent sweating comprised most of the remaining complications. From a careful analysis of the conditions seen the author concluded that the influenza toxin seemed to spread centripetally along the sensory nerve fibres after attacking the pharyngeal mucosa. Its spread might lead to nothing more than neuralgia, or might continue and involve the central nervous system.



**The Follicular Type of Eczema Seborrhœicum.**  
—William B. Trimble (*Journal of Cutaneous Diseases*, January, 1917) describes a new clinical type of this affection. It occurs in both localized and diffuse form. The localized form occurs commonly on the chest and upper back. The lesions occur in small patches, brownish red in color, and made up of a great many inflammatory follicles close together. The follicles are slightly pink and enlarged with dilated mouths; in each opening and around it, is seen a piling up of small greasy scales, making a tiny cave. Over the whole area the evidence of seborrhea is apparent. In a case of long standing the skin is rough to the touch, and in a mild sense takes on the nutmeg grater appearance. The author has used acne vaccine in the treatment of a few of these patients with apparent benefit.

**Earlier Diagnosis of Pulmonary Tuberculosis.**  
—J. Howell Way (*Southern Medical Journal*, April, 1917) urges that it be kept constantly in mind that tuberculosis is the most frequent of diseases, and that when we have persons coming to consult us with indications of debilitated systemic states and slight cough we should not consider our duty performed to them until a most painstaking case history and study of their symptoms have been made, making several examinations and a complete temperature record for several days. A carefully taken history always is of vital importance. Tuberculosis is the most frequent cause of cough. Physical signs found on one side of the chest differing from those on the opposite side should almost necessarily, unless positively indicative of some other known condition, indicate tuberculosis. The tuberculosis problem in its most vital aspect rests upon the average doctor, who, if he only realizes it, is quite capable with brain, eyes, and ears of making the diagnosis of early tuberculosis, and this duty should not be assumed to be the peculiar function of specialists.

**The Origin of Electric Currents Led Off from the Body.**—W. M. Bayliss (*British Medical Journal*, March 24, 1917) subjects the theory of "nerve leaks" and their detection by electrical means for the purposes of diagnosis to an analysis and presents the results of his own investigations of the subject. He concludes that the currents led off from various portions of the body through metallic electrodes are due to electrical inequalities in the electrodes together with differences in the activities of the skin glands. Static charge and induction play no part in such currents. The so called nerve leaks are only places where the skin is moist and are not indicative of lesions of the nerves. There is no evidence in support of the view that so called "neuro-electricity" is generated in the brain and may escape from the nerves through a break in their insulation, and the idea is opposed to what knowledge we do possess of physiological processes. The so called "dielectric oil" recommended for purposes of treatment seems to be nothing more than ordinary liquid paraffin; it does not pass through the skin and cannot reach the nerves or other internal tissues. The results obtained from its use in the treatment of open wounds are due to the exclusion of air and possibly also of bacterial infection and have nothing to do with its insulating properties.

**A Case of Enterospasm.**—C. Hamilton Whiteford (*British Medical Journal*, March 24, 1917) reports the case of a woman, forty-nine years old, who had suffered with indigestion for some thirty years with vomiting on an average of once weekly. Nine years previously the discomfort of her indigestion increased to real pain which came on soon after the ingestion of food and the vomiting became gradually more frequent. When seen the vomiting occurred once daily, she was thin, constipated, and complained of flatulence and epigastric pain. Physical examination revealed nothing in the abdomen other than a tender, ill defined fullness between the umbilicus and the left costal margin. Exploratory operation revealed an enormously distended stomach and duodenum. Three feet below the duodenum the jejunum was found to be intensely narrowed by extreme contraction which extended for a distance of three feet. For an equal length below this the intestine was constricted into a rugose, twisted cord half an inch in diameter. The rest of the bowel was normal. No other findings were abnormal except general marked mobility of the viscera. The abdomen was closed and recovery was uneventful and followed by some relief of symptoms, but this was not expected to be permanent. It was interesting to note that this intestinal spasm was found present on opening the abdomen, although the patient had received one milligram of atropine hypodermically one hour before. Such cases of enterospasm, though not of such great extent, are not uncommon and the author points out the fact that they are likely to mimic several other forms of abdominal disease.

**Luetin Reaction in Syphilis Produced by Agar.**—John H. Stokes (*Journal A. M. A.*, April 14, 1917) says that the enthusiasm with which cutaneous tests for diagnostic purposes have been adopted in clinical practice is a striking tribute to the uncritical frame of mind in which we are prone to receive what promises to present the golden combination of simplicity and usefulness. The reception given to the luetin test is an excellent illustration of this readiness of acceptance. Using sterile 0.5 to 0.7 per cent. suspension of agar in physiological sodium chloride solution, Stokes finds that the intradermal injection of 0.1 mil gives reactions clinically similar to those produced by luetin, while controls of equal amounts of olive oil cause no reaction, although they produce a similar traumatism. The agar reaction differs from the luetin reaction in having a tendency to slower development and more torpid course, but papular and pustular reactions may be produced. After doubtful reactions are excluded the proportion of positive reactions to agar in known syphilites varied from forty to seventy per cent. Normal persons and nonsyphilites tested did not react, but one patient with urticaria pigmentosa, two with gonorrhea, and one with sycosis barbæ reacted positively; the three last receiving vaccines at the time. The influence of iodides was eliminated in one series in which there were fifty per cent. of positive reactions. Internal administration of iodides was found to produce the typical reaction in three cases tested, while in two others the result was negative. From these observations, and others cited from the literature, the author concludes that both the typical luetin and the agar reactions and nonspecific phenomena.



# Proceedings of Local and National Societies

## THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

*One Hundred and Eleventh Annual Meeting,  
Held at Utica, April 24, 25, and 26, 1917.*

The President, Dr. MARTIN B. TINKER, Ithaca, in the Chair.

**Present Status of Vaccine Therapy.**—Dr. W. B. STONE, of Schenectady, presented the following points: In the treatment of some chronic infections, particularly those of a pustular nature and produced by the staphylococci, vaccines are of greater use than are other forms of treatment. As a rule, autogenous vaccines are to be preferred, and in the treatment of colon bacillus infections are absolutely necessary. It is surprising how much slovenly practice masquerades under the name of vaccine therapy. Much good work has been done in the therapeutics of acute infectious conditions, especially in the treatment of pertussis and the bacteriemias, including typhoid fever. We are now almost upon the threshold of an era which may revolutionize the treatment of certain diseases, which heretofore have been uninfluenced except in an anticipatory way. The future alone can decide whether these conditions will yield to a specific vaccine, as suggested by the researches of Gay, or whether vaccines will be supplanted by the intravenous application of unspecific stimulation of the hematopoietic tissues which are believed to be the origin of protective ferments. Let us be honest skeptics of the latter theory until the claims are more clearly shown than at present and until it is proved that these massive reactions are harmless to the patient.

**Present Status of Serum Therapy.**—Dr. RUFUS I. COLE, of the Rockefeller Institute, said that any scientific discovery with apparent practical bearing led to a great variety of applications, some justifiable, and others without scientific basis. Medicine is in the midst of these attempts, some of which have been unproductive of results, others have been fruitful of the greatest good to mankind, and others, by far the greatest number, with the value of the results still uncertain. While the receptive attitude toward the new and unusual was undoubtedly the proper one for the experimentalist, a more skeptical attitude was undoubtedly justified for the practitioner whose chief function was to apply new discoveries. Among practitioners of medicine these two points of view were often combined in the same individual, the greatest skepticism and the greatest credulity. This arose from a sympathetic and humanitarian desire to do no harm and to leave nothing undone which might be of any benefit to the patient. The latter desire, combined with lack of time to weigh carefully all the evidence, had led many to employ so called biological therapeutical methods, which had little or no clinical evidence to support them, were not based on sound experimental observations, and not only did no good, but were actually harmful in many cases. The commercial houses which manufactured biological products were re-

sponsible in a large degree for this state of affairs. The physician should obtain his evidence, as far as possible, from the original publications of the scientific workers, and not from the advertisements of manufacturers. He should try to use well established methods wisely and with sufficient intensity and attention to detail to obtain results, and when he undertook to employ methods which were not well established and the principles of which were not so well formulated, he should always remember that his efforts were of an experimental nature, and they should be carried out most carefully in order that no harm might result and that the results obtained might be of importance in establishing the value or worthlessness of the procedure and so might advance knowledge and be of value to others.

He had tried to present truthfully the advantages as well as the pitfalls associated with serum therapy. Disregarding all the forms of serum therapy that had been proved worthless and considering only those forms in which the value was well proved, this form of therapy had been of the greatest good to mankind. The practising physician, however, should employ only that which had been tried and found to be of value. The unsatisfactory and obscure elements should not discourage the practitioner. In reality, it was an encouraging sign. Out of all the efforts to solve the problems there would undoubtedly come great improvements and extension of the scope of this therapeutical method.

**Present Status of Drug Therapy.**—Dr. WARREN COLEMAN, of New York, stated that the mistakes of medical observers and writers of 150 years ago were obvious, but this scarcely justified condemnation of the whole fabric of their teaching. Their methods were those of empiricism, but empiricism had given them some of their most successful therapeutical agents; for example, vaccination against smallpox, quinine for malaria, mercury and the iodides for syphilis, and ipecac for entamebic dysentery. The complete list might be longer than the list of specifics evolved by the experimental method. A remedy which had been found useful by generations of physicians should not be discarded merely because its actions had not been subjected to the tests of a modern laboratory or because experimental and clinical results were at variance. The experimental method might be lacking in control quite as much as the clinical. The conclusions reached by different experimenters concerning the same therapeutical agent did not always agree. A consideration of the present attitude toward strychnine would serve to illustrate this point. A few years ago opinion was practically unanimous that strychnine was a reliable cardiovascular stimulant. Today its actions were in dispute both among pharmacologists and clinicians. Dixon stated that strychnine was an important cardiovascular stimulant. Sollmann denied that it had such action except in subtoxic or toxic cases. Among clinicians, Cook and Briggs found that strychnine raised blood pressure in disease, but Cabot reported that he had not been able to observe

a rise. The preponderance of evidence derived from bedside studies with the sphygmomanometer indicated that strychnine did not, at least uniformly, cause a rise in blood pressure. On the strength of this evidence many clinicians denied that strychnine possessed any value as a cardiovascular stimulant in disease. Doctor Coleman's criticism of this conclusion was that the experiments lacked proper control. The conclusion was based entirely on the assumption that to act as a cardiovascular stimulant a drug must increase blood pressure. The action of digitalis proved indisputably that this was not true, for digitalis either might not affect blood pressure or might cause it to fall. In the face of conflicting opinions concerning the action of a drug, each clinician had to depend upon his own experience. Doctor Coleman believed that strychnine was one of the most reliable cardiovascular stimulants. He was convinced that there were characters in the pulse, discernible through the tactile and muscle sense, which no instrument of precision yet devised was capable of recording. They concerned the tonus of the artery, the shape of the wave passing under the finger and the "push" behind the wave. It was characters such as these that were summed up in the word "quality."

**Present Status of Physiological Therapy.**—Dr. JACOB J. LEVY, of Syracuse, said drug therapy in chronic conditions was being abandoned gradually and that this had been due to the growth of sanitariums, where drugs played an inferior therapeutical rôle, and the physical agents were the important aids. This accounted for the rise of the osteopaths and of other schools using the mechanical methods. Doctor Levy summarized the advances in physiological therapy made in the past few years as follows: 1. Psychoanalysis in the treatment of nervous disorders. 2. The work of Cannon, who had shown that depressive emotions, such as anger, fear, and grief, caused excessive stimulation of the endocrine glands through the sympathetic system. This chronic emotional stimulation was an important factor in the causation of many of the chronic disorders and must be considered. 3. The aftertreatment of fractures by physical agents, especially in the treatment of adhesions resulting from trauma. There was bound to be a wonderful future for physical therapy on account of the Compensation Act, and the Health Insurance Act, which would without doubt pass. 4. The use of the gamma rays, especially in many gynecological conditions of a nonmalignant nature, when there was an excessive uterine hemorrhage, and in the treatment of fibroids. 5. Finally, the almost universal tendency to give up treatment with drugs and to make use of physical agents, such as fresh air, sunlight, proper diet, mechanotherapy, electrotherapy, etc.

Dr. ALLEN A. JONES, of Buffalo, said that he had carried out in a small way the antipneumococcic serum treatment and recently he had had two patients who were treated with strain No. 1. In one of the cases prompt recovery occurred. In the other case in which he was called in consultation, the patient appeared to be doing well, but died later. With strain No. 2 the resistance of the patients was

not enough and they had died without exception. The subcutaneous injection of the serum after the blood had been defibrinated was used in the general wards of the hospital, and even when gross changes had occurred in the bronchi and other tissues, sometimes when the patient was emphysematous, good results followed. Doctor Jones recalled the case of a patient who, after eight treatments and reinjections of his own serum, was given such relief that he begged for more.

Dr. L. F. BISHOP, of New York, thought the older practitioners had not been willing to take up the physical methods and especially in the treatment of chronic diseases. The Compensation Act, as Doctor Levy had said, had stimulated the efforts of physicians to get their patients back to work. Means such as these produced much better work. No special method of treatment of these patients is to be sought, but a combination of methods, a sum of a great many different methods. Diet, for instance, was of prime importance, and it should be more carefully considered. Doctor Bishop believed that older methods often produced as good, if not better results than were obtained at the present time.

Dr. MARY D. ROSE, of New York, said that she would not wish to treat a case of leucorrhea without the use of vaccines as an adjunct. She had had no experience with autogenous vaccines.

Dr. ANDREW MACFARLANE, of Albany, said in reference to the positive value of the serum treatment of pneumonia, a disease which differed according to the strain of organism, that if this strain could be found it would at once clarify the problem of the therapeutical treatment. One man might state that he cured sixty patients of pneumonia by the serum. If there were sixty cases of type 4, such a statement amounted to practically nothing. If it was of type 3, the results approached the miraculous. The physician should not be led away by any specific treatment of pneumonia, nor by any statement as to the cure of five or six consecutive cases.

Dr. W. DEWEY ELSEVER, of Syracuse, said that it was very difficult for pharmacologists and physicians to get together. One made bedside observations and the other made observations in the laboratory, a situation which, of course, led to many discrepancies. With regard to strychnine, many men had for years believed it to be a cardiovascular stimulant. Doctor Coleman said this was not the case except in toxic conditions. Strychnine was a powerful stimulant of the nervous system.

Dr. J. M. SWAN, of Rochester, disagreed with Doctor Rose's statement. She should not treat the leucorrhea, but the woman who had leucorrhea. There was a tendency to prescribe medicines without making a most careful study. In his experience good was not to be had from the use of drugs, serums, or vaccines except when they were properly indicated.

Doctor RAMSON, of Clinton, discussed the value of exercise in the early stages of certain diseases. Tuberculosis was formerly treated with rest. He had experimented with a definite line of treatment by graded labor in these cases. The results of this method had been demonstrated in England seven or

eight years ago and he had used it himself even before then. He selected two groups of patients, nineteen in each. In the first group rest, fresh air, diet, outdoor care, etc., were ordered. The other group was subjected to graded labor up to severe labor. In the first group there was a total loss in weight of thirty-one pounds. Those in the second group who used the pick, shovel, and sledge gained in weight. Of course, all patients with fever were ordered to rest. He did not wish, however, to discourage treatment by rest, fresh air, and food, because this seemed to be the first treatment in this disease.

Dr. JOHN M. SWAN, of Rochester, said he had always thought it better for the patient to use his own muscles than to have some one else use them for him.

Dr. J. O. STRANAHAN, of Rome, reported a case of streptococcic infection of the throat. On the third day a pelvic abscess in the cul de sac of Douglas developed and ruptured into the bladder. This produced ultimately a vesicovaginal fistula. The temperature was high. After taking three cultures he discovered that this was a streptococcic infection. Active strains of vaccines were used in this case and excellent results followed.

Dr. RUFUS I. COLE, of New York, replying to the question as to the danger of using the serum in the case of a patient suffering from asthma, said he did not know of any intense symptoms of proteosensitization following. However, one should be careful in the use of serum if the patient showed symptoms of high fever, etc.

Dr. THOMAS W. JENKINS, of Albany, recalled the case of a man with a marked abscess and pus running between the layers of the skin, who was cured by one injection of vaccine. In another case of erysipelas he used the streptococcic vaccine for four days without results. In still another case the stock vaccine gave good results, but here the diplococcus was found. He then used the endotoxins and the patient was cured at once. In one case of acne an acute appendicitis developed within twenty-four hours. An abscess of the omentum developed in another case of acne, the patient was operated upon, and a constricted omentum was found. With regard to strychnine, he was sure it was a cardiovascular stimulant.

#### Treatment of Dysthyroidism by Röntgen Rays.

—Dr. M. B. PALMER, of Rochester, concluded as follows: 1. Provided the patient is given the proper treatment in dysthyroidism improvement should follow in nearly every case and freedom from symptoms in others. 2. Patients who are to be operated upon should have at least one treatment four weeks before operation, and, except in an emergency, a second treatment should be given when a high pulse rate is present. 3. It is essential to avoid surgery in a large proportion of cases showing toxic symptoms. 4. A large goitre with no symptoms of dysthyroidism should be removed rather than treated with röntgen rays.

Dr. JOHN M. SWAN, of Rochester, asked Doctor Palmer what treatment he prescribed in the intervals of x ray treatment. He understood these intervals were from two to four weeks.

Dr. DELANCEY ROCHESTER, of Buffalo, said he

had seen many cases of dysthyroidism in the western part of the state of New York. He would like to know if Doctor Palmer employed rest, for instance, or any drug treatment, diet, or other means than the x ray. How did he treat these patients between times?

Dr. ROSALIE S. MORTON, of New York, said that, according to Doctor Stoney, the head of one of the hospitals in London, the use of the x ray was very valuable to those in the trenches. On account of the physical strain and fear of the trenches hyperthyroidism developed, but ninety per cent. of these cases yielded to the x ray treatment and the men went to the depots in a short time. The military strain also caused what was called "soldier's heart" and many of the men suffering from severe wounds also had tachycardia. Doctor Stoney placed the x ray on each side of the neck and favorable results followed applications once a week. Many of the men were at first afraid of the treatment, but soon got used to the treatment and some went to sleep during its application. The average number of treatments was eight in seven weeks. When convalescent they were sent to the depots with normal pulses.

Dr. EDWIN MACDONALD STANTON, of Schenectady, stated the results of the treatment in hyperthyroidism treated at Guy's Hospital in London during a long period of years showed eighty per cent. giving ultimate cures. The history of the case is a very important factor in the treatment.

Dr. THOMAS W. JENKINS, of Albany, reported cases of two patients, one treated by rest, the other by the x ray, in whom the results were about the same.

Dr. CHARLES J. HUNT, of Clifton Springs, said he had studied carefully six cases so far in which dysthyroidism had occurred. Two winters after an acute infection, the chronic infection of long standing was relieved for a long period. A very purulent gingivitis appeared in one case, and the well marked evidences of hyperthyroidism developed. Such a phenomenon often followed an acute infection. He asked Doctor Palmer if he believed it advisable in the treatment of such cases to prevent the possibility of such infections by cutting down after the use of the x ray.

Dr. MYRON B. PALMER, of Rochester, said he paid no attention to rest or diet and that he ordered a moderate amount of exercise. If the patient had much fever he was kept quiet for one or two weeks, particularly in the severer cases. In the administration of the x ray it was difficult to persuade these patients that they were not hurt; they seemed to be unable at first to sit under the tubes and they would jump up and hit the wires. After four weeks, however, they remained under the tube without the least fear. In some cases good results were obtained by simply putting the patients to bed; in this class of patients surgery should not be used. He did not believe that the x ray was the only treatment for this class of patients and he was opposed to the production of redness or any discoloration of the skin. In patients treated five or six years ago the skin absorbed a large amount of the rays and the results were not so good as now.



**Carrel-Dakin Treatment of Infected Wounds.**

—Dr. CHARLES L. GIBSON, of New York, said that the Dakin solution of sodium hyperchloride answered the requirements of an ideal antiseptic, i. e., to diminish toxins without injury to the tissues. The Carrel method of wound irrigation, however, required intelligent attention to detail. In a hospital in France, where the usual operator was replaced by a very competent surgeon, but one inexperienced in the method, it took a month before he was able to get the proper results. The preparation of Dakin's solution necessitated diminishing any irritative action on the skin, and the use of a preparation in which the free alkali was neutralized. The reaction of the solution on the proteins of the body destroys bacteria, and the application must be constant and prolonged to maintain this reaction. If the solution was introduced into the circulation it caused rapid hemolysis and it was necessary to make a careful hemostasis. It should not be introduced into deep wounds in which there was danger of its entering an artery. The solution was to be used in conjunction with, and not instead of, sound surgical judgment. The formula appeared in the *NEW YORK MEDICAL JOURNAL*, November 25, 1916. The method was to carry the solution with a pressure of one metre from a tank above the patient's bed by branch rubber tubes. The fluid was forced out in a spray. A light dressing kept the wound damp without flooding. Irrigation was practised every two hours. The skin could be protected with cloths containing yellow vaseline, and the tubes were changed according to the condition of the wound. The average wound became sterile in ten days. In eighty compound fractures, not one suppurated.

Dr. JOHN VAN DUYN, of Syracuse, stated that he visited several hospitals in France in which the use of this method had been attempted, but that the American Ambulance Hospital was the only one which carried it out properly and successfully. The French hospitals did not appreciate it. The solution was a slight modification of Javel's solution. The only new point was the late closure of the wound. At the St. Cloud Canadian Hospital, the surgeon said the only difference was that one got a cupful of pus instead of a painful. The scientific application of the method was the only new feature. The proper preparation of the wound, the removal of all tissue that could not be cleansed, and the establishment of a good blood supply were important points. As all infection was deeply seated, the wound must be freely opened. Another important point was that the apparatus should be so arranged that the solution reached the surface exposed to infection. The Carrel method did not call for anything but free escape. The solution must be absolutely correct. With experience and practice results became better, but even then their success did not equal that of Doctor Carrel. In the American Ambulance Hospital in one case it was debated whether enough of the wound had been cut away. The intern had spent one and a half hours straightening out tendons, and the wound seemed badly infected. When the sutures in the skin were removed and the Dakin solution run in five times a day, there was no rise in temperature and no untoward symptoms, and four weeks

later there was a fair use of the tendons.

Dr. HENRY H. M. LYLE, of New York, said that surgery in civil life and surgery in war must be clearly differentiated. In war a deep wound with a bottle shaped cavity in which the neck was blocked up rapidly by muscular tissue, blood clot, and foreign body was the common type. The best results in this type of wound in which there was a deep infection were obtained by the Carrel treatment. In the American Ambulance Hospital there was a drop in mortality of 11.8 per cent. to 7.8 per cent. after the use of this method. The economic advantages of this treatment were that with the care and treatment of wounds costing two dollars a day each the healing of a wound in twenty days instead of three months was an appreciable saving. Under other treatment, eighty-five per cent. of the men died of infection after shock was over. In 50,000 cases seventy per cent. of amputations were due to infection. This large percentage could be saved by the Carrel method. In the base hospital the average time of healing was three months, the front line hospital fourteen days, sometimes seven.

Dr. ROSALIE S. MORTON, of New York, stated that there were very few French military hospitals in which the method was being properly used. In the Roymont Hospital in Paris, the chloride of soda solution in the British Pharmacopœia was used, but the wound was kept too wet. In Guy's Hospital they used saturated gauze over the wound. Doctor Lyle had used the Carrel method correctly. Hand or foot shrapnel wounds could be soaked in a bath. It would be interesting to try it in old suppurating leg ulcers beyond the help of ordinary treatment.

Dr. ALBERT VANDER VEER, of Albany, whose experience in military surgery began in June, 1862, at the battle of Richmond, when Labarraque's solution of chlorinated soda, the very best preparation that the army had, was provided for keeping the wounds clean, said that he would like to know more about the termination of cases in which the Carrel method was used. What was the real difference between Labarraque's solution and Dakin's solution? If the wound had been dressed, how often had the dressings to be removed? The advantages of continuous irrigation were appreciated in the last eighteen months of the Civil War. In amputation silk ligatures acted as drainage tubes. Suppurating wounds were dressed twice a day and handling of the wound was distressing. A free incision with washing by Labarraque's solution was the best treatment and wounds healed under this method. Often incisions were six inches long. First, the upper end of the wound was strapped, and the lower end, leaving a small portion open in the middle, the wounds healed in this way often in ten days.

Dr. GEORGE E. BARNES, of Herkimer, stated that a comparison between normal salt solution and Dakin's solution had been made. He would like to ask Doctor Gibson if the comparison had been tried between hypertonic solution and Dakin's solution.

Doctor GIBSON, replying to Doctor Barnes's question, said that many tests of various antiseptics had been worked out, but better results had been achieved by the Dakin solution.

*(To be continued.)*

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*The Neurotic Constitution. Outlines of a Comparative Individualistic Psychology and Psychotherapy.* By Dr. ALFRED ADLER, Vienna. Authorized English Translation by BERNARD GLUECK, M. D., Director, Psychiatric Clinic, Sing Sing Prison, and JOHN E. LIND, M. D., Senior Assistant Physician, St. Elizabeth's Hospital; Associate Psychiatrist, Washington Asylum Hospital, and Instructor in Psychiatry, Georgetown Medical College. New York: Moffat, Yard & Co., 1917. (Price, \$3 net.)

An English edition of Adler's work has been eagerly awaited by the neurologists and psychiatrists who were aware of the valuable work which he had done in the neuroses. The difficulties of the original German, which have deterred many a would-be translator, have been admirably surmounted by Glueck and Lind. Adler's theory is unique in that it posits a feeling of inferiority in the neurotic individual, the result of an actual organ inferiority, the presence of which he has demonstrated in a previous work (*On Organ Inferiority. Nervous and Mental Disease, Monograph Series*, New York). This feeling of inferiority leads to an attempt at compensation, giving rise to the neurotic symptoms. The neurotic life is a striving, says Adler, towards a fictitious goal, complete masculinity, the *männliche Protest*. The translators have had difficulty with many of the author's coined words and awkward expressions, but have come through, in the main, with flying colors. The word *Persönlichkeitsgefühl*, for example, by which Adler means the individual's sense of his own identity, they have rendered by "ego-consciousness," *Hilfskonstruktionen* by "safety devices." Aside from Freud's work, the present volume is the most notable addition to the interpretive school of psychiatry which has yet appeared. It is gotten up in a uniform binding with the many works along this line which these publishers have recently brought out.

*Les fractures de l'orbite par projectiles de guerre.* Par Felix Lagrange, professeur à la faculté de médecine de Bordeaux. Avec 77 figures dans le texte et 6 planches hors texte. (Collection horizon précis de médecine et de chirurgie de guerre. Paris: Masson et Cie., 1917. Pp. 222. (Prix 4 fr.)

This, one of a series of monographs, some of which have been written by such authorities as Babinski on neurology, Carrel and Dehelly on infectious wounds, Abadie on abdominal surgery, and others, is written by a master mind and based on thirty months of actual war service embracing over 600 cases of wounds of the eyes and orbit; of these 397, or 65.5 per cent., were cases without injury to the globe, and 212, or 34.5 per cent., with destruction of the eye. It is indeed an agreeable surprise not unmixed with a certain degree of admiration, to find a busy surgeon who amidst the din and tumult of the surrounding battle could find enough time and patient application to write a book, and a very useful and interesting one at that. The book is preceded by a short historical sketch of orbital fractures as caused by projectiles of war, and is divided into two large sections: 1. Fractures of the orbit with preservation of the eyeball; and, 2. orbital fractures with destruction of the globe. The first embraces fractures where no foreign body enters the globe, fractures with preservation of the eyeball with the presence of a lesion of the orbit; pathogenesis of the visual troubles, lesions of the various nerves, vessels, external and internal eye muscles, and lesions of the various portions of the eye. The second part also treats of fractures involving neighboring cavities. The part that will interest particularly not only the military, but also the surgeon in civil life, is the one referring to reparative surgery of the face and orbit.

Surgically speaking, it remains to be seen whether human ingenuity has kept, if it can do so at all, measurable pace with the awful destructiveness of modern warfare, but to judge by the little volume before us, the author has

obtained many happy results with his plastic work. The author is quite enthusiastic in his praise of cartilage grafting, which he considers a valuable acquisition of modern surgery, and more useful, easier of accomplishment, and of greater reparative value, than fat grafting in suitable cases where sufficient time is at one's command, as several successive operations are sometimes required; this method yields very satisfactory results, as may be judged from the pictures of patients treated.

The book is full of instructive and interesting hints. For example, his views on sympathetic ophthalmia in its relation to ocular wounds in war, traumatic cataract, retinal detachments, etc., are valuable. The book should be in the hands of every ophthalmic surgeon and especially of those who expect to enlist for army surgical work.

*Diagnosis from Ocular Symptoms.* By Matthias Lanckton Foster, M. D., F. A. C. S., Member of the American Ophthalmological Society; Ophthalmic Surgeon to the New Rochelle Hospital; First Lieutenant in the Medical Reserve Corps, United States Army. New York: Rebban Company, 1917. Pp. xvii-490.

It has been contended, and with a large degree of correct reasoning, that specialism tends to narrowmindedness and onesidedness, as well as to undue exaggeration of the importance of pathological findings in the special domain, with the consequent neglect of the relation of these findings to the general condition of the system. The rapid strides that are being made in every special branch of medicine before our very eyes, as it were, tend to accentuate this propensity all the more, to the undoubted detriment of the patient, who is frequently apt to be considered as being made up of different special organs, without that all important interrelation among them the correct interpretation of which constitutes the true diagnostician. On the other hand, the apparently complicated processes attendant upon the examination of the special organs, act frequently as deterrents in the mind of the general practitioner against familiarizing himself with the various methods of examination of these organs, which but too often reflect in their own diseases systemic states and a familiarity with which is frequently an essential of a correct diagnosis. This applies with particular force to the eye, which is practically a terra incognita even to the well informed internist, with apologies to the neurologist, but which, because of its close relationship to the vascular and nervous systems, plays such an important rôle in the recognition of disease; together with anomalies of the nervous system, various diseases of the heart and kidneys, and such systemic diseases as syphilis, diabetes, tuberculosis, gout, and arteriosclerosis, there are often found reflected in the condition of the eye certain signs the recognition of which is not only a great aid in diagnosis, but frequently of importance prognostically.

We therefore, welcome any work that will bridge over the difficulties that beset both the general practitioner and specialist, in diagnosing eye conditions in their relation to general diseases, and Doctor Foster's book is just the work that both will find extremely useful. Through the portals of ophthalmoscopic examination, he gradually introduces the reader, in plain, forcible and lucid English, to the vast domain of eye symptomatology and diagnosis. The general practitioner will find there a mass of highly interesting material that will be invaluable to him in his general work, while the eye man may browse with profit among familiar things that are scattered elsewhere among many textbooks but are grouped and systematized here in an attractive and easily retained form. The work is in fact a useful compilation as well as a rich source of ready reference. Some of the chapters appeared to us especially interesting; thus Chapter VII, on the conjunctiva, presents a rather full and illuminating interpretation of the different varieties of conjunctival affections that are at times the bête noire of even the experienced ophthalmologist; the subject of iritis is brought up to the minute, containing as it does the analysis of the interesting findings on its etiology by Brown and Irons as presented by them in a communication before the American Ophthalmological Society in May, 1916. Chapter XIX, on headaches, neuralgia, and eyestrain, contains a full exposition of the modern views and will be read with equal interest both by the specialist and the general practitioner.

We wish we could bring ourselves to share the author's



views as expressed in the preface as to the superfluity of illustrations in a work of this kind. From Jaeger down to Adam and Oatman, to speak of the last fifty years only, eye atlases, whether of external diseases or of the fundus, have been considered as a great aid in teaching ophthalmology. Though it is recognized as humanly impossible to depict all the varieties of pathological conditions that the eye is subject to, the fact remains that a picture of a type of disease when properly impressed on the mind will aid considerably in comparing with the actual condition under examination, even though the latter deviate somewhat from the type. We have no doubt that the addition of illustrations will greatly enhance the value of this work. We also miss a bibliography, though due credit is given throughout the volume to the respective authors; this lack is the more regrettable because the book is supplied with an unusually complete index. The lightness of the book, the large type, and the dull surface paper add considerably to the pleasure derived from perusing the work.

## After Office Hours

Speaking of Ethel Byrne's imprisonment for what she said about birth control, the *Masses* says: "Hundreds of thousands of dollars' worth of publicity space was contributed to the movement by that woman's single resolution. In five days she announced her message to the whole American public and proved the sincerity of her belief in it. Could one make a finer and more intelligent sacrifice?"

\* \* \*

The third issue of the *Birth Control Review*, for April-May, is devoted largely to a glorification of Margaret Sanger's release from prison. There is no doubt that these people are tremendously in earnest. Perhaps a more moderate attitude toward the medical profession on their part would do no harm. Wherever a stand has been taken for humanity, the doctor has been in the forefront of the fighting and the birth control advocates may be sure that they are in favor of all that is good in their propaganda.

\* \* \*

No living story teller deals with any living people with keener perception than Fannie Hurst treats the Hebrew. It is a trite thing to say that the mantle of O. Henry has fallen upon her and, like most trite things, it is not true. But in limning with an artistic touch the high lights and shadows of the Jewish race psychology, their shrewdness, their love of family, their unselfishness, their humor, and their pathos, this writer is unapproachable. In the *Cosmopolitan* for June there is a fine example of her skill. "Oats for the Woman." As usual, it outlines a problem which many would have solved differently from its heroine.

\* \* \*

It has always been a matter of wonder to those who really knew the psychology of the Frenchman that his country should be so indissolubly associated with pornography and salaciousness. French pictures, French novels, French postcards—they conjure up in the mind of the decent American a loathsome and nauseating picture. It now appears, according to a report presented by Edward Haracout, before the National Book Congress, that nearly all these vile productions were of German origin and were designed to discredit France in the eyes of the world. Since the outbreak of the war and the consequent sequestration of German property, they have disappeared to a large extent from the boulevards.

\* \* \*

Why is it that famous men, leaders of the world's thought perhaps, take up in their declining days some form of occultism, spiritualism, mental telepathy, and the like? Is it that as the shadows gather about their footsteps they seek for some proof of survival beyond the grave and so clutch eagerly at any promise of another world, convincing themselves because they wish to be convinced? Lombroso, Mark Twain, Conan Doyle, occur to us, and now Sir Oliver Lodge has joined the ranks of mysticism. His recent book, *Raymond, or Life and Death*, has had a wide circulation, and in the June *Metropolitan* he sketches briefly the steps by which he became convinced of survival of personality and memory "after the dissolution of bodily partnership that we call death."

## Meetings of Local Medical Societies

**MONDAY, May 21st.**—New York Academy of Medicine (Section in Ophthalmology); Yorkville Medical Society; Medical Association of the Greater City of New York; Elmira Clinical Society; Psychiatric Society of Ward's Island.

**TUESDAY, May 22nd.**—New York Academy of Medicine (Section in Obstetrics and Gynecology); New York Psychoanalytic Society; New York Dermatological Society (annual); Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; New York Otological Society; Onondaga Medical Society; New York; New York City Riverside Practitioners' Society; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York, Therapeutic Club.

**WEDNESDAY, May 23rd.**—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Society of Internal Medicine (annual); Schenectady Academy of Medicine.

**THURSDAY, May 23rd.**—Ex-Intern Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital Graduates' Club, New York; New York Physicians' Association.

**FRIDAY, May 25th.**—Society of New York German Physicians (annual); New York Clinical Society; Manhattan Medical Society; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

**SATURDAY, May 26th.**—New York Medical and Surgical Society; West End Medical Society; Lenox Medical and Surgical Society (annual).

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the twenty-one days ending May 2, 1917:*

**BAUGHMAN, D. S., Assistant Surgeon.** Directed to report to the chairman of a board convened at the Marine Hospital, San Francisco, Cal., May 28th, for examination to determine his fitness for promotion.

**ERYAN, W. M., Passed Assistant Surgeon.** Designated as a member of the Coast Guard Retiring Board, convened at Chelsea, Mass., by department order of November 3, 1916.

**CLARK, T. SURGEON.** Directed to deliver an address on school hygiene at the meeting of the Southern Sanitary Association at Greenville, S. C., May 9-10, 1917; directed to proceed to McCall, Clito, Tatum, and Benettsville, S. C., to make sanitary survey of schools in those localities.

**COBB, J. O., Surgeon.** Directed to detail an officer to proceed to Bismarck, N. D., to make a survey of the water supply of that place for the prevention of the interstate spread of typhoid fever.

**CODY, H. C., Assistant Surgeon.** Directed to report to the chairman of a board convened at the Marine Hospital, New Orleans, La., May 28, 1917, for examination to determine his fitness for promotion.

**CORUPT, G. M., Surgeon.** Granted ten days leave of absence from April 20, 1917.

**DERIVAUX, R. C., Assistant Surgeon.** Directed to report to the chairman of a board convened at the Marine Hospital, New Orleans, La., May 28, 1917, for examination to determine his fitness for promotion.

**ERNST, E. C., Assistant Surgeon.** Relieved from duty at Marine Hospital, San Francisco; directed to continue on duty at Angel Island Quarantine Station.

**FAUNTLEROY, C. M., Passed Assistant Surgeon.** Ordered to report at Immigration Station, Angel Island, Cal., for temporary duty.

**FOX, CARROLL, Surgeon.** Reassigned to duty at the Hygienic Laboratory, effective March 8, 1917; granted five days' leave of absence from May 4, 1917.



FROST, W. H., Surgeon. Granted fourteen days' additional leave of absence from April 22, 1917.

GUIERAS, G. M., Surgeon. Directed to take charge of the quarantine station at Key West, Fla., during the absence of Acting Assistant Surgeon Light.

HURLEY, J. R., Passed Assistant Surgeon. Ordered to proceed to Reedy Island Quarantine Station for the examination and care of patients and the fumigation of a vessel.

JONES, W. M., Assistant Surgeon. Ordered to proceed to Reedy Island Quarantine Station for the examination and care of patients and the fumigation of a vessel.

KOLB, LAWRENCE, Passed Assistant Surgeon. Reassigned to duty at Ellis Island, N. Y., effective April 14, 1917.

LAKE, G. C., Assistant Surgeon. Ordered to proceed to New York, N. Y., for laboratory study and investigation.

LAUGHLIN, J. B., Assistant Surgeon. Ordered to report to the chairman of a board convened at the Marine Hospital, New Orleans, La., May 23, 1917, for examination to determine his fitness for promotion.

LAVINDER, C. H., Surgeon. Relieved from duty at Ellis Island, N. Y., and ordered to take charge of the Marine Hospital, Stapleton, N. Y.

LEAKE, J. P., Passed Assistant Surgeon. Directed to deliver an address on poliomyelitis at the conference of Health Officers at Charleston, W. Va., May 9, 1917.

LIDDELL, T. J., Assistant Surgeon. Directed to report to the chairman of a board convened at the Marine Hospital, New Orleans, La., May 28, 1917, for examination to determine his fitness for promotion.

MATTHEWSON, H. S., Surgeon. Granted one day's leave of absence, April 15, 1917.

MCKEON, F. H., Surgeon. Reassigned to duty at the Tuberculosis Sanatorium, Fort Stanton, N. M., effective May 21, 1917.

NYDEGGER, J. A., Surgeon. Reassigned to duty at Baltimore, Md., effective October 3, 1916.

PREBLE, PAUL, Passed Assistant Surgeon. Granted four days' leave of absence on account of sickness from April 21, 1917.

RUCKER, W. C., Assistant Surgeon General. Directed to attend the Public Health meeting to be held by the Ohio State Medical Association at Springfield, Ohio, on May 14, 1917.

RUOFF, J. S., Assistant Surgeon. Directed to report to the chairman of a board convened at the Marine Hospital, New Orleans, La., May 28, 1917, for examination to determine his fitness for promotion.

SAFFORD, M. V., Assistant Surgeon. Ordered to proceed to Ellis Island, N. Y., for duty as recorder of a board convened to amend the book of instructions for the medical inspection of aliens.

SAYERS, R. R., Assistant Surgeon. Relieved from duty on coast guard cutter *Comanche*.

SIMPSON, F., Passed Assistant Surgeon. Granted one day's leave of absence May 2, 1917; directed to detail an officer to proceed to Gallatin, Tenn., to make a sanitary survey of the water supply.

SMITH, F. C., Surgeon. Directed to represent the service at the meeting of the National Association for the Study and Prevention of Tuberculosis at Cincinnati, O., May 9-11, 1917.

STEVENSON, A. F., Sanitary Chemist. Ordered to represent the Service at the meeting held at Philadelphia, Pa., May 2 and 3, 1917, to consider problems connected with the milk industry.

STONER, G. W., Senior Surgeon. Relieved from duty at Marine Hospital, Stapleton, N. Y., and assigned to duty in the issue of port sanitary statements, Custom House, New York, N. Y.

STOUT, J. D., Assistant Surgeon. Granted twelve days' leave of absence from March 17, 1917.

SWEET, E. A., Surgeon. Ordered to proceed to Reedy Island Quarantine Station for the examination and care of patients and the fumigation of a vessel.

THOMETZ, H. M., Assistant Surgeon. Ordered to report to the chairman of a board convened at Manila, P. I., for examination to determine his fitness for promotion.

TREADWAY, W. L., Assistant Surgeon. Relieved from duty at Washington, D. C., and Spartanburg, S. C.; ordered to proceed to Ellis Island Immigration Station for duty; ordered to report to the chairman of a board

convened at Ellis Island, N. Y., for examination to determine his fitness for promotion.

LUCK, D. H., Assistant Physician. Ordered to proceed to Milwaukee, Wis., to make a study of shop lighting conditions in cooperation with the Wisconsin Industrial Commission.

WAGENBACH, W. F., Assistant Surgeon. Relieved from plague duty in New Orleans; assigned to coast guard cutter *Comanche* for duty.

WARREN, B. S., Surgeon. Ordered to deliver an address on health insurance at the meeting of the Medical and Chirurgical Faculty of Maryland at Baltimore, April 25, 1917.

WAYSON, N. E., Assistant Surgeon. Ordered to proceed to Reedy Island Quarantine Station for the examination and care of patients and the fumigation of a vessel.

WOODS, E. O., Assistant Surgeon. Relieved from duty at Seattle, Wash.; ordered to proceed to Marine Hospital, San Francisco, Cal.

WRIGHTSON, N. D., Sanitary Engineer. Ordered to proceed to Chicago, Ill., for duty in the Interstate Sanitary District of the Great Lakes.

## Births, Marriages, and Deaths

### Born.

KOEHLER.—In Connellsville, Pa., on Wednesday, May 9th, to Dr. M. H. Koehler and Mrs. Koehler, a daughter.

### Married.

BICKING-NORTH.—In Pittsburgh, Pa., on Monday, April 30th, Dr. Clarence Austin Bicking, of Pittsburgh, and Miss Sara Marie North, of Punxsutawney, Pa.

HART-PARRISH.—In Elyria, Ohio, on Wednesday, April 25th, Dr. Elmer Hart and Miss Hazel Parrish.

PEARSON-MOORE.—In Schenectady, N. Y., on Tuesday, May 1st, Dr. Jonathan Pearson, of New York, N. Y., and Miss Marjorie Moore.

### Died.

BAKER.—In Chicago, Ill., on Saturday, May 5th, Dr. William E. Baker, aged forty-five years.

BECKER.—In Albany, N. Y., on Sunday, May 6th, Dr. Hiram Becker, aged seventy-eight years.

BRUNER.—Greenfield, Ind., on Sunday, May 6th, Dr. Charles K. Bruner, aged fifty-nine years.

COLE.—In Columbus, Ohio, on Tuesday, May 1st, Dr. Michael F. Cole, aged sixty-five years.

CROMWELL.—In Eckhart, Md., on Monday, April 30th, Dr. Benjamin M. Cromwell, aged eighty-two years.

CROSBY.—In Minneapolis, Minn., on Tuesday, May 1st, Dr. John A. Crosby, aged sixty-three years.

DE MUND.—In Ridgewood, N. J., on Saturday, April 28th, Dr. Theodore De Mund, aged seventy-seven years.

HAMILTON.—In Cassville, Pa., on Saturday, May 5th, Dr. Alfred James Hamilton, aged seventy-two years.

HUTTON.—In Cedar Rapids, Ia., on Saturday, May 5th, Dr. John W. Hutton, aged sixty-two years.

IZLAR.—In Waycross, Ga., on Sunday, April 29th, Dr. Roberts P. Izlar, aged fifty years.

KERR.—In San Francisco, Cal., on Thursday, April 26th, Dr. William Watt Kerr, aged fifty-nine years.

LAY.—In Sweet Home, Tex., on Wednesday, April 25th, Dr. James E. Lay, aged thirty-nine years.

MCPHERSON.—In Grand Rapids, Mich., on Saturday, May 5th, Dr. James A. McPherson, aged sixty-nine years.

MOODY.—In San Antonio, Tex., on Sunday, April 29th, Dr. George H. Moody, aged forty-five years.

MURPHY.—In Olneyville, R. I., on Monday, May 7th, Dr. Edward Carroll Murphy, aged forty-eight years.

REILLY.—In Dayton, Ohio, on Sunday, April 30th, Dr. Daniel George Reilly, aged fifty-three years.

STRONG.—In Denver, Col., on Friday, April 27th, Dr. Frederick C. Strong, aged sixty years.

THISTLE.—In Washington, Pa., on Saturday, May 5th, Dr. Joseph L. Thistle, aged sixty-two years.

WATSON.—In Albion, N. Y., on Friday, May 4th, Dr. Harriet Noble Watson, aged eighty-one years.

WOMACK.—In Danville, Va., on Saturday, May 5th, Dr. John Hobson Womack, aged forty-eight years.

# New York Medical Journal

INCORPORATING THE

## Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 21.

NEW YORK, SATURDAY, MAY 26, 1917.

WHOLE No. 2008.

### Original Communications

#### THE DUCTLESS GLANDS IN CARDIOVASCULAR DISEASES AND DEMENTIA

PRÆCOX.\*

By CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.,  
Philadelphia.

It is fourteen years since I signed the preface—the portion usually written last—of a work on the internal secretions. Curiously enough, no one seemed to realize at the time, although its title included the suggestive words “Principles of Medicine,” the underlying truth it was intended to convey. This truth, to me at least, appeared to outstrip immeasurably in importance that of organotherapy, irrespective of any predominating position this branch of therapeutics might ultimately attain, even when the products are become something better than they now are—mere extracts of the factory which produces the secretions and not the secretions themselves. Swale Vincent, however, summarized clearly and succinctly described my aims when he wrote in 1913: “Sajous apparently postulates a relationship between all the ductless glands whose functions dominate most of the bodily activities, normal and pathological.”

Time has shown that wherever the field has been sufficiently scrutinized and some degree of order introduced in the clinical or experimental data collected, there was good ground for the urgent appeal made many years ago. I then compared medicine to “a chain in which the majority of the links were of gold and the rest of lead pending the acquisition of sufficient gold to replace the lead,” urging that the ductless glands furnished those links.” If I am not mistaken, this trend of thought is proving its soundness, and I would be untrue to my own convictions and perhaps delay progress in the noblest of human endeavors, did I now hesitate to assert, with all the emphasis of which I am capable, that medical progress which would require fifty years under present conditions, would accrue in probably less than ten years, if the major ductless glands were given due importance in the pathogenesis of all diseases.

A warning is necessary at the present time, however, to avoid wrecking the ship while it is being launched. One of our most distinguished surgeons, Professor W. S. Halsted, of Johns Hopkins Uni-

versity, a most painstaking and conscientious observer, wrote only last year (1915): “It must be evident to everyone that there reigns the greatest confusion on the subject of the functions of the glands of internal secretion.” The cause of this is not difficult to find. He relied mainly for his knowledge of those functions upon the teachings of physiologists, the normal mentors of this phase of medical thought. We all know the enormous value of their contributions to our knowledge; indeed, the names of Claude Bernard, Brown-Séquard, Moritz Schiff, and other physiologists have been epoch builders, and at the present time their labors are constantly adding to our knowledge of the ductless glands. Yet we should not lose sight of the fact that, precious as their labors are, their aims are different from ours; they are first of all biological physicists and chemists. We are first of all humanitarians. Indeed, as stated by Dr. L. Faugères Bishop in his work on Arteriosclerosis: “Sick humanity is clamoring for relief and will not wait for the technicians slowly to complete their tasks and in due time bear their treasures of knowledge and present them for use. The sick man says, ‘Go seize the precious truth and use it now.’” To this I would add: Neither does Death await the laboratory man’s results, precious as they are as auxiliaries to our labors.

Our traditions warrant not only a bold effort to correct a situation which tends to perpetuate the death dealing trend of many diseases that still defeat all our efforts, but they bid us proceed with certainty of success. You will probably recall that when that eminent physiologist, Professor Pawlow, published his work on the digestive glands, he credited physicians with the discovery of their secretory innervation long before this was done by physiologists. “They had even come,” he wrote at the time, referring to physicians, “to recognize different morbid conditions of the innervation apparatus. Physiologists, on the other hand, had fruitlessly endeavored for decades to arrive at definite results upon the questions. This is a striking, but by no means isolated instance where the physician gives a more correct verdict concerning physiological processes than the physiologist himself.” Then, to account for this often noticed greater insight into physiological truths, he says: “Nor is it indeed strange. The world of pathological phenomena is nothing but an endless series of the most different and unusual

\*Read by invitation before the American Congress on Internal Medicine, December 28, 1916.

combinations of physiological occurrences which never make their appearance in the normal course of life. It is a series of physiological experiments which nature and life institute, often with such interlinking of events as could never enter into the mind of the present day physiologist, and which could scarcely be called into existence by means of the technical resources at his command. Clinical observation will consequently always remain a rich mine of physiological facts."

This should not in the least curtail our use of any data physiologists may afford. These should, in fact, be deemed invaluable contributions to our sum of evidence, but what I would urge is that we should cease to depend totally upon physiologists for the discovery or elucidation of functions which are of paramount importance in the development of our knowledge of disease and therapeutics. All branches of biological science, normal and morbid, are legitimate fields of investigation for elucidative data, but with clinical medicine as a starting point because of the vast wealth of material it affords.

The cardiovascular diseases and dementia præcox have been selected to illustrate what the ductless glands might mean to the field of clinical medicine.

The mortality statistics of the recently published Census for 1914 refer to the deaths from organic diseases of the heart as "the largest number classified under any one of the titles of the International List of Causes of Death for that year." It states, furthermore, that deaths from this cause "exceeded the number charged to tuberculosis of the lungs by more than 9,000, and the number assigned to pneumonia (all forms) by nearly 10,000." Turning to what the census terms the "diseases of the arteries, atheroma, aneurysm, etc.," the figures given as the annual average for the years 1906 to 1910, are considerably more than twice those for 1901 to 1905. Making all allowances for the many misleading features which such statistics may include, the fact remains that diseases of the cardiovascular system are increasing at a very rapid rate. It might be urged that comparisons with pulmonary tuberculosis and pneumonia, such as those submitted by the bureau, fail to afford a true idea of the relative values, since both of these diseases may have shown a decrease of mortality through the improved prophylaxis and therapeutics of recent years. While this criticism is warranted, the mortality of both pulmonary tuberculosis and pneumonia showing a marked decline, the fact remains that the actual averages of both vascular and cardiac diseases of recent years as compared to those of former years likewise show a very marked increase. Facts tend to suggest, therefore, that while we have succeeded in reducing the mortality of tuberculosis and pneumonia, our results in cardiovascular diseases have not been such as to compensate for their rapid increase. Can our present knowledge, deficient as it is, of the functions of the ductless glands, and their rôle in disease, throw any light upon the problem as a whole and suggest remedial measures capable perhaps of raising the standard of our results? If the intimate relationship between the ductless glands and metabolism is recalled, it will appear that this question can be answered in the affirmative.

#### ARTERIOSCLEROSIS.

This disease has become one of the most active agents of the fell reaper. The word "disease" is hardly applicable, however, for if we take into account the many complications it includes, cardiac, renal, cerebral, mental, locomotor, etc., we can well say with Huchard that we are dealing with a family of diseases. The complexity of the problem is further increased by the multiplicity of factors which are known to cause arteriosclerosis. Thus, overfeeding accounts for the great majority of cases of arteriosclerosis in the well to do; toxemias, including those due to intestinal toxins, gout breeding purin bases; obstructive renal disorders; continued and excessive physical labor; the violent overstraining of athletes; various infections, notably typhoid fever, rheumatism, tuberculosis, syphilis, malaria, etc.; poisoning by such agents as lead, barium, etc.; stimulants, alcohol, tobacco, tea, coffee; worry, anxiety, and the general stress of life all have been incriminated as causal factors of the disease.

An effort to ascertain the status of the ductless glands in the pathogenesis of the disease should begin by a full recognition of the pioneer work done by Josué, of Paris, who produced vascular lesions by injections of adrenalin, resembling at least those of arteriosclerosis, and who first described a syndrome for the early recognition of this disease based on the symptomatology of hyperadrenia. We shall see that there is justification for this attitude in certain cases. But we shall find also that other glands are involved in the genesis of the disease. To make this clear I shall divide the morbid process into three types.

*Autolytic type.*—The pancreas, from my viewpoint, plays one of the leading parts in the process. Besides governing carbohydrate metabolism, it supplies a ferment or ferments which take a direct part in the protein metabolism of the tissue cells, and also in the defensive reactions within these cells, as well as in the phagocytes and bloodstream.

In the first edition of *Internal Secretions* (1903-1907) I summarized this feature of the problem in the following words: "The presence of trypsin and other ferments in leucocytes is now recognized as a fundamental feature of phagocytosis. Metchnikoff's cytase is regarded by him, and by Bordet and others, as a trypsin; Kanthack and Hardy also attribute the proteolytic activity of leucocytes to soluble ferments. The more recent writers refer increasingly to the presence in leucocytes of such a ferment. . . . That trypsin is the bactericidal agent of the intestinal tract has been shown by Charrin and Levaditi, Zaremba, and others." After a study of the trophocytes of sponges, laboratory studies of the properties of ferments in lower forms, the migratory powers of leucocytes in higher forms, etc., I concluded that some leucocytes, at least, migrated from the intestinal canal to the tissue cells, there to carry on, among other functions, that of catabolism. I also held that in the blood, besides acting as phagocytes, they took part in the defensive process in the plasma when it was invaded by bacteria, toxins, toxic waste products, or other substances harmful to the tissue cells, the catabolic phase of metabolism here serving to break down the pathogenic sub-



stances, endogenous or exogenous, precisely as it did without components of the tissue cell.

Abderhalden subsequently (1905-1915) reached very similar conclusions. "Everything points," writes this observer, "to the fact that the [tissue] cell has agents at its disposal which render it capable of splitting up into their simplest units all the complicated substances which are brought to it or which it itself builds up." Again, "Each separate cell with very few exceptions disposes of the same or similar ferments as those secreted by the digestive glands in the intestinal canal." As to the manner in which the tissue cells are reached by these ferments, he writes: "Many facts accord with the suggestion that the leucocytes play a part in connection herewith." In keeping with my own views, Abderhalden has termed the digestive ferment a "defensive ferment," thus bringing, he adds, "the so called reactions of immunity into close line with processes that are normal and consequently familiar to the cells." Briefly, the same process which prepares foodstuffs for assimilation and breaks them down to eliminable wastes, is used by Nature to convert pathogenic substances likewise into eliminable end products, thus protecting the organism against their morbid effects. This conception of immunity, while devoid of complexities, enables us to understand clearly many pathological and clinical phenomena that have remained unexplained. In arteriosclerosis, and other conditions to which references shall be made, we witness, among other causative phenomena, exaggeration of this digestive process, with tissue destruction as a result.

The presence of digestive ferments in tissue cells has long been recognized. No less an authority than Vaughan states (1913) that "the cell which can no longer supply a digestive ferment is already dead, whatever be the kind or amount of pabulum surrounding it." As regards the presence of the digestive ferment in the blood, I may quote Eugene L. Opie's statement that "the ability of the blood to remove injurious material is dependent on the possession of proteolytic enzymes. Peculiar to the polymorphonuclear leucocytes is an enzyme which, like trypsin, exerts its digestive action in an alkaline medium."

Wheeler and Bishop's sensitization theory of arteriosclerosis is also based on the presence of trypsin in the tissue cells, with excess of proteins as the main pathogenic agent. Yet how is this sensitizing process carried on and how are the arterial lesions provoked? We are not dealing here with a sudden anaphylactic reaction, but, in practically every instance, with a very slow and gradual erosion, as it were, of the vascular walls. How is this morbid process developed? This is where, I believe, the functions of the thyroid and adrenals assert their influence. While there is no proof that the protein itself activates directly the trypsin zymogen in the cells, much evidence is available to show that it does so indirectly by evoking, in the body at large, a defensive reaction. From my viewpoint, the protein does this by enhancing the functions of the thyroid and adrenals beneficially up to a certain limit, harmfully when this limit is exceeded. In other words, proteins used in excess awaken a reaction having

for its purpose the conversion of the harmful surplus of proteins, both in the cells and in the blood, into eliminable end products. As long as the excess is only such as to keep this protective reaction within certain bounds, no harm to the tissue cells results, even though the cellular proferment is sensitized; but if, when the protective tide is at its highest level, more proteins are added and the already sensitized cellular proferment becomes activated it digests the cell itself, starting the destructive process, or autolysis, the precursor of arteriosclerosis.

The sensitizing properties of the thyroparathyroid secretion, which I assimilated to those attributed to opsonin by Sir A. E. Wright, has been confirmed by others. Thus Léopold-Lévi and H. de Rothschild, of Paris, write in connection herewith in the second volume of their *Physiopathology of the Thyroid Gland*: "Sajous has attributed, among the functions of the thyroid body, a rôle to the latter which he assimilates to that of opsonins and to auto-antitoxins. More recently, Miss Fassin, at the Bacteriological Institute of Liège, M. Stepanoff, and M. Marbé, at the Pasteur Institute, have confirmed on their side the influence of the thyroid on the blood's asset in alexins and opsonins." For the chemical process involved, which also includes the cellular nucleins, I must refer you to former writings, recalling merely that the high liver in the early stages of arteriosclerosis often presents symptoms of Graves's disease, flushing, sensation of heat, nervous irritability, palpitations, high blood pressure, etc., and that the thyroid gland or its preparations do not always produce vasodilatation, as is generally stated. W. E. Waller has also emphasized this fact recently, citing a number of cases of Graves's disease in which, in keeping with some of my own observations, the blood pressure rose to 170, and in one instance to 250 mm. Hg. In the present calamitous war hyperthyroidia has also been found by L. T. Thorne to be accompanied by a rise of blood pressure. Autopsies of victims of Graves's disease often show, moreover, arterial degeneration presenting the characteristics of arteriosclerosis.

As regards the production of arteriosclerosis by adrenal extractives, so much evidence has been published to that effect that I will only recall a few facts. First observed by Josué, this phenomenon has been witnessed by many other investigators. Some authors have argued that the lesions differed from those of typical arteriosclerosis. The fact is that, while in some instances the lesions start in the intima and others in the media, both tend to merge. As regards the influence of adrenaline upon its genesis, so careful an observer as Biedl writes: "There is no reason to doubt that the changes observed in the vessels of rabbits are the outcome of the action of this substance." Another close observer, Richard M. Pearce, concluded after a study of the labors of Vaquez, Aubertin and Ambard, Rose, Darré, Landau, and others, and an examination of 163 adrenals obtained at autopsies of cases of arteriosclerosis, that hyperplasia of the adrenals was an almost constant lesion in arteriosclerosis associated with chronic interstitial nephritis and left sided hypertrophy of the heart, and that it occurred with almost equal frequency in arteriosclerosis with

chronic nephritis of the parenchymatous type. He also found it to be a frequent lesion of arteriosclerosis without nephritis and of nephritis without arteriosclerosis.

Both the thyroid and adrenals being admittedly factors of the problem, by what process does a given substance, say protein in excess, produce the local morbid process? The cellular ferments are subject to the laws of all ferments, one of which is that their activity is increased by a rise of temperature up to a certain limit. This is precisely what occurs in the present connection. That the thyroid influences oxidation is well shown by the studies of Magnus-Levy, Salomon, Steyrer, and others, in which among other conclusive facts, the intake of oxygen in Graves's disease was found to be increased from fifty to eighty per cent. As regards the adrenals, the progressive fall of temperature from normal to 80° F. or even below, which follows their extirpation, the low temperature attending Addison's disease, and the fact that, as stated by Biedl, injections of adrenaline may cause a considerable rise of temperature, point to the influence these organs have on general oxidation—a process which I regard as the most important of their functions. Finally, that the thyroid and adrenals act jointly and are mutually necessary is well shown by the observation of Eppinger, Falta, and Rudinger, that adrenaline fails to raise the blood pressure after the thyroid has been removed. All these facts tend to show that the increased temperature needed to activate the cellular ferment is supplied mainly through increased functional activity of the thyroid and adrenals.

Recalling the stimulating influence of overfeeding, particularly of protein wastes, on the thyroid and adrenals, and that the excessive activity of these organs so raises the sensitiveness of the cellular trypsin that this ferment tends to digest the very cells which harbor it through, as we now see, increased oxidation, we are brought to realize how typhoid fever, scarlatina, influenza, rheumatism, tuberculosis, and other febrile infections may initiate the disease. Alcohol belongs to the same category as a cause since it is by undergoing oxidation in the body that it liberates its energy. The cases due to the excessive use of tobacco probably belong also to this class, Cannon, Aub, and Binger having found that injections of nicotine in small amounts in cats caused an increase of adrenal secretion. Gley likewise observed recently that nicotine caused an increase of adrenaline in the blood, while in rabbits Leo Loeb found that the primary lesions caused by nicotine were in the intima. An active defensive reaction such as that occurring in gout, renal insufficiency, syphilis, lead poisoning, etc., is also attended by increased functional activity of the ductless glands. As to the pathological lesions produced, the blood being the active oxidizing agent, the lesions are those of the nodose type, affecting first the intima, particularly where the blood is most rich in glandular products, and then the aorta, where autolysis is most active.

*Adrenal type.*—This form approaches most nearly Josué's adrenaline type. It differs from the autolytic type in that the lesions appear first in the media. As stated by Guthrie McConnell, "The

changes which develop do not correspond accurately with those of the ordinary nodose sclerosis, but they are indistinguishable from the changes seen in Moenckeberg's type of medial degeneration." Harlow Brooks and Kaplan reported an interesting case in connection herewith. To relieve asthma, the patient had been given intramuscularly from ten to 120 minims of adrenaline daily for over three years. At the autopsy the necrotic foci were found especially in the media. As stated elsewhere, the evidence tends to show that this form is due to excessive constriction of the vasa vasorum, owing to the contracting influence of adrenaline on the smaller or terminal arteries. That the other coats of the vessels may also be involved, however, is suggested by Cowan's observation that while the lesions in the vasa vasorum were sometimes the only visible ones, he had observed cases in which the interference with the vascular supply from the vasa vasorum produced medial and intimal necrosis.

To this type probably belong the numerous cases due to excessive physical labor—sixty-two per cent. of 3,894 hospital cases studied by Thayer. Abelson and Langlois have shown that the internal secretion of the adrenals destroyed fatigue products, i.e., toxic wastes generated during muscular activity. This has been confirmed by Mossé and others. The fact that emotions, fear, etc., as shown by Cannon, increase adrenal activity, suggests that cases due to worry and anxiety, also known to play a part in the etiology of the disease, belong to the adrenal type, though merged in many instances with the autolytic type.

*Denutrition type.*—A third type imposes itself, however, when we take into account the fact that cases of myxedema frequently show post mortem advanced arteriosclerosis with typical lesions including calcification. A similar condition has been observed by Bourneville, Marchand, Heyn and others, in hypothyroidia, while premature arteriosclerosis is not uncommon in diabetes, particularly in the advanced stage. The influence of the thyroid apparatus upon oxidation and metabolism explains this phenomenon—diminished functional activity, obviously defective metabolism, and degeneration in the vessel walls. The sclerosis, fibrosis, or calcification found more or less in all forms being a process of local repair, it occurs as well in this degenerative form as it does in the two preceding. In the aged, arteriosclerosis is doubtless due in some instances to deficient activity of the ductless glands. As is well shown by the studies of Landau, Ecker, Heine, Rolleston, and others, the adrenals, for instance, show marked reduction in volume and in wealth of vascular channels and secretory activity in aged individuals. This applies also to the thyroid.

The fact that hypoactive adrenals do not prevent the development of this denutrition type of arteriosclerosis, suggests that high blood pressure is not necessarily a feature of the morbid process. Indeed, various observers have brought on the disease by injecting toxins, including adrenaline with agents, amylnitrite, for instance, which would prevent a rise of blood pressure, or in doses too minute to affect the latter. High blood pressure should be re-



garded, therefore, more in the light of a very important early symptom and also as a valuable danger signal in advanced cases than as a causal factor of the disease, bearing in mind, however, that in some patients it is compensatory.

Having now submitted my conception of the pathogenesis of the disease, its relations to diagnosis and treatment may be briefly outlined.

*Differential diagnosis and treatment.*—If the death rate of arteriosclerosis and its many complications is to be reduced materially, the symptomatology of the presclerotic stage should be established as clearly as possible, i. e., the stage before the bloodvessels have become the seat of lesions, when either excessive adrenal activity, autolysis, or arterial denutrition is taking place. The etiology here is of cardinal importance. As to the symptoms of fully developed disease, they are virtually similar, being those of arterial degeneration, however caused. I will refer only to such remedial measures as the pathogenesis described may suggest.

Let us consider first the adrenal type. Although Josué and others recognize a clearly defined adrenal syndrome, both the prodromic and late signs they describe have seemed to me to occur in the autolytic period as well. Indeed, it is difficult to understand how it can be otherwise, since the power of the adrenal secretion to excite thyroid activity causes both these organs to act synchronously. It has seemed to me, however, that in cases of sustained exertion, as in laborers, letter carriers, bicyclists, etc., the adrenal factor could be discerned to a certain extent. In such cases, the blood pressure is apt to be somewhat high, 150 mm. Hg. or thereabout; the patient may complain of headache or rather of fullness about the brow and of cramps in the calves of the legs. He may be irritable or, conversely, exuberant, flushed and buoyant, "feeling like being on the go all the time," as one patient expressed it. The pulse may be slow and full and the heart beat, though normal, somewhat forcible. Epistaxis and conditions which the patient defines as nervousness, palpitations, sleeplessness, especially during the early morning hours, a nervous or hacking cough, asthenia or a "wheezing under the breast bone," and often gastric disorders in which hyperchlorhydria and pyrosis are prominent signs. In fact, it is usually for some gastric derangement with constipation or for muscular pains attributed to rheumatism that the patient presents himself.

Such men may, in keeping with what is observed in hypernephroma, show great muscular development—sufficient in three patients whom I have seen to suggest larval acromegaly—and perspire very freely. They may also show venous engorgement, venous pulse, facial congestion, all symptoms of hyperadrenia, all due to thickening of the arterial coats, especially of the muscular media. Conversely, they may appear pale, complain of cold extremities, and stand cold weather badly. This may be due to constriction of the peripheral arterioles, but in all likelihood is due to the onset of organic lesions.

Such cases yield readily to measures calculated to reduce the functional activity of the adrenals. A less arduous occupation and abstention from meat, coffee, tea, and alcohol to lower the vascular tension

often suffice. If the vascular tension is high, the conditions of the kidneys should be looked into. As a rule at this time, these organs are found normal though some polyuria may be present. Spirit of nitrous ether may then be used in small doses three times daily to reduce the tension if it fails to recede after a few days, and also small doses of sodium bromide and chloral on retiring if the tendency to insomnia persists. The iodides at this stage are harmful. So are strychnine, digitalis, and tonics in general, most of which stimulate the adrenals and aggravate the trouble.

The autolytic type may either begin with the symptoms described, where the causative poison is one acting slowly, as is the case in the large proportion of patients in whom the disease is due to the excessive use of proteins, alcohol, coffee, etc., or may follow a febrile disease. Here, we are no longer dealing with erethism due merely to exaggerated metabolism, but with the symptoms of the damage the latter is doing or has done to the bloodvessels. In the overfed or overworked, as previously stated, we witness the phenomena of stimulation—flushed face, brilliant eyes, with perhaps slight precordial pain after an unusually copious meal or unusual exertion, as running, climbing, etc., and general vivacity; but, it is important to note that this stage of primary exuberance corresponds with the febrile period of an infection, which may, though relatively very short, do as much damage to the bloodvessels as years of overeating, hard labor, etc. The patient, after either of these preliminary periods, long or short, passes into what is now mistaken for and described as such in most textbooks, the early manifestations of arteriosclerosis, but which are in reality those of its second stage. While in the first stage, the vessels are merely congested and more or less thickened or hypertrophied, thus causing the blood pressure to be rather high, in this second stage organic lesions have already compromised their power to contract equally in all parts of the circulatory tree. This may affect one part of the latter more than another, or a morbid process may be awakened in one or more organs, the brain, cord, liver, kidneys, etc., according to the inherited or acquired susceptibility of these structures. Then the syndrome usually compared to neurasthenia, which is really that of a debilitated circulation, begins to appear. Loss of vigor, lassitude, or myasthenia, drowsiness, postural vertigo, faintness, more or less marked visual disturbances, phobias, headache, dyspnea on exertion, transitory hemianopsia or amaurosis—the whole gamut with which the physician is so familiar.

Here again, prophylactic measures, a reduction of proteins—eliminating meats and eggs—and any other harmful food the patient may be indulging in too freely are indicated. Acidosis is another feature that is harmful in these cases, which a vegetable diet, by supplying alkaline salts, tends to counteract and gradually to eliminate. Although the arteries are already damaged, the process of repair in them is very active, often by insular sclerosis so disposed longitudinally as to restore the contractile activity of the vessels to a remarkable degree.

As to drugs, is it rational to give the iodides in



cases in which the thyroid secretion laden with iodine in organic combination is taking part in the cellular destruction of the arterial walls? I am glad to note that the experience of Dr. L. Faugères Bishop coincides with mine in this particular. In fact, he refers to patients who were rendered uncomfortable by the abuse of iodides and suggests the possibility of iodism superadded to the symptoms of the disease. This is precisely what happens when the iodides are added to the thyroiodine with which the tissues are laden, the thyroid being already overactive. The indications are precisely the opposite; no remedies until the toxic factor, whatever that may be, dietetic, intestinal, bacterial, etc., is eliminated prophylactically. If after a couple of months, the patient does not show the sense of wellbeing which usually follows well addressed prophylactic measures and still shows neurasthenia like symptoms, it is because metabolism and arterial degeneration is still proceeding, owing mainly to hyperplasia of the thyroid. Arsenic in small doses, say three minims of Fowler's solution three times a day, as shown by Mabile and confirmed by Ewald, Heinrich Stern, and others, will then gradually reduce the thyroid erethism. In cases showing actual hyperthyroidia or larval Graves's disease, ergotine or the coal tar products are helpful to counteract the vascular supply of both the thyroid and adrenals and thus inhibit their secretory activity. It should be remembered that rest is an important feature wherever exuberant activity of the ductless glands is present. The iodides and digitalis—the latter an active adrenal stimulant, a fact in which several experimenters also sustained me—are particularly valuable late, i. e., when the thyroid and adrenals have been in a measure exhausted through the excessive activity that the original cause of the trouble, some toxemia, endogenous or exogenous, has imposed upon them.

When in the form just described exhaustion of the adrenals and thyroid has occurred through the excessive activity imposed upon them by toxins, they have reached, from my viewpoint, the denutrition type, or the condition that prevails in what has been termed the presenile or senile form of arteriosclerosis. In some persons, even those of frugal habits, this develops early because their ductless glands through inherited debility are unable to bear the least exacerbation of activity imposed upon them occasionally by even slight intercurrent disorders, fatigue, emotions, shock, worry, i. e., the wear and tear of existence. Important also in connection herewith is the influence of the disease of children, particularly those attended by fever. Interstitial hemorrhages of both adrenals and thyroid sufficient to reduce considerably their functional efficiency cause lesions which in after life leave the organs on the very threshold of physiological activity. Though able to carry on just the needs of commonplace existence, they prove inadequate to meet the needs of any intercurrent issue. Such people are very early the prey of intercurrent diseases, tuberculosis and pneumonia in particular. They grow old early because as the wear and tear of life impinges upon their ductless glands, denutrition progresses, including that of the arterial system. Premature involu-

tion of the thymus, as I have shown elsewhere, may initiate this denutrition type in the young.

The treatment here is the opposite of that indicated in the foregoing forms. Organotherapy, provided thyroid and adrenal gland and any other organic product used is given in small doses, is of great value. The iodides also in small doses, digitalis, and strophanthus are exceedingly helpful. A reduced diet here is not indicated. Besides the thyroid and adrenal preparations already mentioned, some pancreatic product should be added to facilitate intestinal digestion, sustain tissue life and contribute with the other organic products administered to the defensive resources of the organism.

Such are the relations of the ductless glands to early arteriosclerosis as I interpret them. They seem to be borne out by experimental and clinical evidence, the bulk of which could not be submitted owing to lack of space. So strong is this evidence in the aggregate that it seems to me possible to conclude that arteriosclerosis is the result of excessive or deficient activity of certain ductless glands, the thyroid and adrenals in particular.

#### DISEASES OF THE HEART.

The views submitted concerning the vascular system apply to certain organic cardiac disorders quite as well. A brief summary of the relations between the adrenals and thyroid on the one hand, and the heart on the other, will therefore suffice.

*Acute dilatation of the heart*, such as the heart strain observed in otherwise healthy athletes and the so called irritable heart in soldiers, first described by the late J. M. DaCosta, is but an example of adrenal exhaustion, Brown-Séquard and, forty years later, Oliver and Schafer having shown that the secretion of the adrenals caused contraction of the heart muscle. This secretion is poured into the inferior vena cava, the blood of which carries it to the right heart. Now it is the right heart which is dilated. That digitalis or strophanthus which, as already stated, stimulate the adrenals, should be indicated, seems obvious. This is not the best treatment, however, for we are dealing with extreme deficiency of adrenal secretion due to exhaustion of the adrenals—what might well be termed acute hypoadrenia. Deficiency of fluids being also a result of severe exertion, hypodermoclysis in small doses with adrenaline or a fluid preparation of posterior pituitary, because of its wealth in adrenal substances, with absolute rest to enable the adrenals to recover their secretory activity, are more rational resources.

*Hypertrophy and degeneration.*—Overgrowth of cardiac muscular tissue is usually attributed in arteriosclerosis to the increased resistance to the blood column imposed by the diseased vessels, the average calibre of which is narrowed when there is an extreme degree of sclerosis of visceral arteries and larger vessels, according to some authors. Yet we know that thickening of the vessels may occur without high blood pressure in arteriosclerosis and that, as is the case in the latter disease, prolonged severe exertion, such as that to which blacksmiths, longshoremen, bicyclists, etc., are exposed, brings on hypertrophy of the heart. The fact that this type is known as "primary idiopathic hypertrophy" shows

that its pathogenesis is unknown. In truth, when such cases are analyzed with care, many of them are found to be in that stage of arteriosclerosis in which general erethism prevails, i. e., before the stage of degeneration has occurred. After a time there occurs in the heart, not as a result of increased blood pressure as is now assumed, but as a result of autolysis, what Tyson and Fussell describe as the "arterial sclerosis atheroma and fibroid thickening so constantly seen in valves and heart walls."

Briefly, the causes being the same, the types of both hypertrophy and subsequent degeneration described are but counterparts of the form of arteriosclerosis I have traced to excessive activity of the thyroid and adrenals. Nor do the treatments differ, digitalis and its allies being harmful in the hypertrophic or erethic stage, but beneficial in the degenerative.

This cursory survey of a few cardiovascular diseases illustrates the importance of including the ductless glands in our conception of their pathogenesis and treatment. Indeed, owing to the non-recognition of these organs, I may add, a large proportion of untimely deaths which occurred in acute diseases of many organs and particularly the heart, might have been avoided.

#### DEMENTIA PRÆCOX.

Just as cardiovascular diseases now stand first among those which cause death prematurely, so does dementia præcox stand first as the destroyer of the mind of the young. In a recent paper, Bayard Holmes states that of the 14,000 insane in Illinois, at least fifty per cent. are cases of dementia præcox. This probably represents the average throughout the United States. In other words, over one half of the inmates of our asylums, to say nothing of the many that are not committed, suffer from dementia præcox or from the complications of this dread mental disease of adolescence.

Dementia præcox is considered in the present connection for two main reasons: 1. To recall the importance of a gland, the thymus, which in the pathogenesis of general diseases has been almost entirely neglected. 2. To inquire from our colleagues who devote their labors to psychiatry whether, granting that the thymus underlies the development of dementia præcox, the general practitioner, who in practically every instance sees the initial signs of the disease without recognizing their meaning, owing of course to lack of special training, could not be familiarized with these early symptoms sufficiently to enable him either to send the patient to the psychiatrist before the morbid process is irremediable, or to treat him himself if a psychiatrist is not within reach.

The participation of the thymus in dementia præcox was suggested to me by the fact, confirmed by many clinicians, that, as observed in 1858 by Friedleben, the size and condition of the thymus was an index to the state of nutrition of the body at large. Fourteen years ago I urged, after a careful study of the relations of the thymus to the brain, that it took part in the development of the latter, the deduction submitted at the time being substantially that reached recently, viz., that the function of the

thymus was to supply through the agency of its lymphocytes the excess of phosphorus in organic combination which the body, particularly the osseous, nervous, and genital systems, including the brain, required during its development and growth, i. e., during infancy, childhood, and adolescence. I will not give the evidence already published elsewhere, but will merely recall a few salient facts.

Considerable confusion concerning the physiology of the thymus is evident in the literature of the subject even now. There are at least ten theories as to its functions. The confusion lies in the fact that each author thought his own theory explained the entire rôle of the organ, whereas it failed to do so when submitted to analytical scrutiny. Yet each, with one exception, had merit in the sense that it represented a *bona fide* feature of the problem as a whole. The exception which seemed to find no substantial support was the theory which endowed the thymus with an internal secretion. The evidence sustained strongly, however, the view that its lymphocytes carried nucleoproteins, rich of course in phosphorus as are all nucleins, to the organism at large, including the brain and nervous system, for the development of their neurons.

Another feature which delayed progress in ascertaining the functions of the thymus was the non-recognition by many experimentors of the fact that a proper selection of the animals and removal of the thymus almost immediately after birth alone showed its influence on the body growth, the twelve years before puberty in man being represented in many animals by but a few days. When these and other facts were taken into account, the functions of the thymus as above described seemed to impose themselves.

The wealth of the thymic lymphocytes in nucleins coincides with the all important influence which the thymus seems to possess in the production of idiocy. At Bicêtre Hospital, according to Morel, seventy-five per cent. of 408 nonmyxedematous idiotic children, ranging from one to five years old, examined post mortem from 1890 to 1903, showed absence of the thymus. At the request of Bourneville, Katz performed autopsies in sixty-one mentally normal children, varying in age from one month to thirteen years, who had died of various diseases. In all of these the thymus was present. Conversely, in twenty-eight mentally weak children examined post mortem by Bourneville, the thymus was absent. These observations correspond with the results of complete thymectomy in animals. Basch, Klose and Vogt, Morel, and others have observed mental disorders in puppies the fifth or sixth month after removal of the organ.

While the thymus thus shows itself capable of supplying nucleins to the organ of mind, dementia præcox also shows in many ways some connection with the thymus. There is a marked reduction of the lymphocytes in this disease which the therapeutical use of thymus gland corrects. Deficiency of nucleins is also shown by the excess of purin bases in this disease. Defective metabolism of the bones is shown by the frequent presence of osseous disorders such as retarded growth, rickets, osteomalacia, and fragilitas ossium. Finally, therapeutically, Ludlum and

Corson-White obtained excellent results in three out of six cases of dementia præcox, the three patients in whom it failed being old and much demented. While these cases are quite insufficient in number to demonstrate the value of thymus gland in the disease, they are at least suggestive when considered with the other data submitted.

The familiar functional relationship between the various ductless glands suggests that asthenic disorders of the latter should show some mental kinship with dementia præcox. The English Myxedema Committee, after an extensive investigation, found that nearly one half of the patients suffering from myxedema also showed mental disorders. The types most frequently observed were melancholia with delusions and hallucinations, due, as I suggested elsewhere, to lowered metabolism occurring as a result of the deficient thyroid activity; and acute or chronic mania and dementia, due, from my viewpoint, to the accumulation in the tissues, including the brain, of intermediate products of metabolism which a normal supply of thyroid secretion would, in conjunction with other internal secretions, have converted into eliminable products. Bernstein found the stigmata of myxedema in practically all cases of dementia præcox.

The mental symptoms of Addison's disease also showing considerable kinship with those of myxedema, we are brought to realize that thymic deficiency entails more or less deficiency of the other ductless glands and that we find in the stigmata of these various organs clues to a possible underlying cause of dementia præcox which may so far have been overlooked.

In discussing the relationship between the diseases of the ductless glands and cardiovascular diseases I could speak from the standpoint of clinical experience, but dementia præcox being out of my line, I can only bid for light, hoping that the following stigmata of insufficiency of the three main ductless glands apparently concerned in the morbid process may prove of some service. Indeed, in this disease as in arteriosclerosis, the great desideratum appears to be recognition of the initial symptoms, so as to make it possible perhaps to thwart its progress. The stigmata referred to, reduced to their simplest expression, are briefly as follows:

*Stigmata of thymus deficiency.*—1. Deficient development of the osseous system and of the epiphyses, resulting in deformities suggesting rickets or osteomalacia, due to inadequate assimilation of calcium owing to the deficiency of thymic nucleins which take part in the building up of calcium phosphate, terminating in undersized stature. 2. Deficient mental development due to the insufficient production of thymic nucleins to supply the neurons of the central nervous system during its development. 3. A low relative lymphocyte count due to the inadequate formation of these cells by the thymus.

*Stigmata of thyroid deficiency.*—1. Subnormal temperature, cold extremities due to defective oxidation and metabolism, the thyroid collaborating actively with the adrenals and thymus—before puberty only as to the latter gland—in sustaining this process with a tendency to obesity. 2. A doughy, dry skin, with at times cervical or axillary fat pads due to plasmatic infiltration and circulatory torpor; also in

very marked cases, scaly skin and dry, brittle hair and nails due to deficient nutrition of these structures. 3. Mental torpor or deficiency where true thyroid stigmata are discernible, complete development of the brain requiring perfect coordination of the thyroid, adrenal, and thymic functions.

*Stigmata of adrenal deficiency.*—1. Muscular weakness and emaciation, pallor, deficient hair growth, sensitiveness to cold, subnormal temperature, all due to deficient tissue oxidation and recession of the blood mass into the splanchnic area. 2. Weak heart action and pulse, low blood pressure, and constipation due to deficient peristalsis, the result in turn of torpor of the intestinal muscular layer. 3. Pigmentation, sometimes limited to bronze areas on the back of the hands, and freckles. 4. Mental torpor, slow intellect, or even idiocy where the adrenal deficiency is initiated *in utero*.

In all these abnormalities we must bear in mind the influence of toxins, exogenous and endogenous, which are now known to bear so great an influence on mental diseases. The functions of the ductless glands including that of converting poisons into eliminable wastes, their insufficiency entails an accumulation of these poisons, or of intermediate wastes—which are also toxic—and therefore the very conditions which promote certain forms of mental aberration. Important also are the diseases of children in the genesis of dementia præcox, since, as we have seen, hemorrhages in the various ductless glands may then occur which are followed by sclerotic lesions that impair their efficiency. But here another feature must not be overlooked—the lesions that are sometimes produced in the brain itself, in the course of acute febrile infections.

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## THE VEGETATIVE NERVOUS SYSTEM AND DEMENTIA PRÆCOX.\*

### *A Critical Résumé and Discussion.*

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The concept of the vegetative nervous system is fairly clear so far as its structure is concerned. Its manifold functions are far from being completely analyzed, although students of physiology and pathology are actively engaged in work upon the many problems presented, some of which will engage our attention here. The concept of dementia præcox, on the other hand, is far from being clear, and before going into the intricacies of the relations of the vegetative nervous system and dementia præcox, some definition is desirable as to the fields to be covered.

By the vegetative nervous system is meant that collection of nervous receptors, connectors, and effectors, which, acting upon the unstriated muscles of the body and upon the secretory glands, external as well as internal, constitute the chief mechanism by which the metabolism of the body is regulated. It acts as a more or less interrelated series of groups of adaptative mechanisms at that which may be

\*Outline of a discussion given at the American Congress of Internal Medicine, December 28, 1916.



termed the physicochemical level of the bodily functions (1). Its mechanisms transform comparatively small amounts of energy coming from the vast cosmic energy of the outside world, brought through all of the sensory receptors of the human body, and act to keep the human machine, as a machine, in proper condition to do its work, to aid the individual as a unit in society toward its future goal. Just what all of the receptors are is not yet completely known. They react mostly to physicochemical stimuli and mediate, for some at least, through special chemical substances to which Bayliss and Starling gave the name hormones. The oldest known of these is carbon dioxide. Its chief gland is the blood. At present adrenaline is the only other hormone whose chemical composition may be said to be definitely known, although many others are slowly revealing their chemical composition, Kendall's recent analysis of the thyroid substance being an illustration. The endocrinous glands are part and parcel of this vegetative nervous system. There seems to be good evidence that this nervous system is a later evolutive regulatory apparatus which, through a process of divergence, was necessary as complexity arose in the zoological series. The vegetative nervous system took over the function of regulation as chemical interrelationship became structurally impossible.

This vegetative nervous system shows functionally a duplex system, the autonomic and the sympathetic fibres, both of which sets are present in all of the structures of the body. It is through the reciprocal activity of these two groups that metabolism and a condition of wellbeing are effected. We shall have occasion later on in our discussion to attempt to separate the activities of the autonomic and the sympathetic series in their relations to what we shall term the somatic disturbances, i. e., the machine defects, in dementia præcox.

Having defined then for the time being what we here mean by the vegetative nervous system, in equally brief manner, let us turn to what we shall mean by dementia præcox.

Two authoritative monographic treatises exist which discuss dementia præcox, an earlier, more formal, descriptive one by Kraepelin, who has been foremost in the attempt to demarcate clinically a large and heterogeneous group of psychotic reaction types, and a later, more biological, and interpretative work by Bleuler. These two concepts of dementia præcox outlined in somewhat different ways and from slightly differing angles will represent what is here meant by dementia præcox. This condition has reference to a large group of individuals who for the most part show in adolescence or early adult life a characteristic series of vegetative, sensorimotor, and symbolic system disorders which more or less damages them in their social adaptations. We shall here discuss only those changes evident in the vegetative level reactions and then endeavor to see if any common factors exist and whether, by means of such correlations, understanding of this symptom subgroup may be found which shall be dynamic and offer some real type of logical interpretation.

These vegetative level disorders are particularly

in evidence in the schizophrenic syndrome. They are frequently spoken of as the physical symptoms of dementia præcox. In the sense here outlined the term physical symptoms is not the best term. The division of symptoms into the vegetative, sensorimotor, and symbolic is a preferable one. Hence in this place the alterations in knee jerks, etc., will not be discussed. These belong chiefly to the sensorimotor group, subserved by the peripheral sensory and motor system and less obviously by the vegetative system. The voluntary and involuntary modification of these sensorimotor reactions occurring in certain mannerisms, gestures, forms of speech, eccentricities of action, etc., belong to the symbolic group. They symbolize something for the patient. These are also omitted in this review. A really complete analysis of schizophrenics, as of all diseases, must, however, include the changes at all three levels. This review confines itself first to the purely descriptive phases of the automatic activities of the vegetative nervous system. Later we shall refer to some etiological factors. We shall pass in review their various appearances which have been observed frequently, constantly, or only rarely in the schizophrenic group. It is to be borne in mind that all of these may be complicating pictures from other and outside factors. It is only by collecting and sorting them, however, that any advance can be made in newer and better syntheses.

These vegetative level somatic disturbances are very numerous, and now that attention has been called to them new ones are being noted every day. They have always been there, but, like everything else in nature, until there seems to be a value in something we do not see the reality that surrounds us. Purpose therefore sharpens our observation and hypothesis serves to collect the observations into some wish fulfilling form. The most recent of these attempts at systematization of vegetative phenomena is that of Eppinger and Hess, who would generalize a vagotonic, sympathicotonic, vagotropic, and sympathicotropic series of changes based upon the disturbances of functional balance between the autonomic and sympathetic systems.

To avoid any preconceived arrangement, however, we have grouped them alphabetically and have not endeavored to separate the autonomic from the sympathetic series. Thus there are inconstant and conflicting changes in the blood itself, its morphology, its chemistry, its coagulability, its hemolytic reactions. Among the more striking of the serum reactions to which an enormous amount of work has been devoted are those suggested by Abderhalden's researches. Beginning with the dogmatic statements of Fäusser and his followers it appeared that a final answer had been found, but after a careful study of an enormous literature we are forced to the conclusion that whereas certain facts stand out showing some disturbances of "defense ferment" action, they are extremely variable, contradictory, and confusing. They need to be reappraised from an entirely different viewpoint, the hypothetical foundations for which are as yet lacking. There are changes in the bloodvessels, affecting the contractility of the vessel walls, or the exudative capacity of these walls thus permits edemas, which in

certain extreme reactions cause epileptiform seizures in the schizophrenic, or the wet brain of the catatonic (*Hirntod*). The entire *circulatory apparatus* has been scrutinized and conflicting changes in the blood pressure and the pulse have been recorded. For a number of years *bony* changes have been known. Osteomalacia as a vegetative disturbance in schizophrenia is almost a commonplace of psychiatry.

*Endocrinopathic* changes have been recorded for years, but only within comparatively recent times has the search been sufficiently exhaustive to say that we really know anything about the subject. Laignel-Lavastine on the basis of endocrinopathic disturbances promised a dismemberment of psychiatry in 1908 at the Congress of Dijon. What has been accomplished in this latter direction we shall not have time to discuss at this time. There is little question as to the facts. They admit only of collecting. How shall they be weighed?

*Eye symptoms* are more or less constantly present. They consist of irregularity of the pupils, wide dilatations, inequalities in the palpebral fissures, transitory swellings in the discs, sometimes advancing to choked discs, peculiar and paradoxical reactions to light and to certain mydriatics, notably to adrenaline. Adrenaline mydriasis is a topic of special interest. Changes within the eye media themselves in the nature of edemas of the bloodvessels, causing slight opacities, are known in dementia præcox. They are sometimes called "arteriosclerotic" changes by even well equipped ophthalmologists. "Rheumatic" iritis is another of these anomalies.

In the *gastrointestinal tract* one meets with ptialism, dry mouth, xerostoma, and thickened tongues. Esophageal spasms are frequent, most often resembling vagotonic spasms in the lower third of the esophagus. Hypermotility and hyperacidity may exist with other gastric medleys, ventricular, peptic ulcers, etc. Ptoses are extremely frequent. Ileocecal valve relaxations, Lane's kinks, and related motor anomalies are nearly always present when looked for in the schizophrenic. Some shallow gastroenterologists have attempted to explain the disorder on the basis of these gastric, intestinal, and colonic vegetative nerve disturbances. Great variability in absorption capacity, special intestinal protein sensitizations are other gastrointestinal symptoms of the schizophrenic syndrome. These various anomalies are results, not causes.

Modified *kidney* disturbances have been frequently found. *Liver* anomalies are frequent, hyperglycemia, marked changeability in sugar mobilization, glycosuria, leucosuria, spasmogenic icterus.

In the consideration of the *lungs*, the study of respiratory anomalies is very incomplete. Markedly spastic motor states, which are frequent, reduce the respiratory quotient and give rise to a number of lung anomalies. The Pottenger chest palpation tests are an index of the vegetative response and tuberculosis, as is known, is a frequent result. Reflex fixation (*Spannung*) of the chest wall is one of the most frequent vegetative signs. While the symbolic causation is fairly well recognized, its vegetative disorder results have not been carefully studied. We hazard the conjecture that the ultimate unravel-

ing of the tuberculosis problem will be much furthered if phthisiologists will enlarge their vision and study the relationship between the psyche of schizophrenics and tuberculosis. Pottenger is following the trail suggested by the far reaching concept of "disorders of respiratory libido."

In the *skin* a number of anomalies are found. Dermographism has been extensively observed, cyanosis, a commonplace, changes in the secretions, hyperidrosis, anidrosis, modifications of the nails and hair, purpuras, edemas, etc. The skin protein reactions are just beginning to be studied.

From this extremely brief résumé, the documentary evidence for which is very extensive, it stands out that in the schizophrenic may be found, far more than in almost any other group of individuals, a most fertile field for the observation of vegetative nerve disorders. There is no visceral nervous anomaly which will not be noted in some one or other schizophrenic and a greater variety of anomalies of the vegetative nervous system are likely to be found in a typical schizophrenic than in any other sick type. Yet they are for the most part, save in many catatonics, usually of so unobtrusive a character as to escape observation. This generalized visceralosis, if I may coin a term, has tended to give credence to the general belief that a mechanistic toxic factor lies behind the whole dementia præcox reaction. Practically no two physicochemical mechanists have agreed upon what toxic factor or factors, but from the earlier conjectures of Dide to the present time, the various advocates of a somatic toxemia have boxed the visceral compass to find the autointoxicants, always to find it somewhere else—now the intestine, again the hypophysis, then a thyrosis, once again a gonad or a thymus, or what not.

When in closing, I state that man is a social animal, I trust I shall not be accused of undue levity. It is so often emphasized that man is a mere chemical machine, that it seems desirable to accent the concept of his preëminent social function. No one will fail to admit that the principle of evolution can be most advantageously applied to man in all fields of his activities. Man is the last word in the accumulated experiences of countless centuries. His ancestry began with cosmic, physical, and chemical forces. He can never leave them and they determine in part his aftercoming structures and functions. Those who have followed Henderson in his masterly study on man's environment as influencing his inner structure must realize how the composition of water, of nitrogen, of the metals, constrain the activities of even the highest of the biological series, to definite reactive trends. When life insinuated itself into dead matter, however, when crystalline laws were surpassed because they were too rigid to allow for the accumulation of energy which was building up animal and vegetable forms, a type of superchemistry arose, the behavior of which science has symbolized under the term vital. These vital reactions in their turn became condensed in structure. This very structural rigidity, like its prototype the crystal, in its turn threatened to limit the power of life's accumulations. If evolution was to go on, if the animal body was not to be hampered in its power to profit



from increasing experience a supervitalism must arise. Retrospectively this is what happened when language was evolved, when through a masterly symbolism, which was capable of being applied to an infinity of things, the animal, man, was not confined by his structure to a monopoly of reactions bound up within the structure itself. There was no longer any limit to the energy that man might accumulate, now that he had a means of concentrating it and of using it by means of a flexible growing thing like the symbol. This was his social tool that set him apart from all other types of herds. This was the master expression of his psyche.

When I speak of the psyche, then, I mean that portion or function of man which operates chiefly by means of and through symbols. Psychological mechanisms, therefore, are preëminently symbolic mechanisms. Their study is the study of symbology, with its enormous phylogenetic past which is just being unraveled. By many who are mostly dealing with classroom problems this study is often termed psychology. The average classroom psychology, however, only touches the fringe of the actualities of life. The psychology which is to be of any service to medicine is that which deals with this enormously rich past, of which the previously emphasized evolutionary hypothesis takes cognizance. It is the psychology which is tucked away, condensed, concealed within the symbol. It is best termed the psychology of the unconscious. It is by means of such a concept that we can get in sympathetic touch with the past. The unconscious then contains all of the chemistry, the vitalism, and the symbolism. The laboratory cat of Cannon's experiments on seeing the dreaded animal the dog—symbol—arches its back, raises its hair, dilates its pupils, increases its heart beat—vital reactions—and through the vegetative nervous system alters the chemistry of the entire body. This is done through unconscious responses of which the conscious symbol, dog, is but a small part.

The psychology of the conscious is but a momentary flash of what the hundred million years of life have condensed and concealed in the living human being. It expresses only the numerator of a fraction which represents life. The immensely more important part of life is hidden in the denominator. As the numerator 1, the moment of consciousness, is to the denominator, 100,000,000 years, so is our conscious knowledge of what is going on to that which really makes it happen.

It is right here that we part company with a purely autointoxication theory of dementia præcox and wish to emphasize the importance of the individual's symbolic life, that is, his social functions. All these changes which I have briefly summarized are undoubtedly there. We cannot doubt it any more than we can doubt that Pawlow found psychical reflexes in his laboratory dogs and that actual gastric juice changes followed the ringing of a bell; nor are we sceptical concerning the action of the secretions and the vegetative nervous disturbance in Cannon's cat. The receptors for hearing in the former and those for seeing in the latter started a series of changes in the organs which were transitory because dealing with transitory emotional situ-

ations. If Pawlow and Cannon kept up their stimuli indefinitely, we can readily see that grave alterations might ensue in the viscera of the laboratory animals. Hodge and Crile have attempted to show this.

Now the chief characteristic of the schizophrenic, as seen in psychanalytic study, reveals a constant unconscious emotional stress. There is no let up in it save when the patient possibly constructs a flight, as in a delirium. Although he constructs psychical barriers—and these are what psychiatrists call his symptoms—the emotional undertone continues with an intensity which is almost beyond credence, and, were it not for the ingenious psychological blockings, would be beyond human endurance. In spite of all these blockings the stress gets through and ultimately tears the individual to pieces. This causes his generalized viscerolosis and induces the vegetative nervous disorders which have here simply been catalogued and not described. What these emotional factors really are, which by reason of their continued action in the unconscious cause this intense conflict whose burden is met with varying degrees of illness, can be learned from the student of psychopathology. To neglect this, the study of man's psyche, in the production of disease, is to neglect the most important part of man's functions. To include it is to follow out the Hippocratic injunction to "study the whole man."

"What is greater than desire in the heart of man?" Nothing is greater than desire in the heart of man! has always been the answer. The psychopathologist studies the disorders of the function of the "desire in the heart of man," for here lie the chief answers to the problem of dementia præcox. The vegetative nerve disorders are the results of its maladaptation rather than its causes.

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64 WEST FIFTY-SIXTH STREET.

## THE TRUTH ABOUT ELECTROTHERAPEUTICS.\*

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Electricity as a therapeutical agent is employed more frequently now than ever before. The evolution from empiricism to accurate knowledge of some of the physiological effects of electricity has been gradual but sure, until at the present time it may be said that there is a sound scientific basis for the employment of electrotherapeutic measures.

Progress in this field has been retarded by the following conditions: 1. The ancient teaching that electricity is purely psychical in action and that its chief use, therefore, is in the field of neurology, with persistent adherence to this doctrine despite demonstrable evidence of many physiological effects and its application to other fields. 2. The erroneous statements appearing in some modern textbooks

\*Read before the Philadelphia County Medical Society, February 14, 1917.



upon electrotherapy, also in special chapters contributed to standard works upon general therapeutics, statements which have evidently been copied from old works containing ideas long since discarded by physicians who have kept apace with progress. 3. The absence of even rudimentary teaching in the majority of undergraduate and postgraduate medical schools. 4. The prejudice which has arisen from the association of electrotherapeutics with irregular practice, and the unwarranted claims and pseudoscientific teaching of honest but erring enthusiasts who do not use critical methods of control in their work. 5. A lack of proper standardization of electrotherapeutic apparatus. This condition is due to the fact that manufacturers do not know what is best suited to the needs of the profession, and that physicians, because of the lack of technical knowledge, cannot advise them. The consequence is that each manufacturer sets his own standard, with an ensuing confusion in the reports of results by different physicians possessing different apparatus. This is especially true where apparatus for the generation of high frequency currents is concerned, since these currents are subject to great variation, both as regards their character and the effects produced by them upon the organism.

The realization of the foregoing unfortunate conditions has inspired the present paper, the purposes of which are to correlate the important facts concerning the physiological action of electrical currents and to specify what the author's experience indicates are some fallacies of teaching; to plead for an unbiased study of the subject by all physicians as a duty which they owe both to themselves and to their patients; to urge upon enthusiasts the necessity of being guarded in their assertions, for though electricity has many definite uses, it also has its limitations. It is imperative that physicians employing this remedy view the subject with the proper perspective, differentiating theory from proven basic principles, and being sure of reported results. The writer also desires to recommend the addition of electrotherapeutic teaching to the curriculum of all medical schools, together with the installation of well equipped electrical laboratories in these schools, and in endowed research institutes where trained men may work in collaboration with the physicist, physiologist, pathologist, and clinician, upon the same plane of dignity as those in the laboratories of bacteriology, serology, or pathology. Another purpose of this paper is to urge the correction of lax legislation which permits the employment of electrotherapy by nongraduates of medicine, who apply treatment without knowledge of physiology or pathology. There should be the same Federal prosecution of malefactors who misrepresent electrotherapeutics in advertisements in the lay press as there is in the case of the misrepresentation of drugs. Finally it is desired to emphasize the necessity for standardization of apparatus and dose if uniform results are to be obtained. Under the direction of a national body of electrical technicians and clinicians, it is possible to standardize electrotherapeutic apparatus and dose with almost the same degree of accuracy as drugs in the Pharmacopoeia are standardized, which is now being done by a committee

of the American Association of Electrotherapeutics and Radiology.

In addition to its known value, electricity has great possibilities, and perhaps may solve some of the elusive and difficult physical problems that have hitherto resisted scientific endeavor. It is true that many conditions can be treated with greater benefit by drug or other measures than by electricity, but experience also teaches that in many pathological conditions, the benefits to be derived from the application of electricity are greater than those obtained by any other means.

#### PHYSIOLOGICAL EFFECTS OF ELECTRICITY.

Electricity, though always the same force, is manifested in many ways and when modified and applied with knowledge, intelligence, and skill, may be made to produce different physiological effects. It is upon this variability that the whole superstructure of electrotherapeutics rests. The known effects produced by electricity may be classified as follows: 1, mechanical; 2, electrolytic or chemical; 3, counterirritant; 4, thermic; 5, actinic; 6, psychical. These effects may be postulated, and it requires but simple logical deduction to reveal their application to rational therapeutics.

*Mechanical* contractions of nerves, muscles, ligaments, and viscera may be produced by the interrupted galvanic, the plain or interrupted faradic, the sinusoidal, the static wave, static sparks, static induced current, and the high frequency resonator discharge. These contractions may be general or local, slow or rapid, superficial or deep, irregular or so rhythmical that they may be made exactly to synchronize with the heart beat. The correct employment of electrical contractions alternating with relaxations, accomplishes exercise without fatigue, with the incidental stimulating, developmental, eliminative, and metabolic effects. All these currents have some particular indications, although there are conditions in which they may be used interchangeably or in combination.

*The electrolytic or chemical* action of the galvanic current is utilized to advantage in medicine, and offers a fruitful field for future research work. The destruction of small growths and treatment of hypertrichosis by electrolysis is well known. By a method known as ionic medication, various drugs may be introduced into the tissues. Copper, zinc, silver, mercury, magnesium, and other metals may be separated from their salts and driven into the tissues from the anode, as may cocaine, morphine, and aconite. Iodine, the salicylates, and other useful drugs are driven in from the cathode. The advantage of ionic medication over introduction of the drug through the alimentary tract is that the direct application of drugs insures a maximum effect, while when introduced by the stomach, chemical changes and distribution of action may materially lessen the local potency of the remedial agent. The opposite poles have opposite chemical reactions, the positive being acid in reaction, while the negative is alkaline; the positive contracts, the negative dilates; the positive is sedative, the negative is stimulating.

*Heating* of tissue is produced by the various forms of high frequency currents and from carbon, tung-

sten, and nitrogen electric therapeutic lamps. The effect produced by a high frequency current may range from a slight irritation of the skin and the production of a simple hyperemia, to actual coagulation, desiccation, or incineration. The action may be localized in one area or generalized over the surface of the whole body. The current may penetrate the body at given points; a joint may be heated, as may the liver, lung, kidney, or indeed any organ. This heat may also be distributed equally through every portion of the organism with a consequent elevation of the body temperature. The heat from electric therapeutic lamps, as far as is known, is comparatively superficial, although the lamps furnish a convenient method of applying surface heat, and are of undoubted value.

All degrees of *counterirritation* may be produced by the application to the skin of the galvanic and high frequency currents, the static brush discharge, heat from therapeutic lamps, and the ultraviolet rays. The counterirritation from the ultraviolet rays is more lasting in effect than that obtained by the other methods.

*Actinic* effects are produced by some of the spectral and extraspectral rays generated by electrical currents. Blue rays are known to be sedative and red rays stimulating. The action of the other spectral rays is not so well determined. Very little is known of the action of infrared except that of heat. The ultraviolet rays are strongly actinic and are bactericidal in action to a marked degree, very stimulating and irritating, even to the point of producing the destruction of superficial tissue. Under modifications of application, consisting of filtration of irritating wave lengths—red, yellow, and green—by interposing cobalt blue ultraviolet glass, and compression of tissue for the purpose of producing ischemia by quartz lenses while the rays are passing through, these rays may be made less irritating. The rays cannot penetrate any substance colored red, hence the necessity of producing a temporary ischemia to insure penetration by the rays. Under ischemia, the penetration is from one to four millimetres. The ultraviolet rays may be used with success in some skin lesions and in such systemic conditions as are benefited by sunlight. The x ray properly comes under electrotherapeutics, but because of the wealth of literature upon this subject, it will not be discussed here.

The beneficial *psychical* influence of electricity upon some impressionable patients is undoubted, and is welcomed in the treatment of such conditions as hysteria and hypochondriasis, but this is the least of the beneficial effects of electricity, and not the greatest, as some of us have been taught to believe. There is an influence aside from the psychical one. It may be safely asserted that the individual who comes in unexpected contact with a live wire does not die from the psychical effect; conversely the therapeutic application of a selected current benefits the recipient.

Let us now consider some of the fallacious teachings.

1. The belief that the galvanic current on account of its low voltage follows the surface of the body and does not penetrate into the deep tissue, is an

erroneous one. The dry skin is a poor conductor, but when it is moistened electricity passes through it with ease. The deeper tissues are largely or saline fluid composition, therefore, they are a good conducting medium, and the galvanic current passes through them freely. Living bone, with its constant moisture, is a much better conductor than the skin. The brain is acted upon perhaps more freely than any other tissue, because of the large percentage of fluid of which it is composed, and the current easily reaches the brain because it is a better conductor than either the scalp tissue or the cranium. The action of the galvanic current upon the brain is shown by the dizziness or even syncope, which results when the current is passed transversely and not longitudinally; this also results from a sudden break in the current or when the circuit is opened and closed too suddenly. When the galvanic or any other current is applied in a bath and the body is submerged during the passage, the action is largely upon the skin surface, because it requires less electromotive force for the current to pass through the water than through the skin to the deeper tissues.

2. It has been asserted that high frequency currents produce their effects by various mystical influences, among which has been mentioned "fine cellular massage." There is no present evidence to show that there is any action other than that of heat, but it may be truthfully said that for the superficial or deep application of heat with its known benefits high frequency currents hold first place.

3. The application of high frequency glass vacuum tubes is often erroneously called ultraviolet ray treatment. Ultraviolet rays will not penetrate ordinary glass. If the tube is held a short distance from the body, allowing the sparks to pass through an air space, a very small amount of ultraviolet rays that may reach the skin is generated, but not a quantity sufficient to produce any therapeutical effect. Practical ultraviolet rays can be produced only by iron carbon or quartz mercury vapor lamps, and projected through clear water, air, or rock crystal. The quartz mercury vapor lamps are much more powerful than the iron carbon lamps and have largely superseded them.

4. Physical contractions by the static wave current and static sparks have been recommended for acute neuritis for the purpose of aborting or shortening the attack, by hastening the absorption of exudates, promoting tissue drainage, relieving pressure, reducing muscle spasm, and alleviating pain. This is a plausible theory, but does not work out in practice in the case of acute neuritis. Because of its high voltage and relatively low amperage, the static wave current is less irritating than the interrupted galvanic and faradic currents, and may do less harm, but even so, why treat an acutely inflamed nerve by any manipulation, no matter how slight, that produces trauma?

Absolute rest and immobility are the first indications. In addition, heat from electrical sources, such as high frequency currents and therapeutical lamps, or mild positive galvanism to lessen nerve irritability, may be used to advantage. Mechanical or electrical contractions should never be induced during the acute stage of a true neuritis, whatever



the anatomic location. During the subacute and chronic stages, the static wave current and static sparks, together with diathermy, may be used, and will not only give relief, but also materially hasten the cure. Reported cases of acute neuritis aborted or cured by the static wave current and static sparks, were probably not cases of true neuritis at all, but neuralgias or myalgias. For the relief of muscle spasm these currents are exceedingly valuable. In cases of inflammation due to infection or in cases where pus is present, electrical contractions are always contraindicated and may produce harmful results. High frequency currents, ultraviolet rays, and radiant light and heat may be used to advantage to promote phagocytosis before and after incision and drainage.

5. Another error is the assertion of the reduction to normal size of large fibrous prostates. Honest but mistaken physicians have reported that these results have been obtained and have indeed gone so far as to assert that operative surgery can be dispensed with in these conditions. What really has been accomplished is the relief of the superimposed infiltration and chronic inflammation, the abatement of which ameliorated or obviated the symptoms. The static wave current is extremely valuable for this purpose, and may obviate the need for surgical interference in cases that would otherwise require prostatectomy. In cases of hypertrophied fibrous prostates in which the tissue drainage affected by the static wave current does not relieve the coincident congestion sufficiently to abate the symptoms and in which there is an accompanying cystitis, bladder atony, and dilatation, the Röntgen rays may affect the fibrous tissue as it does the tissue of uterine fibroids. If the application of the rays produces no improvement, prostatectomy is the only means of relief, unless it be permanent catheter life. An acutely inflamed prostate should not be treated by the static wave current for the same reason that an acute neuritis should not be so treated.

6. There is a widespread belief that the static positive and negative poles may be used interchangeably. This is an error, inasmuch as sedative or irritating effects are dependent upon the polarity.

7. It is stated that ozone generated by the high frequency current and passed through aromatic oils for the purpose of absorbing the irritating nitrous acid, which is generated with the ozone, is beneficial in diseases of the respiratory tract, such as catarrh, bronchitis, and tuberculosis. Pure ozone alone is irritating to mucous membranes, and much more so when mixed with nitrous acid, which is seldom if ever entirely absorbed by the oils. Ozone is very unstable, and even though it did possess virtue it could not reach the throat or lungs in a pure state, because of the chemical combinations it would form, especially with nitrogen, before reaching its destination. Its use should be condemned because it produces an irritating effect and aggravates the conditions rather than relieves them. There may be some beneficial effect from nebulized oils alone, but not from ozone passed through them. This so called ozone therapy has been a fruitful field for charlatans and many have been its victims.

8. In the case of pathologically incurable diseases, such as locomotor ataxia, paralysis agitans, chronic Bright's disease, diabetes, etc., extravagant claims too ridiculous for refutation have been made for electricity. The employment of electricity is amply justified in these cases for the improvement of metabolism, the promotion of comfort, and the prolongation of life, but no cure can be expected.

9. The question of the value of high frequency currents for the reduction of blood pressure is of interest to the profession, and there is much difference of opinion regarding it. Indeed, some eminent therapeutists have declared them to be of no value whatever. Autocondensation, if administered properly, is a very valuable adjunct to dietetic, pharmaceutical, hydrotherapeutical, and hygienic measures in cases where the reduction is indicated, especially when autointoxication is the causative factor. In chronic nephritis the rise in blood pressure may be a compensatory condition, and it may not be prudent to lower it beyond a certain point. Autocondensation acts by the dilatation of the peripheral vessels, thus producing an equalization of the circulation and probably increased oxidation and elimination. Increased specific gravity of the urine is noted after autocondensation treatment; to some extent this may be due to greater concentration after an increase of perspiration. It is often possible to reduce the pressure from ten to twenty points, or even more, by one treatment. With continued treatment, there is more or less permanency in the reduction, although this doubtless is partially due to other measures coincidentally employed. Were it necessary to choose between ordinary rational measures and autocondensation, the former would be chosen as first in value, but when both are used together there is no doubt that better results are accomplished than when either is used alone. This conclusion has been reached after years of careful observation. It may be added here that static wave currents elevate the blood pressure in cases of hypotension, while high frequency currents lower it, when hypertension exists.

#### ELECTRODIAGNOSIS AND PROGNOSIS.

The value of the galvanic and faradic currents and the more recently studied condenser discharges for nerve and muscle testing in peripheral and in some central nerve lesions for the determination of changes in electrical response leading to the reaction of degeneration is proven, and the method should be in more general use by the profession, as often a diagnosis and prognosis may be given promptly, malingerers exposed, guesswork eliminated, and reputations for ability enhanced.

#### RÉSUMÉ.

Electrotherapeutics should be studied from the standpoint of cause and effect rather than by outline of indications. Success depends upon an adequate knowledge of physiology and pathology as related to the human body; upon a mastery of the laws that govern electricity; upon the possession of efficient apparatus, the achievement of good technic by practice, and the good judgment to apply all these acquirements to the best advantage. Given two men with the same apparatus, one may get excellent re-



sults and the other poor results, for the same reason that in the hands of one, calomel may be a potent remedy, while in the hands of another it would fail.

Electrotherapeutics is not a system to be used to the exclusion of other therapeutical measures, but is a worthy additional unit to any physician's armamentarium. Competence in this as well as in other methods of physical therapy will do much to discourage irregular practitioners who are thriving on charlatanism.

1809 CHESTNUT STREET.

## REPORT OF SIX CASES OF DYSPHAGIA AND DYSPHONIA OF DENTAL ORIGIN.\*

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Among the many recent advances in medical science none is of more importance than that which has been so forcibly brought to the attention of the profession in the last few years by the work of Rosenow and Billings in showing the important rôle that focal infection plays in the production of systemic disease.

We, as laryngologists, have had this impressed upon us in the many discussions which have taken place with the tonsil as a battleground, until today there is little dissent from the opinion that the diseased tonsil is, if nothing more, a decided menace to good health. It is important, however, constantly to bear in mind that the tonsil is only one possible focus of infection and that in determining the cause of systemic disease every possible centre must be considered. The danger of falling into error by overlooking this fact has been shown conclusively by Dr. Charles W. Richardson, who in a paper a short time ago reported a number of cases where the tonsils had been removed for the relief of systemic disease and later the cause of the trouble was found to reside elsewhere, as well as a second group where the patients were sent to him with the request that the tonsils be removed for the relief of certain troubles, and where he was able to demonstrate the existence of a focus of infection elsewhere.

A cause of infection of equal importance with the tonsil is disease of the teeth. In spite of the admirable work of Hartzell and others, there is still a surprising ignorance of the subject on the part of physicians and especially of dentists. Great credit is due to the educational campaign which has been carried on to enlighten both physicians and dentists of the deadly peril that lies in the apical tooth abscess. This has been almost the only point raised to show that due importance should be attached to this common source of infection.

It is truly amazing, in spite of all that has been written and said, how densely ignorant, or what is even more reprehensible, how indifferent the majority of the dentists still are to the subject. The attitude of one prominent dentist in New York, honest

in every respect and doing the highest grade of work according to the accepted standards, is characteristic of the great mass of his profession. In a recent conversation he did not hesitate to declare that the whole subject was purely a fad on the part of dishonest or visionary dentists and that all the present craze about pulling teeth was nothing less than criminal.

We do not desire to enter further upon this subject, but our own strong feelings about it lead us to make these remarks prefatory to the report of a series of six cases illustrating what to us is an altogether new manifestation of focal infection proceeding from the teeth.

CASE I.—S. G., age forty years, was first seen June 21st of last year complaining that for five days he had had difficulty in deglutition. There was no history of a foreign body, no pain in the throat. Fluids went down easily but it was difficult or impossible to swallow solid food. Examination of the throat was negative. There was no inflammation of the pharynx, larynx, or mouth of the esophagus. No direct examination was made. The patient was a school teacher approaching the end of the school year and naturally more or less tired. Strychnine was prescribed and the patient was instructed to report in two days. When next seen the difficulty in swallowing had materially increased so that even fluids were gotten down with some difficulty. There was also great fatigue in talking so that the patient found it trying to speak above a whisper. A second examination of the throat revealed no inflammatory condition. At this time attention was particularly directed to the teeth which were found to be extensively gold capped. Based upon our previous experience with such teeth this was regarded with suspicion, and an x ray picture was ordered to be taken at once. This revealed abscesses at the apices of several of the gold capped teeth. Immediate extraction of the abscessed teeth was advised. A culture made from the pus of the teeth showed *Streptococcus viridans*. Rapid improvement in swallowing took place, and in two weeks time the difficulty in swallowing and speech had entirely disappeared. The patient during the brief interval between the onset of the attack and the surgery of the mouth had lost considerable weight which required a number of weeks to be restored.

CASE II.—A. D., age thirty-three years, was first seen July 21st, with the complaint that for one year he had had difficulty in speaking and in swallowing. The patient was a man of normal size some twenty pounds below normal in weight, gave no history of previous illness and without any suggestion of central lesion. The character of his voice attracted attention at once. There seemed to be little power over the laryngeal and pharyngeal muscles. It suggested decidedly the voice of a child suffering from an attack of postdiphtheritic paralysis of the soft palate. Examination of throat and larynx was entirely negative. The patient's occupation was not one that demanded much use of the voice. Formerly he had been a choir singer, but for the last year had to give it up. Pyorrhœa alveolaris was discovered. An x ray of the teeth showed no apical abscess. Careful treatment of the pyorrhœa alveolaris was begun. Immediate improvement in the symptoms followed. The pharynx, voice, and swallowing steadily improved and at the end of the two months he was virtually well.

CASE III.—Mrs. J. C., age thirty-two years, was first seen August 21st, complaining of an obstruction in the throat. She was exceedingly nervous and could not sleep; examination of the throat was negative. A diagnosis of hysteria was made and internal medication ordered. Some improvement followed, but was not pronounced. At the second visit attention was directed to the teeth and an x ray was ordered. Abscesses at the apices of four teeth were found and the teeth extracted. *Streptococcus viridans* was discovered in the pus. An autogenous vaccine was administered. Great improvement took place. The patient at the end of three months was discharged well.

CASE IV.—A hospital case, a young man, age twenty

\*Read before the Middle Section of the American Laryngological, Rhinological, and Otological Society, Columbus, Ohio, February 26, 1917.

years, presented himself complaining of inability to swallow. Examination of the throat was negative. This case was examined with the esophagoscope with negative findings. The patient showed evidence of dental abscess. An x ray was ordered and the diagnosis confirmed. Extraction of the abscessed teeth was performed with prompt and satisfactory relief of symptoms.

To these four cases we are able to add, by the courtesy of Doctor Haskin, the reports of two others of a similar nature.

CASE V.—F. C., age fifteen years, was referred to Doctor Haskin for loss of voice which had extended over ten days. A diagnosis was made of hysterical laryngitis. The patient was pale and seemed mentally depressed; appetite poor. Adenoids and tonsils had been removed. Examination of the teeth showed the upper six year molars to be in bad condition and painful upon pressure over the roots. Radiograph proved them to be badly filled and with infection at the apices. The fillings were extracted with the escape of offensive gas and secretion. Prompt recovery of the voice took place.

CASE VI.—Mrs. M. F., age sixty-two years, presented herself on account of great difficulty and pain in swallowing. There was a history of rheumatism and bad heart. Examination showed a small pocket of pus in the left tonsil, seven badly diseased roots with marked pyorrhea alveolaris and much pus; blood pressure was 230 mm. Hg. The pus pocket in the tonsil was opened and drained without relief to the symptoms. The entire seven teeth were then extracted. Immediate improvement followed with little pain for over a week. With the exception of a single application of nitrate of silver to the lingual tonsil no further treatment was given. Two weeks after the extraction of the teeth patient reported being entirely free from all difficulty or pain in swallowing and feeling better than in years. Blood pressure continued to drop until two months after the operation it had fallen to 185 mm. Hg.

The clinical history and outcome in these six cases have been of more than ordinary interest to us.

The condition of the first patient, S. G., when first seen was such as to give decided concern. He had not been ill for years and was not given to complaining. His inability to swallow as well as talk when first seen had already begun to affect his general health and the pain and apparent paralysis of the muscles of swallowing and speaking rapidly increased in the short time elapsing before the true cause of the symptom complained of was realized and the proper treatment instituted. He was totally unaware of having any trouble with his teeth. Equally rapid with the onset of the symptoms was the relief secured by the removal of the diseased teeth.

In Case II the symptoms were not so pronounced, but had extended over a much longer period of time. As stated in the report of the case, the character of the voice was peculiar and attracted immediate attention upon his entering the consultation room. It was first strong, but almost immediately weakened and suggested a partial or complete loss of function of the pharyngeal muscles. Here the trouble was not one of apical abscess, but of extensive pyorrhea alveolaris. We employed in this case, after the proper treatment had been given to the teeth, an autogenous vaccine over a considerable period of time. The organism was the same as is wont to be found in most of these cases, *Streptococcus viridans*.

Case III was also a chronic case with many of the symptoms of what we are apt to pronounce hysteria. Diagnosis of diseased tonsils had been made and an operation recommended although there was almost no tonsil present. Here also the use of an

autogenous vaccine in connection with dental and other treatment effected a satisfactory result.

Case IV was more acute in its onset. No history could be elicited of a foreign body nor the swallowing of an irritating fluid. His complaint in regard to swallowing was so pronounced, however, that we felt warranted in making an endoscopic examination, which, of course, revealed nothing. Serious trouble was found in this patient's mouth, and proper treatment gave prompt relief to the dysphagia. Just how the infection worked in the case it is not possible to state positively. It would seem most probably there must have existed, as in the better known conditions affecting the heart or other organs of the body, an actual toxemia of the muscles concerned. While this form of toxemia is entirely new to us, there is little question that it is not a rare condition, and will explain many cases that have been puzzling us and which we have been regarding as a pure neurosis. In connection herewith allow me to speak earnestly of the importance of not depending upon a mere examination of the teeth by any dentist, however competent he may be, but that every case should have complete and satisfactory x ray films made. These moreover should be interpreted by one who is accustomed to do so and not left to someone entirely ignorant on the subject.

We, as specialists, cannot too soon get away from the practice of depending on, as final, the opinion of the family dentist that there is nothing the matter with the patient's teeth. However good a dentist may be, no examination by him can take the place of a good x ray picture, and where such a picture reveals the presence of an abscess, we have yet to be convinced that any dentist can drain the abscess satisfactorily. Certainly any such attempt should be followed up by another roentgenogram.

104 EAST FORTIETH STREET.

## SURGICAL ASPECTS OF MALE STERILITY.\*

By ABR. L. WOLBARST, M.D.,  
New York.

(Concluded from page 932.)

### TREATMENT.

Unfortunately there is little to be said about the medical treatment of male sterility, for it is apparent that the etiological factors are of such a character as to be unamenable to internal medication. Recently, however, there has been a tendency toward the use of the animal testicular extracts which I have employed extensively but without any striking result. In cases of azoospermia without obstruction, Lepinasse has been employing with some success the desiccated anterior lobe of the pituitary and desiccated suprarenal gland, especially the cortex. In one case with few immotile spermatozoa there was a distinct improvement following the administration of forty grains of anterior lobe of pituitary and twelve grains of desiccated suprarenal daily for one week. Six months later the spermatozoa were normal in morphology, almost normal in number, stain-

\*Read before the New York Physicians' Association, February 23, 1917.



ing reactions were normal, and motility one half to two thirds normal. Hygienic regulation of the sexual life will often greatly improve those cases in which sexual excess is the cause of the sterility. General debility due to constitutional disease or other causes must be treated according to the requirements of the individual case. Without exception, all patients must have repeated examinations of the seminal fluid in order to determine the progress of the condition. Generally speaking, surgical measures offer the only reasonable hope of relief in male sterility. These measures depend upon the character and site of the pathological lesion, and likewise upon the effect which these lesions have on the seminal fluid.

*Surgical treatment of azoospermia.*—In epididymitis we deal principally with the bilateral type, gonorrheal or tuberculous, most commonly the former. Considering the tuberculous type first, it may be broadly stated that any surgical interference to relieve the obstruction would not usually be justified in view of the probable involvement of the vasa deferentia and other portions of the genital tract. It is not easy to believe that both epididymes may be seriously involved without attacking the rest of the genital tract sufficiently to render operative measures useless, if not actually harmful. But if anything is to be done the measures resorted to in the gonorrheal type may be adopted. In gonorrheal obstruction there is but one measure which offers some degree of hope—the Martin operation, vasoepididymostomy. Briefly stated it is the purpose of this operation to obtain a passage for the spermatozoa from the locked in testes to the vasa deferentia on both sides, by joining the end of the vas nearest the testis to a portion of the epididymis or testis which has been found on microscopical test to contain viable spermatozoa. The patency of the vas deferens, seminal vesicle, and ejaculatory ducts must be determined at or before the operation by injecting five to ten c. c. of argyrol or color solution into the vasa and recovering it from the bladder by catheter. If the argyrol solution does not appear in the bladder almost immediately there is another obstruction somewhere and the operation is doomed to failure from the outset. At best, this operation offers no guarantee of success in removing the sterility, but it should be done whenever possible so as to give the patient his only chance.

In a personal experience covering eighteen patients operated on, I have met with gratifying success in one case. Spermatozoa were found in fairly large number and moderate efficiency within four months after the operation, and pregnancy followed within a year thereafter. In two cases a few spermatozoa succeeded in passing into the semen, but they were too few to result in impregnation. In five cases, obstruction was found at the time of operation in the vas deferens or ejaculatory ducts, thus rendering the operation hopeless. While not strikingly encouraging, the results from this operation are such as to justify its performance in every case of epididymal azoospermia. The patient has everything to gain if it succeeds, and nothing to lose if it fails.

Other surgical measures having the same object

in view are the Lespinasse sac operation and resection of the obstructed vas with end to end anastomosis on the same or opposite side. I have had no personal experience with these measures and cannot comment on them.

In colliculitis, when the verumontanum is principally involved in azoospermia local treatment applied through the urethroscope is imperative. It is the only means at our command whereby these lesions can be seen and properly treated. If the obstruction is caused by the presence of papillomata, cysts, or other tissue deposits, fulguration through the urethroscope offers a successful means of relief. Occlusion of the ejaculatory ducts is amenable to fulguration, passing of fine filiforms and prostatic massage with the urethroscope *in situ*—combined massage and urethroscopy—as described later on.

Conservative measures will give better results in azoospermia due to chronic vesiculitis than the radical operations of drainage or excision. Conservative treatment consists in exposing the vas deferens under local anesthesia and tying a fine silver tube into the vas leaving it *in situ* for several days, the end free and exposed. Through this tube argyrol, protargol, and collargol may be injected into the vas several days in succession, the purpose being to destroy any persistent bacteria and their destructive byproducts. Excellent results have followed this method in my own experience and in that of others. The radical operations of vesiculectomy and vesiculectomy as perfected by Fuller and Squier for chronic gonorrheal vesiculitis are useful in their own sphere, but it is extremely doubtful whether these measures will aid in restoring healthy spermatozoa to the seminal fluid.

In occlusion of the ejaculatory ducts the ducts may be attacked from the posterior urethra through the urethroscope with a considerable measure of success. Usually they are choked up with an accumulation of pus and secretions which cannot be dislodged by the usual methods. I have succeeded in emptying them by vigorous yet gentle massage of the prostate with a finger in the rectum, while the cystourethroscope is in place. In this procedure it is interesting to see a great clump of pus and debris emerge from a duct which might have been invisible previously. The mouth of the duct dilates and the cloud of pus shoots up under pressure of the finger in the rectum, hesitatingly at first, as though it were being held back by a spasm of the prostatic follicle. The current of water employed in urethroscopy is diminished in volume while massage is being done, otherwise the expressed material might pass into the moving current too quickly and escape unobserved into the bladder. All of this expressed material can be recovered later when the patient empties his bladder. The obstructive plugs having been removed, it is possible to pass a filiform or a fine piano wire into the ducts for dilatation; then a fine urethral catheter may be introduced through which argyrol, protargol, or collargol may be injected. Fluid introduced in this manner will often find its way backward into the vas deferens, thus medicating the entire infected tract.

In chronic prostatitis, when the prostate is large, soft, and boggy, the amount of debris expressed by



massage in this manner is almost unbelievable. Local application of silver nitrate ten per cent. once weekly immediately after this form of massage will in most cases restore the prostate and annexa to a more normal condition, thus giving the spermatozoa a better chance to reach the urethra alive with the seminal fluid.

In occlusion of the vas deferens, the chances of success are better, but not very great, for it is not a simple matter to empty the vasa of the accumulated secretion and other products found in these conditions. I have tried to establish a patent passage through the vasa by passing a fine piano wire or filiform in the same manner as we would dilate a urethral stricture with a sound or filiform. In a recent discussion of this subject McKenna declared that the wire in the vas may be retained from five to fourteen days, and by the end of that time the lumen of the vas would be of normal size. Similar attempts to force an opening by injecting argyrol have likewise met with occasional success. Nevertheless, in view of the simplicity of the operation it would appear that this measure ought to be resorted to in all cases in which the vasa or the ejaculatory ducts are occluded. In one of my patients in whom azoospermia resulted from occlusion of the vasa without obstruction in the epididymes, a few spermatozoa were found in the spermatic fluid one week after this operation, but they soon disappeared, the inference being that the vasa became choked up again.

In cryptorchism the chances of success are slight. Bevan's operation is the most popular and the most satisfactory, as far as the replacement of the testes in their proper position in the scrotum is concerned; but past experience does not justify the hope of restoring the function of spermatogenesis, the absence of which is the cause of the sterility.

Azoospermia due to tight stricture is readily amenable to surgical measures, provided, however, that there is no other obstruction in the genital tract. Dilatation, and if necessary, urethrotomy, offers a reasonably certain relief to the obstruction of semen.

*Surgical treatment of oligospermia and necrospermia.*—We have to deal principally with prostatitis, vesiculitis, and colliculitis, and the measures to be taken have already been outlined in the treatment of azoospermia. In my series of cases it was found that these lesions were observed in fifty-eight per cent. of the cases. A fairly large proportion was not gonorrheal in character and many were due to sexual exhaustion (excessive coitus). There is no obstruction to the passage of spermatozoa; there is rather a diminution of their number and virility (Fig. 6) due to the destructive character of the pathological secretions from the prostate and seminal vesicles. Any treatment that will restore these organs to the normal will increase the number and vitality of live spermatozoa in the seminal fluid. Massage of the prostate, stripping the seminal vesicles, injection of silver salts into the vas deferens, draining the vesicles, local applications of silver nitrate to the inflamed verumontanum and ejaculatory ducts—all of these measures are strongly indicated, and the prognosis is excellent. Of special importance is the treatment applied through the urethro-

scope, for the work is done under the naked eye, the progress noted from day to day. Most satisfactory results have followed combined urethroscopy and prostatic massage, as described above. By this means the operator is also enabled to determine from which portion of the prostate the pus is derived, thus enabling him to devote special attention to certain parts of the organ.

*Artificial impregnation.*—In cases of oligospermia with deficient fertilizing efficiency, that is, with viable spermatozoa present but in diminished number, an important measure that must not be overlooked is artificial impregnation by the direct injection of the semen into the uterine cavity. This procedure is also the last resort in hypospadias and epispadias. Cary states that when spermatozoa show twenty-five per cent. efficiency, artificial impregnation is justified. The weak spermatozoa are thus enabled to reach the uterine fundus without passing through the destructive vaginal zone, and it is apparent that if they have any fertilizing power in them this procedure gives them their greatest opportunity. The seminal fluid is collected in a sterile condom and a small quantity, not more than a few drops, for fear of uterine colic, gently deposited inside the cervical canal by means of a uterine syringe. The remainder of the fluid is spread over the cervix and the os.

In her great passion for a child the sterile woman will, as a rule, never object to this procedure if she has any hope of a successful result, and every sterile woman is entitled to the chance which this measure offers. The best time for this operation is within a week after the cessation of menstruation, the earlier the better. The best place for it is the patient's home, where she may rest on her back for a day or two after the operation, with the hips elevated.

Rohleder, of Leipzig, is a strong advocate of artificial fecundation in these cases. He reports twenty-one successful operations in sixty-five cases of sterility. I am satisfied that this measure often provides the only means of impregnation in these cases of inefficient spermatozoa, and believe it should be done more often than it is. In my experience the procedure has met with considerable success.

#### CONCLUSIONS.

1. The treatment of sterility in marriage requires the most careful study of the generative organs in both parties, preferably simultaneously.

2. A woman should never be subjected to surgical measures for sterility unless her husband has been carefully examined and found capable of fertilization by the systematic efficiency test.

3. In the male spermatic efficiency, judged by the presence or absence of azoospermia, oligospermia, and necrospermia, must be determined.

4. To give trustworthy results, spermatozoa must be examined immediately after emission in contact with the natural female secretions.

5. In a study of eighty-seven cases, fifty per cent. were due to azoospermia, thirty-five per cent. to oligo-necrospermia, and 13.5 per cent. to oligospermia.

6. Bilateral epididymitis caused azoospermia in seventy-two per cent. of cases; prostatitis, vesiculitis, and colliculitis caused oligospermia and necrospermia in seventy-two per cent. of cases.

7. Sexual exhaustion (excessive coitus) is a frequent indirect cause of sterility.

8. Gonorrhea is the underlying factor in sixty-seven per cent. of azoospermia; forty-two per cent. of oligospermia; fifty-five per cent. of oligonecrospermia. Sixty per cent. of the total number were due to gonorrheal infection.

9. Syphilis appears to be a slight factor in male sterility.

10. Lesions responsible for the sterility were discovered through the posterior urethroscope in forty-seven per cent. of cases.

11. Treatment is surgical and must be applied either to removing the obstruction to the passage of the spermatozoa or to removing the pathological genital secretions which injure or destroy them.

12. Artificial impregnation is indicated in cases of subnormal spermatogenic efficiency, and is often successful.

13. The probability of cure, excepting in azoospermia, is about thirty-three per cent. In azoospermia much less.

113 EAST NINETEENTH STREET.

## TREATMENT OF DISEASED NASAL SINUSES AND EARS BY THE GENERAL PRACTITIONER.

BY WILLIAM FERGUSON, M. D., C. M.,  
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In a climate like that of the seaboard towns of the Eastern States, it is of the greatest importance that the general practitioner have a good working knowledge of the nasal sinuses in the diseased state and the intimate connection existing between them and the common pathological lesions of the middle ear and mastoid cells.

The pharyngeal end of the Eustachian tube, the connecting link, lies in such a position in the nasopharynx that any blocking of the nares from septal spurs or deflections, or any enlargement of the adenoid or tonsil tissue will produce variation in the atmospheric pressure within the middle ear and characteristic changes in the lining mucous membrane, resulting in transient or permanent auditory disability.

This statement is applicable also in diseased nasal sinuses, only here the condition is induced by infective material from the sinuses, and we have to deal not only with catarrhal conditions but also with acute infections of the middle ear and mastoid cells. In my classification of these conditions I shall include some common pathological states of the ear not directly associated with the sinuses, but of sufficient practical interest to devote a few moments to their consideration.

*Classification:* Nasal sinuses: 1. Ethmoidal (including high ethmoid or frontal sinus). 2. Sphenoidal. 3. Maxillary or antrum of Highmore.

Ear: 1. External ear, including foreign bodies, perichondritis, eczema, furuncle, and cerumen. 2. Middle ear, including acute catarrhal and purulent otitis media; mastoiditis, and chronic catarrhal and purulent otitis media. 3. Tubal appendage, including tubal catarrh and tubotympanitis.

This may look very formidable at first glance, but it will be seen that many of these states are correlated, and if a comprehensive grasp of the early diseased state has not been obtained, we cannot intelligently treat the later and more serious conditions.

The ethmoidal labyrinth is made up of a series of delicate cells placed between the middle turbinate and the inner wall of the orbit, and extends anteriorly from the nasal process of the superior maxilla backward to the sphenoid body. The anterior cells drain into the middle meatus, the posterior cells into the nasopharynx.

The frontal sinus, really a high ethmoid cell, the outer wall of which forms the prominent supra-orbital ridge, extends for a variable distance upward in the frontal bone and outward and backward over the roof of the orbit. Being divided by incomplete septa, it drains by a very small duct downward and backward under cover of the middle turbinate. The maxillary sinus or antrum of Highmore is placed in the body of the superior maxilla, and drains in an upward direction under cover of the middle turbinate and near the opening of the middle ethmoidal cells, so it can be readily understood that this sinus really is a receptacle for the overflow from the frontal and ethmoidal cells.

The sphenoidal sinus is of similar anatomical construction in that it is a single cell in the body of the sphenoid bone and also drains upward. It is placed opposite the posterior edge or face of the middle turbinate, and is another receptacle.

On examining the nose with reflected light nothing of these natural sinus openings is seen, only the middle turbinate bone curving downward, outward, and backward, like a small sail, is observed, completely obstructing the view. Therefore you can readily understand that when infection of the ethmoid cells exists the resultant swelling simply blocks the exits of these sinuses and intense pain from retention results.

In acute ethmoiditis the patient may at first complain of a sensation of stuffiness or cold in the head, due to the catarrhal swelling of the middle turbinate. This produces negative pressure in the sinuses and excessive secretion from their lining membrane, creating a suitable soil for infectious germs. As soon as the disease is established the patient complains of intense frontal headache, a distinct feeling of block high up in the nose, dizziness on bending down, tenderness over the inner wall of the orbit and frontal bone, general malaise, chilliness, and some rise of temperature. The discharge is thick and creamy in character and, if the nasal spaces are fairly free, will be quite profuse; but if the nasal septum is deformed, most of the discharge tends to the nasopharynx and the frontal pain will be very distressing.

What is to be done? Rest in bed, an initial dose of calomel followed by salines, and a light diet are indicated. Locally a spray of cocaine hydrochlorate, two per cent., in a solution of adrenalin one to 10,000, should be used. Use this frequently throughout the day, followed by a spray of abalone until the acute symptoms have subsided. Where there is a severe blocking and the cocaine spray does not give



relief, you might try some steam inhalations, which will help to unload the engorged tissues and promote the flow. When the acute symptoms have subsided use a twenty per cent. solution of argyrol followed by a spray of medicated oil.

An acute ethmoiditis may be confined to the ethmoids or involve the frontal sinuses. In any case, the maxillary antrum and sphenoid act as receptacles and invariably contain pus. However bad the picture may look, it is a comforting fact that the great majority of first attacks clear up very well under conservative treatment. The great danger is in neglected cases, and there are many who receive little or no treatment. These drift into a chronic state and are in constant danger from the possibility of aural infection, chronic laryngeal catarrhal inflammation, general systemic infections, and cerebral abscess.

Subacute and chronic cases are surgical propositions and belong to the rhinologist. In any patient who has gone through an attack of acute ethmoiditis and exhibits nasal deformities, such as septal deflections and spurs—predisposing factors to catarrhal sinuses—I would strongly recommend the removal of these by the submucous method, thereby possibly guarding the patient against future attacks, or at least securing such free drainage that, should an attack supervene, he is saved the intense pain and possible intracranial complications as well as the severe and radical ethmoid operation.

Although I have spoken of the sphenoid and antrum of Highmore as receptacles, I do not wish to convey the idea that they never become infected independently. The antrum may become infected through a tooth socket, and the sphenoid may, as the result of repeated nasal catarrh, have its resistance so reduced as to fall an easy prey to infection, endangering the optic nerve as it passes over the roof of the sinus, or the more serious complication of thrombus of the adjacent cavernous sinus.

One frequently is consulted for an annoying headache, the source of which seems baffling. In these cases a careful inspection of the nose may reveal a middle turbinate pressing tightly against the septum. The application of a little weak cocaine solution in adrenalin to the point of contact, may clear up the headache and indicate the necessary steps for permanent relief; or, again, there may be nothing to indicate either block or pressure, but the anterior tip of the middle turbinate may have a granular or moth-eaten appearance. Here you are dealing with a latent ethmoid infection which, owing to the free drainage in the middle meatus, gives the patient no concern except at such times as he contracts an acute rhinitis, which stirs up the latent ethmoid and he complains of a dull headache and troublesome nasal discharge. In these cases vaccines have been used with variable results; sufficient successes have been recorded to warrant a trial in people adverse to operation.

In examining the ear always remember to draw the auricle upward and backward in adults, and downward and backward in children. Any hairs in the canal can be disposed of by wiping the canal with a little vaseline, thus making them adhere to the sides and giving an unobstructed view.

Foreign bodies should always be syringed out; never use forceps. Insects may cause intense irritation; a few drops of ether in the canal will put an end to their activities until they are syringed out. Perichondritis of the auricle is a common occurrence with athletes. It is very obstinate to treatment. The more radically you go at it the quicker the results. Make a free incision through the auricle, clean out, and insert a through and through drain. Eczema of the auricle and canal may be due to constitutional causes, but in the majority of cases the underlying cause is a neglected chronic purulent middle ear affection. This can be treated with boric acid in alcohol, twenty grains to the ounce. For the eczema apply locally to the canal a solution of silver nitrate, 240 grains to the ounce, to destroy the skin infection, and order yellow oxide of mercury ointment to be applied to the parts on a cotton wrapped toothpick. Avoid any contact of water while washing by inserting a small pledget of cotton in the canal.

Furuncle of the external canal is a very painful condition and the patient is fearful of mastoiditis. In fact, the two conditions often simulate each other. In furuncle, if you place your thumb gently on the mastoid surface close to the auricle, being careful not to touch it, and press smoothly and firmly backward, no pain is elicited. Now gently move the thumb forward against the auricle and immediately the patient winces. In furuncle the swelling of the canal is nearer the outer end, while the swelling or sagging in the case of mastoid involvement is well up the canal near the drum head. Also, if you take a tightly wrapped cotton applicator and touch the swollen area, in furuncle it is exquisitely tender, in mastoid involvement only slightly tender on strong pressure. In both conditions there may be a discharge. In mastoid involvement it is blood tinged serum or creamy pus; in furuncle more likely to be of an old necrotic character from chronic purulent middle ear affection, a frequent source of infection of the canal. In both conditions the auricle may protrude from the side of the head, but in mastoid affection this would require a longer history. In treatment, carry the incision deep down to the bone one or more times, as indicated by the extent of the swelling. Clean out and pack with half inch strips of gauze wet in saline or aluminum acetate solution. Cover with moist dressing, except in very severe winter weather, and dress daily. Later, instill a solution of alcohol and boric acid.

For cerumen, if it is too hard to syringe out, use drops of sodium bicarbonate, sixty grains to one ounce, for a few days; then syringe. This is the most economical and satisfactory operation that we do today on the ear. A case diagnosed as blocking due to cerumen turned out to be due to a gauze pack, of three months' duration, for a ruptured drum. The rupture showed no evidence of any attempt at repair.

As I stated in my early remarks, the diseased states of the Eustachian tube, the middle ear, and the internal ear are correlated; so instead of taking up the various pathological conditions, enumerated in my classification, as separate and distinct diseases, I shall endeavor to present a series of pictures be-



ginning with the condition of simple congestion, then acute inflammation, later purulent inflammation, and, finally, chronic terminal conditions met with, and to give a comprehensive although somewhat superficial mental picture of the correlation and characteristics of the various diseases mentioned in my classification.

A short discussion of the anatomy of the Eustachian tube and middle ear, and its bearing upon the conditions met, will clarify the sequence of events. The Eustachian tube is part cartilage and part bone, and is entirely lined with a secreting mucous membrane. The outer or cartilaginous end is the part involved when congested. The middle ear is a single cavity opening out from the inner end of the Eustachian tube. It also is lined with a secreting mucous membrane. The upper part or attic contains many reduplications of mucous membrane, in which is found most of the connective tissue of the middle ear, hence it is subject to purulent infection. Remember this point, for it is very important in prognosis. The lower part or atrium contains the ossicles and its mucous membrane has a very rich venous supply. Here the simple congestions and acute catarrhal inflammations occur.

Now let us take a patient with either adenoids or a deformed septum, and with a simple nasal catarrh. Here we get a congestion of the Eustachian tube with increase of secretion and swelling, resulting in a block. At once this is felt in the ear, where a rarefaction takes place and the drum membrane sags inward, producing a sensation of sudden deafness with tinnitus and slight vague pains. External examination of the drum shows it to be strongly retracted and the head of the malleus very prominent. This is tubal catarrh and calls for treatment of the nasal condition with argyrol and vaseline, and air douches to the tube.

If for any reason the vessels of the middle ear are lacking in tone, this congestion of the tube is seen to extend to the mucous membrane of the middle ear, and we get an excessive secretion. Fluid collects, but it is not inflammatory. This fluid prevents the drum from being strongly retracted; and hence the deafness comes on more slowly and the stiffness is not so apparent. On blowing the nose a snapping sound may be perceived, due to the passage of air through the fluid.

External examination shows the drum moderately retracted and the lustre lost. In the lower zone the drum may have a yellow appearance, due to the fluid. Some congested vessels may be seen through the drum. This is tubotympanitis and its treatment is similar to tubal catarrh, with this exception, that if, in spite of careful treatment for two weeks, the fluid persists, then the drum must be incised, otherwise adhesions are likely to take place and defective hearing result.

Now let us go a step further. Our patient has the same nasal, pharyngeal, and tubal conditions; also the tendency to venous stasis in the middle ear, but in addition he has very poor power of resistance, and we get not a congestion but an acute catarrhal inflammation of the middle ear. The entire lining mucous membrane is involved and the cavity is filled with transuded serum mixed with secretion from the

mucous glands, making a turbid fluid. The inner lining of the drum becomes exfoliated and soon the remaining layers give way to increasing pressure and the fluid finds its way into the external canal.

At first there is a feeling of stuffiness, followed by pain worse at night, but as the fluid collects deafness becomes more marked and the pain more in the nature of a heaviness in the side of the head. The temperature may be elevated, especially in infants, in whom also convulsions may take place. The drum may rupture in forty-eight hours. Then by external contamination the catarrhal condition changes to purulent.

External examination now shows that the drum has lost its lustre and is of a uniform, hyperemic shade in both the membrana vibrans and Shrapnell's. The drum appears to bulge as a whole and the head of the malleus is discernible, which is important, as I shall explain later.

*Treatment.*—Make a free incision in an upward and backward direction so as to establish free drainage. Syringe with a solution of saline or boric acid every three hours, and as soon as the discharge has lessened use a solution of alcohol and boric acid. In the early stages of the disease when the pain is severe we may give a dose of morphine, or apply in the canal carbolic acid and glycerin one in twenty; but do not use oils. Dry heat is grateful.

Now if we take our basic premises in this last condition and presume that the discharge affecting the Eustachian tube is of a virulent type, or grant the assertions of some investigators that virulent germs are present in the middle ear, then we arrive at the third state, that of purulent middle ear inflammation. I have drawn your attention previously to the fact that most of the connective tissue of the middle ear is in the upper part or attic; hence it is in this region that we find cellular inflammation. This is the part attacked; tissue necrosis takes place quite rapidly, and the exudate is purulent in character from the onset. The fluid may perforate through Shrapnell's membrane or pass down into the atrium and thus gain entrance to the canal. Should neither of these events occur, the fluid may find its way backward through the aditus ad antrum into the mastoid cells, thus producing the condition of acute mastoiditis, with its possible intracranial complications.

Acute purulent inflammation of the middle ear and mastoid cells is ushered in with sudden severe pain, high temperature, headache, chills, and general constitutional disturbances. Hearing is rapidly lost and occasionally we see vertigo with nausea and vomiting, disturbance of equilibrium and spontaneous nystagmus, indicating involvement of the labyrinth, i. e., acute catarrhal labyrinthitis. When the mastoid cells are involved the symptoms of purulent middle ear infection become increased in severity. The pain is transferred to behind the ear, and should the lateral sinus become involved there is a distinct septic temperature.

External examination of the drum in purulent cases shows the upper portion, or Shrapnell's membrane, to be alone affected, thus differing from catarrhal cases. This area (Shrapnell's) may appear thickened, hyperemic, or dull purple in color and moist. It may bulge slightly or to such an extent as

to hang down and completely hide the head of the malleus.

Acute mastoiditis may be described as follows: The patient's appearance is one of anxiety, face pale, forehead moist, eyes bright, and general nervousness manifest. He complains of loss of sleep and severe headache at night. His hearing is defective, pulse and temperature increased. Tinnitus, deafness, and pain over the mastoid bone may be accompanied with nausea or disturbance of equilibrium and at times the patient may have a distinct septic appearance. On examination we may notice the affected ear seems to protrude away from the side of the head, the mastoid area may be swollen, or by pressing with the thumb we may elicit tenderness. The external canal may be dry and we see the angry, hyperemic, bulging drum, or the canal may be full of seropurulent fluid. On wiping this away we see the ruptured, inflamed drum. On the posterior superior surface of the canal near the drum head may be found a swelling, due to a periostitis of the posterior canal wall, which is the anterior wall of the mastoid cells.

Some mastoids develop very rapidly when associated with infectious diseases or *Streptococcus mucosus capsulatus* or pneumococcus. When incising for purulent middle ear always have a smear examined, whether mastoid infection is suspected or not, for in these cases the infection is very virulent, and unless we open the mastoid early we run grave danger from cerebral complications. Once we know the germ causing the infection, we can from personal experience judge how far it is safe to carry expectant treatment.

The treatment of purulent middle ear infection and that of mastoiditis in the early stages are identical. Rest in bed, light diet, initial dose of calomel followed by salines and free incision of the drum under gas are indicated, followed by a syringe of saline or boric acid solution every two hours; we should have a blood count and an x ray made. Ice bags or morphine simply mask the symptoms; I do not advise their use.

The indications for operation are: 1. The persistence of the acute symptoms in spite of the above treatment. 2. When the flow is so profuse that it could not possibly come from the middle ear alone. 3. When the symptoms show improvement but the blood count remains high and the x ray indicates a mastoid cloudiness. 4. When the condition seems improved but the patient does not sleep but suffers from a dull headache. 5. When the temperature manifests a septic type. 6. When mastoid edema or subperiosteal perforation occurs. The temperature indications are not of much value; the blood count and x ray findings are the best guides; you should go over the plates with your x ray expert so that your clinical deductions may be interpreted by his reading.

Many cases under careful treatment clear up, but to be too conservative in the face of positive clinical and laboratory findings, is simply to invite disaster from sinus thrombosis or cerebral abscess.

Now a word in closing in reference to the final state encountered, namely, that of chronic purulent inflammation. This is the result of incomplete cures

in many cases unavoidable under the most skilled man, owing to the patient's objection to the slightest surgical procedure for the relief of the underlying and active conditions of the nose and nasopharynx. Locally these chronic cases may be due to unhealthy granulations in the mastoid antrum and middle ear, or necrosis of the tympanic walls and ossicles.

For treatment you may use locally a solution of alcohol and boric acid and at the same time administer internally syrup of the iodide of iron for the adenoids, and a medicated oil spray for the nasal condition; or you may go further and remove the adenoids and nasal deformities. After all this has been done a certain number exhibit intermittent discharge; these are the cases in which destruction of bone has occurred; they include cases of chronic mastoid with unhealthy granulations in the antrum, and cases of necrotic destruction of the ossicles and walls of the tympanic cavity.

For these bad cases only the radical mastoid operation offers any promise of success, and with it fifty per cent. of the patient's hearing is likely to be lost.

Chronic catarrhal middle ear is the direct result of repeated acute catarrhal attacks. Deafness is progressive and permanent from adhesions, unless we take active surgical steps to correct the nasal and pharyngeal predisposing conditions. We cannot restore lost function, but prompt and decisive action is essential to arrest the rapid course toward permanent auditory disability.

40 EAST FORTY-FIRST STREET.

## A CONSTRUCTIVE HEALTH PROGRAM FOR URBAN SCHOOLS.\*

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An ideal program for urban and other schools should include items to safeguard the health of all individuals coming under their jurisdiction. Until recently practically nothing has been done to safeguard the health of the teacher, while much time, money, and energy have been expended in protecting the health of the school child. Both parties may profit by educating the teacher and the child in matters of health and hygiene. To provide for such health protection it is necessary that urban schools should operate under a health program which should include: 1, daily morning hygienic inspection of pupils; 2, observation for evident physical disabilities; 3, the hygiene of the classroom, and 4, the instruction in hygiene.

The operation of such a program must necessarily bring into play the combined efforts of the teacher and the pupil, with the result that both will profit. It should closely correlate the efforts of all school health agencies and should seek public cooperation.

1. *The daily morning hygienic inspection* should take place at the beginning of the morning session.

\*Read at the Hygiene and Physical Education Section of the New York State Teachers' Association, Buffalo, November 28, 1916.



Its purpose is: 1, to discover the early signs of illness and to prevent contagion; 2, to inculcate habits of personal cleanliness by inspection of each pupil; 3, to establish cooperation between the home and the school, and, 4, to establish a close cooperation between the school medical inspection service and the class teacher for the benefit of the health of the children.

In detecting the early signs of illness the teacher is placed in the same position as the mother is at home. The mother does not send for the family physician every morning, but as soon as she notices a change in the disposition, attitude, or appearance of the child, the family physician is notified immediately because there is a change from the normal. The teacher need not be acquainted with the symptoms of the individual diseases common among school children, such as scarlet fever, measles, chickenpox, whooping cough, diphtheria, etc., but she should know that any deviation from the normal in a previously healthy child is usually indicative of oncoming illness. Children showing deviations from the normal, particularly when previously healthy, should be sent from the room immediately to the school medical inspector or school nurse for final diagnosis.

In New York, teachers are required to make daily inspections to prevent the spread of contagious and infectious diseases among the other pupils in the class, to avoid a school endemic, to limit epidemics throughout the entire school system, and equally important, to avoid personal exposure. The last object is exceedingly important in view of the fact that each year a large number of teachers contract in the classroom, unquestionably, acute contagious diseases common among school children. New York public school teachers regard the daily morning hygienic inspection as a health insurance policy. When properly conducted, the inspection should take less than five minutes. The following is a typical method of conducting the inspection when the class is seated in the classroom:

A general class inspection is for the purpose of noting any obvious signs of illness. Coats, sweaters, and rubbers should be removed. The teacher standing in front of the room should note the following items; care should be taken not to embarrass unnecessarily the delinquents: 1. Blouses; shirts; dresses; collars. Note cleanliness and order. 2. Ties; hair ribbons; order of hair. Heads of girls should be inspected at least three times a week. Special attention should be given to chronic offenders. 3. Handkerchiefs. 4. Individual toothbrushes: The teacher should ask the children who have individual toothbrushes to stand. The increased number from day to day should be noted. Toothbrush drills should be practised in pantomime during the hygiene lesson on daily routine. Every effort should be made to have each child possess a toothbrush. 5. Teeth brushed: Children who have brushed their teeth on the morning in question should be asked to stand. 6. Nail biting: Pupils who do not bite their nails should stand. 7. Shoes: The pupils remain seated but turn facing the window with their feet in the aisles, when the inspection is made by the teacher from the head of each aisle.

After the general inspection to detect the early signs of illness, etc., the teacher makes a special inspection by putting the class through a drill. Desk tops are put down. Hands are placed on the desk, palms down. Heads are raised slightly and turned to one side, away from the light. Teeth are displayed by drawing the lips well apart. The entire class remains in this position ready for the teacher to make the individual inspection for cleanliness of the following points as she passes along the aisles. When girls are inspected, the hand nearest the window is placed on the desk, the other is used to pull the braids upward and backward. Only one side of the head need be inspected, as it is fair to assume that if one side is clean it is likely that the opposite side is clean as well. 8. Hands and arms are inspected for cleanliness and rash. 9. Finger nails are carefully examined as to cleanliness and nail biting. Children should cut their nails short and take a pride in their appearance. 10. Teeth are displayed by having the lips drawn well apart. Emphasis should be placed on good mouth hygiene. Charts displaying a clean, even, healthy set of teeth may be hung about the walls of the classroom. The same plan should be followed showing well trimmed finger nails, clean hands, shirts, ties, etc. 11. Face. 12. Neck. 13. Ears. 14. Head. All are finally carefully observed. This close individual inspection affords an opportunity for the teacher to discover cases of contagion and to refer them to the principal, doctor, and nurse. The head should be observed for pediculi, or nits; the eyes for discharge, and the skin for rash, and the early signs of general illness or contagion should be noted. When unhygienic conditions are discovered, an endeavor should be made to correct them in such manner as not to occasion embarrassment. Children who show evidences of extreme neglect should be referred to the principal or to the nurse for home visits. The sounding of a bell should announce the arrival in the school of the doctor and nurse. All contagious or suspicious cases should be sent to the doctor's office for examination or exclusion if necessary. A teacher's reference slip should be filled out for each child to take with him to the doctor's office. The principal should exclude from school attendance children who need immediate attention.

2. *Observations for evident physical disabilities.*—At the beginning of each school year, one morning should be set aside as Health Day for the examination of children for the testing of vision, and for the noting of obvious defects, such as cross eyes, inflamed eyes, impaired hearing, mouth breathing, the presence of cavities, green deposits, sore and spongy gums, and evidences of malnutrition. But at all times, teachers should keep the children under careful classroom observation in order to discover these and other evident physical disabilities. No special training is necessary. That this is so has been shown in several schools in New York, where teachers have demonstrated their ability to detect apparent physical disabilities. About three minutes will suffice for examining each pupil, who will either be passed as normal or referred to the school medical inspector for further examination. In addition, the teacher should acquaint herself with the physical condition of each child in her class by



consulting his physical record card and by noting the defects in the rollbook opposite the child's name. Thus acquainted with the defects in her group, the teacher can intelligently counteract and eliminate the health depressing influences of school life, and at the same time can direct her classroom instruction more effectively. A child with defective vision will be placed at a proper distance from the blackboard and teacher's desk so that he can see. The child with defective hearing will not be stupid or backward if placed so that he can hear what is going on. The child with heart trouble will not be required to take part in heavy, strenuous exercises, rapid dismissals, fire drills, etc. The teacher should make a summary on a specially devised card which she should sign and send to the principal's office.

I have consulted the health record of  
Class ..... and find:  
Defective Vision.. — Cases Pulmonary Defects — Cases  
" Hearing — " Speech Defects... —  
Cardiac Defects... — " Nervous Defects... — "  
These defects have been noted in the rollbook.  
....., Teacher.

Such a procedure gives the teacher knowledge of the physical condition of her pupils and the principal ascertains the health status of the school in so far as physical defects are concerned.

The following instruction may prove of value to teachers in observations for evident physical disabilities: The Snellen chart is to be used once a year to estimate acuteness of vision. For very young or mentally retarded children, charts with numbers or pictures should be used. The Snellen chart should be hung in a good light, preferably at the back of the room, on a level with the eyes. The pupil should be placed twenty feet from it. Each eye should be tested separately, the other being completely covered with the back of the hand or an individual slip of paper so as not to press upon the eyeball. The pupil should start at the top and read down. The number opposite the last line successfully read should be recorded as the denominator of a fraction, the numerator of which is constantly 20. For instance, if the 70 line is the last line read by the right eye, and the 100 line by the left eye, the record is as follows: R  $\frac{20}{70}$  L  $\frac{20}{100}$ . The right eye has two sevenths normal vision, and the left only two tenths normal vision. Except for  $\frac{20}{30}$ , two thirds normal vision, fractional vision is defective vision.

In other words, a record of less than  $\frac{20}{30}$ , i. e.,  $\frac{20}{40}$   $\frac{20}{50}$  in one or both eyes, is abnormal. However, a record of even  $\frac{20}{20}$  or  $\frac{20}{30}$ , if accompanied by any evidences of eyestrain (S), such as cross eye, habitual headache and weariness after study, bloodshot eyes, or crusty lids, is abnormal, and should be recorded as follows: R  $\frac{20}{20}$  (S) L  $\frac{20}{30}$ . If a child wears glasses, test with glasses on. It will then be de-

termined whether or not the glasses fit. If with glasses he cannot read the normal line of  $\frac{20}{20}$  or  $\frac{20}{30}$  the child should be referred to the nurse for reexamination and possible change of glasses.

Children with running ears and those who do not hear questions readily and frequently ask for repetition, should be referred to the doctor or nurse. Inquiry regarding earache should be made and any case of discharge noted. The child who appears inattentive and who is believed to be an incorrigible child, may be suffering merely from defective hearing. The presence of cavities, green deposits, sore and spongy gums should be observed. No time should be wasted in counting the number of cavities, as one small cavity is sufficient to indicate the need for dental treatment. The teacher is in constant contact with the child and may easily note signs of defective nasal breathing. Habitual mouth breathing, chronic nasal discharge, and frequent colds, are indications of defective nasal breathing. Children who are unusually pale, thin, and puny, underweight for their height, and lacking in vitality, should be suspected of suffering from malnutrition.

All cases of defects should be recorded on a teacher's reference slip and referred to the school

#### TEACHERS' REFERENCE SLIP.

School..... Grade..... Room.....  
Name..... Age.....  
Address..... Floor.....

Doctor

Referred to Nurse for

Date..... Teacher.....

Action Taken:

Date..... Nurse.....  
..... Doctor.....

DEPARTMENT OF HEALTH—BUREAU OF CHILD HYGIENE—CITY OF NEW YORK.

doctor or nurse for further examination. The nurse will return the slip with the child, stating the action taken. The teacher should keep these slips in a special folder. At the end of each month, when the teacher makes her report, she should review these slips to determine whether or not the defects have been corrected. If not, the matter should again be taken up with the nurse.

3. *The hygiene of the classroom.*—The object of the hygiene of the classroom is to counteract and eliminate the health depressing influences of school life and can be accomplished by intelligent attention to the following details: seating, light, temperature, ventilation, order and cleanliness, relaxation, and exercise. The teacher should seat the pupils at the beginning of the term with regard to individual comfort. Not later than two weeks after the beginning of the term, seats should be adjusted by the janitor so that the pupil can sit with hips well back, the thighs rest-

ing on the seat and the feet flat upon the floor. The desk and seat should be adjusted so that the proper writing position can be taken, i. e., hips back, body straight, inclined forward—never flexed or twisted—forearms resting on the desk near the edge. The eyes should then be not nearer than ten inches nor more than sixteen inches from the writing. Defects in vision and hearing should be discovered early so that afflicted children may be placed at a proper distance from the blackboard and teacher's desk.

Light should fall from the left and from behind. Shades should be so adjusted that the sunshine shall not fall upon the book or work. There should not be two consecutive periods of close eye work. The eyes should never be closer than ten inches to the work, sixteen inches is preferable, and should be raised occasionally from the work. Books should be held at a right angle to the line of vision, and off the desk, though the hands may rest upon it.

The classroom temperature should be maintained between 65° and 68° F. when artificial heat is used. An accurate thermometer should be attached to the teacher's desk and an hourly record of the temperature should be made. If the temperature is not satisfactory, the principal should be notified at once.

With regard to ventilation, a flag or other indicator should be placed in front of the air intake. When this shows a deficient supply of air, the fact should be immediately reported to the principal. Windows should be opened from the top and bottom after every class period, but on very cold days they may be closed before the end of the period. Except as noted, the schoolroom should be closed when forced ventilation is in operation. When it is not in operation, the room should be opened on at least two sides; transoms should be kept in repair for this purpose. Drafts must be avoided.

Children should be urged to take pride in the order and cleanliness of their desks and classrooms. In the upper grades, this interest should be extended to the school and community through sanitary squads, and pupil health organizations.

Children, particularly in the lower grades, should not be required to sit still for long periods at a time. In addition to setting up exercises, games should be used when necessary, and a short recess should be given in which free movement about the room and quiet conversation may be allowed. In addition, immobility may be relieved by alternation of tasks, standing to recite, and group and blackboard work. Immediately before and after lessons requiring severe concentrated effort, a short relaxation is most helpful. The children may be permitted to rest their heads upon the desks and relax completely for a minute or two. They should be called to strict attention immediately following such periods. The contrast between work and rest should be definite. Pupils should not be restrained from leaving the room to go to the toilet. If the teacher suspects that a pupil is abusing the privilege, appropriate measures may be taken subsequently. Two minute setting up exercises should be given without fail at ten, eleven, and two o'clock, or after each class period. The periods for physical exercise, play, and recess should be strictly observed, and should be taken out of doors unless the weather is inclement.

4. *Instruction in hygiene.*—The object of the instruction in hygiene is to inculcate habits of cleanliness and care of the body, etc., in order to maintain and promote good health and vigor. The emphasis of the instruction should be placed upon the practical affairs of daily life, such as keeping the scalp and hair clean, brushing the teeth, attention to clothing, study, play, and rest, and not upon theoretical instruction in anatomy and physiology.

In the first three years the pupil should be told to do things without emphasizing the reasons therefor. Each topic should be related to daily living and should affect daily practice. Stories and actual illustrations from daily life, many of which may be supplied by the children themselves, should characterize the method of teaching in these years. After the third year the pupils should be required to use textbooks, but the method of applying instruction to daily practice should be continued. The result of the instruction should be tested by inspection and by questioning the pupils as to their success in putting into practice the teaching of the previous lessons. The pupils should become interested in the formation of good hygienic habits, and should learn to apply the lessons of personal hygiene in the home, neighborhood, school, and city. Student selfgoverning health leagues, and sanitary squads may be formed with great profit. The pupils should be alert to note all matters affecting health. The personal example and influence of the teacher is of great importance. At all times an endeavor should be made to put into daily practice (Daily Routine) the lessons learned in school. The following is a typical daily program:

1. Rise promptly when awake.
2. Take breathing and setting up exercises appropriate to the grade.
3. Wash (warm water and soap) hands (hand brush), face, neck, and chest. Cold splash on face, neck, and chest. Clean fingernails.
4. Clean the teeth. Brush the gums and the whole mouth, and rinse the mouth. Drink a glass of water.
5. Dress with inspection of clothes as to cleanliness.
6. Eat slowly at breakfast and chew well.
7. Attend the toilet, and wash hands afterwards.
8. Prepare for school. Books and clothes clean and in order.
9. Observe regulations as to entering school.
10. Care for outer clothing. Attend to order of desk, and prepare for daily morning hygienic inspection.
11. Keep correct sitting and standing posture in school.
12. Drink water at recess. Use individual drinking cup or bubble fountain.
13. Return home for lunch without loitering. Wash before lunch. Eat slowly.
14. Play in fresh air after school.
15. Study. Pay attention to lessons, and finish the work.
16. Wash and prepare for the evening meal.
17. Prepare for bed early. Attend the toilet, wash, put clothes in order, and open window.

Children should be led to observe their environment and to help improve conditions about them. Health topics should be used frequently for oral and written compositions. Specific cases of accidents, diseases, disorders, examples of unusually good hygiene, should be brought to the attention of the pupil and lessons as to their conduct should be drawn therefrom.

Practically all of the details recorded in this article are taken from the Course of Study in Hygiene

in the New York Public Schools, where it has been in operation the last two years. The writer therefore wishes to acknowledge indebtedness to Dr. C. Ward Crampton, director, and Dr. Frances Cohen, assistant director of Educational Hygiene, for their great share in the construction of the syllabus. The Daily Routine is exclusively the work of Doctor Crampton.

1066 CLAY AVENUE.

## THE MERCURIC CHLORIDE TEST FOR THE DIAGNOSIS OF SYPHILITIC INFECTION.

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Gordon (1) in February, 1915, reported the results in seventeen cases of a test for syphilis which he devised. His technic was as follows: To 0.5 c. c. of blood serum, five drops of a one in 100 solution of mercuric chloride were added, the drops falling in the centre of the test tube containing the serum. Ubel (2) in September, 1916, reported fourteen cases, using the following technic: To several c. c. of blood serum, five to ten drops of a one in 100 solution of mercuric chloride were added, the drops falling in the centre of the tube. In reading the results the formation of a precipitate indicated absence of infection, while, if the serum remained clear, infection was indicated. Various degrees of intensity of the precipitate supposedly followed the intensity of the Wassermann reaction.

That the immense amount of serological work done in connection with syphilis should culminate in a test so simple seems incredible, and a series of thirty-one tests does not seem sufficient evidence for its acceptance. We received several inquiries from physicians throughout the State concerning this test and thought it advisable to carry out in connection with our Wassermann work a series of tests using mercuric chloride.

As neither Gordon nor Ubel in their papers state whether the serum was fresh or inactivated, we therefore made a preliminary series of tests, using both fresh and inactivated serum. As the results were the same in each instance in a series of 200, we decided to use for this report the following technic: Five drops of a one in 100 solution of mercuric chloride were added to each tube of inactivated serum, using the same capillary pipette to insure uniformity of the drops. The serum utilized was that remaining in the tubes after the requisite amount had been removed for the Wassermann test; all serum unfit for this test or which gave an anti-complementary reaction was discarded. In all cases from 0.5 c. c. to one c. c. of serum was available for the mercuric chloride test. In our series of 500 tests, of which 209 gave a positive Wassermann and 291 a negative, all showed the production of a precipitate. The amount of precipitate varied in dif-

ferent serums, but we were unable to determine that syphilitic infection, as shown by the Wassermann reaction, had any effect. In no serum was a precipitate absent entirely when the mercuric chloride solution was first added. If the serum was in great excess occasionally the precipitate would dissolve on shaking.

### CONCLUSIONS.

1. The test as devised by Gordon is erratic.
2. The precipitate varied in different serums; this apparently depends on some difference of chemical composition and is not affected by the presence or absence of syphilitic infection.
3. The mercuric chloride test for the diagnosis of syphilitic infection should not be used.

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## A STATISTICAL AND CLINICAL SURVEY OF 591 GENITOURINARY CASES.

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The figures and observations gathered for this article are compiled from 591 authentic cases treated at the Cornell Clinic and constitute about one half of the total number of cases treated by the entire department during 1916. It was our aim to review each case as far as applicable, to determine: 1, types of cases seeking treatment; 2, number and per cent. of cases discharged cured, verified by all known tests; 3, condition and number of patients who voluntarily cease treatment, although not discharged cured; 4, common gonorrheal complications, etc. The total number of patients treated on the even days of the week was 591, out of which 377 were affected with gonorrhea in some form or another. The Department of Urology does not treat patients with syphilis, and such patients, as soon as a diagnosis is established, are at once referred to the department for the treatment of skin diseases and syphilis.

The principal figures of interest are the following: Out of a total of 377 gonorrheics, fifty-three, fourteen per cent., were discharged cured, verified by all known tests; 129, 34.2 per cent., patients ceased treatment when the urine was clear, but were not yet eligible to be discharged as cured; 195, 51.7 per cent., patients ceased treatment while the urine was still cloudy. From these figures it will be noted that out of each 100 patients only fourteen took the trouble to keep up treatment until actually cured, and 34.2 per cent. of the patients discharged themselves as cured as soon as the urine appeared clear, while 51.7 per cent. of the patients discontinued treatment although visibly ill.

What constitutes a cure? Briefly stated, we consider a patient cured when 1, there is no urethral



discharge; 2, the urine is clear; 3, there are no constricting bands or stricture of urethra; 4, the prostatic secretion is free from pus; 5, there is no reappearance of symptoms when treatment is discontinued and liquor indulged in; 6, there is a negative complement fixation test. The complement fixation test, as already known, is of great value in chronic gonorrheics, but is of little or no value in acute cases where the gonococcal infection is limited to the anterior urethra. We found in some cases of the last mentioned group that, while the complement fixation test was negative and the urine clear, nevertheless the discharge containing gonococci reappeared when treatment was discontinued and liquor indulged in. Furthermore, patients that have received gonorrheal vaccine injections will frequently show a persistent positive complement fixation test for many months, although otherwise clinically cured. How long such cases persist positive is as yet not determined.

In a survey of all the venereal clinics in New York Barringer and Platt (1) in 1915 published the following statistics of two approved clinics:

	Clinic A.	Clinic B.
Discharged cured .....	9.7 per cent.	9.4 per cent.
Ceased treatment improved....	19.3 per cent.	14.2 per cent.
Ceased treatment unimproved.	71 per cent.	76 per cent.

M. M. Davis, of the Boston Dispensary (2), has reported 11.4 per cent. of cures out of a total of 450 patients, while H. M. Sanford, of the Lakeside Hospital Dispensary of Cleveland, reported twelve per cent. of cures. In our own series of cases 34.2 per cent. of the patients discontinued treatment when the urine was clear. How many of these could be added to the list of those cured is difficult to say. We have repeatedly observed acute gonorrheics who reach a stage where the urine is clear even though the treatment is discontinued for several days, yet the prostatic secretion shows presence of pus, some even containing gonococci.

What becomes of the patient who ceases treatment while still actively diseased, and why does he discontinue treatment? These are questions that are difficult to answer unless actively investigated. In a number of instances we have written to delinquent patients, telling them that our records show that they have ceased treatment although not as yet cured, and asking them to please inform us why treatment was discontinued. Some of these letters came back, indicating that either the patient had moved away, or that he had given a fictitious name and address. The others were never heard from. It is safe to state that the patient who becomes indifferent about his infection and in whom the inflammatory process lingers for months or even years not only spreads gonorrhea, but ultimately acquires the worst type of urethral stricture. A number of our patients attend the day clinic as long as they are out of work, but as soon as employment is procured they seek treatment either at some night clinic or to a small extent at some private office. Then there are patients who object to being treated and examined by students. This, of course, cannot be remedied, since clinics attached to universities are to some extent for teaching purposes. A little kindly reasoning with the rebellious patient will usually overcome his objection.

An effort was made to determine the exact period of incubation in acute gonorrhea; also whether there is any difference in the period of incubation between initial gonorrheics and those who have had previously one or more attacks of gonorrhea. In fifty-two per cent. of the primary group the period was from three to five days, while in forty-eight per cent. the period was anywhere from six hours to fourteen days. The multigonorrheics showed that sixty-five per cent. appeared from three to five days, while the remaining number appeared from one to ten days, thus showing no great difference between the two groups.

To this day there are some urologists who assert that posterior urethritis is caused by the use of the hand syringe. While our statistics show that 39.5 per cent. of our acute cases had at one time or another acquired involvement of the posterior urethra, yet by far the greater part of these showed signs of posterior urethritis on their first examination. We realize that these figures are far below the usual findings of others. In our classification of acute posterior urethritis we were in main part guided by the presence of a hazy or cloudy second portion of urine. These were invariably cases where treatment had been deferred for several days, although the infection had definitely shown its presence. The posterior urethra may become involved from the outset, especially if the patient indulges in excessive venery at the time of infection, particularly when liquor is then freely consumed.

Of our acute gonorrheics 15.7 per cent. had acquired acute epididymitis, as follows: left side, thirty-seven per cent.; right side, sixty-three per cent.; both sides, none. Jean Simons (3), after collecting statistics from thirteen different authorities, found their percentages of cases differed, but the figures deducted from their grand total showed that 34.6 per cent. were complicated by epididymitis. All of our epididymitis cases had acute posterior urethritis, which tends to prove the accuracy of the statement that epididymitis never occurs except from inflammation or trauma of the posterior urethra (4). On the other hand, chronic prostatitis is a most common complication of chronic urethritis and stricture of the urethra. The gonococcus, while occasionally found in the prostatic secretion of more recent cases, is seldom found in prostatics of long standing.

The following is a tabulation of the frequency and number of visits made by gonorrheal patients:

Number of Visits.	Acute Gonorrhea.	Chronic Gonorrhea.	Per cent.
1	62	17	20.0
2	28	16	11.6
3	23	10	8.7
4	12	10	5.8
5	12	11	6.3
6-10	41	31	19.0
11-15	25	10	9.2
16-20	21	16	9.8
21-30	6	11	4.5
31-40	2	5	1.8
41-50	3	2	1.3
51-60	0	3	.7

Those patients had to make the largest number of visits whose prostate was secondarily involved.

As previously stated we do not treat syphilis in

the Department of Urology. As soon as we are certain that the suspected sore is a primary lesion we transfer the patient to the skin and syphilis department. It may not be amiss to remark that we are of the opinion that every venereal sore should be considered as a probable chancre until definitely proven to be otherwise. This policy if carried out we believe would greatly diminish the possibility of error in overlooking atypical chancres in which spirochetes are not always demonstrable. That such errors have been made in the past in many instances is readily shown by the frequent finding of tabetic atony of the bladder in patients who seek relief for incontinence, and in whom a careful history discloses the fact that they had venereal sores many years ago, receiving local treatment only, but at no time was a blood test taken. Error in diagnosis, as well as oversight, occurs especially where the patient has a narrow foreskin and comes to be treated for gonorrhea. The glans penis is continually bathed in gonorrheal pus, and if a sore is perchance detected it is often thought to be due to erosion from uncleanness, while it really is a primary sore.

One of our gonorrheics had a most innocent looking sore on the foreskin; the Wassermann test was negative once on the fifth and once on the ninth week after exposure. He came back, however, three months later with a typical luetic macula roseola. Another gonorrheic had several innocent looking erosions on the scrotum and had a positive Wassermann six weeks later. Many similar cases are of sufficient importance to warrant two or three blood tests within six months of every doubtful venereal sore when the diagnosis of chancre is not established *per se*.

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17 EAST THIRTY-EIGHTH STREET.

## PYLORIC OBSTRUCTION AND THYMUS DISEASE IN AN INFANT.

By ROBERT L. PITFIELD, M.D.,  
Philadelphia.

In the following history of Baby G. it will be seen that three hyperplasias, perhaps all manifestations of a common disease process, interfered in a serious way with his health and threatened his life. A large adenoid so obstructed his breathing that his nutrition was seriously delayed; a hypertrophic pyloric obstruction all but starved him to death, and an enlarged thymus gland on several occasions very nearly strangled him.

CASE.—Baby G. was born three weeks prematurely, as were his brother and sister. His father is a healthy man and his mother but fairly so; she has at times signs of marked nervous irritability. No syphilis, tuberculosis, or indeed any other factor of etiological importance was present in the history. The child was bottle fed. When but a few days old mere stretching of the foreskin caused him to become apneic and cyanotic and he was revived with some difficulty. The same thing happened a few

days later while being bathed. This was the first appearance of thymic disease. When he was two weeks old an officious nurse raised his milk formula from F. 2.50, S. 6, P. 50 to something equivalent to F. 7, S. 6, P. 1.50. He then began to vomit persistently and he rapidly lost weight. At the age of six weeks he vomited all of his food, passed but little urine, and his stools were very small, owing to the persistency of the vomiting, the reversed peristalsis in the stomach and the presence of a small tumor in the right hypochondriac region, a diagnosis of pyloric stenosis was made. He was operated on quickly and easily by Dr. J. B. Deaver and did very well for a week, retaining some of his food and passing more urine and larger stools. The stitches were removed at the end of a week, the wound opened and all of the intestines were extended. These were caught in a sterile pad, the wound resutured and the child recovered and remained fairly well until four months old. At this time on acquiring a slight cold, stertorous crowing breathing developed with some cyanosis. In a few days marked dyspnea supervened. Catarrhal pneumonia was found to be present in both apices. From the fact that obstructive breathing was present with a harsh sibilant note in the trachea just beneath the sternum and because of the recurrence of the cyanosis in slight exertion and from the fact that dullness to the right and left of the manubrium was found, a diagnosis of thymic enlargement was made. Immediately at the suggestion of Doctors Graham and Fussell he was taken to a hospital and a massive dose of x rays (twenty milliamperes minutes) administered over the sternum. At once respirations fell from fifty-eight per minute to twenty-eight and the cyanosis disappeared. A fit of coughing the next day precipitated other attacks of dyspnea, apnea, and cyanosis, and the child very nearly died, being revived with artificial respiration and oxygen. Daily doses of x ray were given for a week and he was removed to his home. For two months at irregular intervals massive x ray doses were given with a Coolidge tube, whenever thymic attacks appeared.

Two sheets of aluminum foil as a filter were interposed and the lungs were carefully screened with lead foil at each treatment. Great improvement followed and thymic attacks disappeared for eight months only to reappear after an operation for adenoids, when a severe and life jeopardizing attack lasting about eight hours all but killed the child. The operation was done with great skill and rapidly without a general anesthetic by Dr. F. R. Packard, morphine and atropine as safeguards being employed in lieu of ether. Five minutes after the child was taken from the operating room the thymic attack commenced, followed by edema of the lungs. Oxygen and mouth to mouth insufflation finally rescued him from what seemed to be a moribund condition. His pupils dilated and he was apneic, pale, and cyanotic and apparently lifeless. He finally recovered, one x ray treatment was given, and in a week he went home. He has gained about five pounds in two months since the adenoid was removed and is up to weight, being about twenty-two months old and weighing twenty-six pounds.

In all 275 milliamperes minutes in x ray treatments were given in four months time. Each application of the x rays relieved the dyspnea at once, but each treatment was followed by nausea and vomiting the next day. Thymic attacks came on often whenever there was a fresh nose fall.

Edema of the lungs, according to many writers, is common in thymic disease. Probably the proximity of the vagi to the enlarged gland has something to do with the edema. Pressure by clamps or sectioning the vagi will produce edema in the lungs of dogs. The x ray treatment, acting immediately and so specifically, in this case I believe more than anything contributed to the recovery of this child from the thymic disease.

It seems that with the most malign cunning all the manifestations of the hyperplastic disease were placed just where they could best obstruct highly important and vital actions and thus jeopardized the life of this child many times in divers ways.

5211 WAYNE AVENUE.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

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A. R. ELLIOTT PUBLISHING COMPANY,

Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single copies, fifteen cents.

Remittances should be made by New York Exchange, post office or express money order, payable to the A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MAY 26, 1917.

### SEPARATE TRAINING CAMPS FOR MEDICAL OFFICERS.

It is estimated that from 8,000 to 20,000 additional medical officers will be required for the army of the United States by the close of this year. Thanks to the foresight and alertness of the medical section of the American Red Cross Society some thirty-odd base hospital units have already been organized and some of them are now at the front in France. The service in these hospitals, however, does not differ essentially from that in peace times save for the urgency of the needs of the patients and the predominance of surgical cases. Therefore the surgeons who serve in these base hospitals require no special military training. They can go direct from civil practice and will soon adjust themselves to the differences which necessarily exist between the military and civil hospital. The surgeon with the troops in the field, however, will find himself in very different surroundings from those to which he has been accustomed and will require special training along strictly military lines in order to give the most satisfactory service.

For this reason special provisions must be made for the military training of medical reserve officers who are expected to serve in the field. This can

best be done at an officers' training camp such as has been established for the 40,000 young men who are expected to furnish the company officers for the national army. The training of medical officers, however, is so different from that of company officers that the best results could be obtained by separate training camps for medical officers. We therefore urge the construction of four medical officers' training camps, one in the East, one in the South, one in the Middle West, and one on the Pacific Coast. Two or three months' training at such camps would be invaluable to the medical reserve officer and to the troops with whom he would be called upon to serve; even one month would probably be of great value to the medical officer. In the training camps for line officers much is taught regarding strategy and tactics which is extraneous to the duties of the medical officer. By concentrating medical officers in camps of their own they could be given a highly specialized and concentrated course of training under the instruction of the higher medical officers of the regular army. For these reasons we urge the War Department to establish special training camps for medical officers at the earliest possible moment.

### THE MENTAL HYGIENE MOVEMENT.

The impetus which has been given the subject of mental hygiene recently may cause the profession to lose sight of the fact that the modern movement really had its inception over a century ago. In 1803 Johann Christian Reil, born in 1759, published his *Rhapsodien über die Anwendung der Psychischen Curmethode auf Geisterrungen* (Halle), reviewed by Dr. W. A. White in the *Journal of Nervous and Mental Disease*, January, 1916, pages 1-22, which may be said to represent the first attempt at formulating the principles of psychotherapy. Beginning with a criticism of the asylums of that day, he went on to discuss psychotherapy, his whole attitude toward the problem being distinctly pragmatic. We cannot quote in full his conception of consciousness, but he evidently had a broad grasp of the subject and appreciated somewhat its genetic significance. He spoke of the false treatment of insanity by blood letting, purgatives, and emetics. He said in effect one must treat bodily conditions by proper physical remedies and psychical conditions by psychical means. Moreover, he gave an excellent description of the various means of appealing to the psyche.

This book, we must remember, was written at a time of the most abysmal ignorance of and indifference to mental disorder, the only other intelligent



observers of that time being Pinel and perhaps Willis. Later Charcot, followed by Liebau and Bernheim, brought hypnosis into psychotherapy; this had its vogue and subsided. The work of Janet marked a departure in psychotherapy and finally the movement culminated in a new method of approach to mental problems originated by Freud and later on modified and extended by Bleuler, Jung, and Adler.

Few authors, however, have recognized the fact that there is a vast field of endeavor in regard to both prevention and treatment of nervous and mental disorders; consequently the profession has remained unenlightened. A few volumes have appeared, chief of which is a collection of treatises on the subject by various authors and published under the series title of *Modern Treatment of Nervous and Mental Diseases*, edited by Dr. W. A. White and Dr. S. E. Jelliffe. Nearly all other books dealing with the subject take either a fatalistic or a materialistic view of it. Curiously enough, however, the real fight for the mentally ill was initiated by a layman, who had himself suffered from a mental disturbance.

In June, 1900, Mr. Clifford W. Beers, a Yale graduate, began to suffer from depression, and shortly afterward entered a private sanatorium, where he experienced many evils only too common in such places. From then on, throughout the course of a disorder which lasted five years, Mr. Beers went through all of the vicissitudes common to these sufferers, kind treatment as long as he was depressed and therefore merely passive, but when he became excited and troublesome, first tactless overruling of his requests, next brutal treatment and even assault. In 1905, after five years of suffering, Mr. Beers recovered and began to devote his life to a project which he had conceived while in an asylum, the amelioration of the condition of the insane. Finally, in 1908, his book, *A Mind that Found Itself*, appeared. About two months later the Connecticut Society for Mental Hygiene was born and not long after the National Committee for Mental Hygiene, of which Mr. Beers is secretary, started its work.

This organization has gradually increased the scope of its activities until at this writing there are eighteen State societies. The latest achievement is the establishment of a quarterly magazine, *Mental Hygiene*. In the first issue, dated January, 1917, Dr. Lewellys F. Barker, furnishes an illuminating discussion of some of the problems in connection with the subject which he believes to be important. Among these may be mentioned the marriage of people with psychopathic tendencies; the relations of puberty, of pregnancy, and of climacteric periods to mental hygiene; the pedagogical problems con-

nected with children presenting a lower degree of educability than normal; the psychology of the adult criminal and the relations that exist between crime and mental disorder; the psychiatric study of juvenile offenders; the cooperation of psychiatrists with the best legal talent in the revision of law codes; the psychiatric study of inebriates, paupers, prostitutes, and sexual perverts, and a consideration of their sources; and the study of the conditions, heredity, or environment that lead to the less outspoken instances of social maladjustment, including those of the psychoneurotic patients who crowd our hospitals and sanatoria, and those of the large group of persons who, owing to anomalies of character and conduct, provide material for the news columns of the sensational press.

This program is ambitious in its aims, but not impossible of achievement. Bearing always in mind the fact that abnormalities of behavior are rigidly determined by preexisting psychical and physical causes, we should seek ever back of the descriptive, materialistic view of human conduct and strive to find its genesis. Environment, education, heredity, eugenics, all of these are fields for the physician who would steer the human ship safely past the rocks of the neuroses and psychoses.

#### SENILE APPENDICITIS.

Volumes have been written on the subject of appendicitis, but little has been said regarding this pathological process in old subjects nor what percentage of cases occur in the decline of life. The question as to whether or not senile appendicitis differs from that met with in children and adults has also been neglected, but from recent studies on the subject it becomes evident that any distinctive characteristics are evidently due to structural changes in the appendices of subjects advanced in years, as well as to the special reactions at this time of life in face of infections, psychogenic and other factors. Special types of appendicitis bear certain relations to the normal evolution of the vermiform appendix. From the age of fifty years as the earliest and sixty years as an average, changes occur in the cavity of the diverticulum and its subserous lymphatic system. These changes consist in a partial or total obliteration of the appendicular lumen and the disappearance of the lining mucosa and its glands, accompanied by a parallel regression of the submucous lymphoid system. This double process is encountered in twenty-five per cent. of cases, according to Ribbert, and in about fifty per cent. according to Armengau.

In other instances the involution takes place later and more slowly, leaving the appendicular lumen and the submucous lymphoid system almost intact. The

lesions will vary with the type of involution. An appendix having a late and incomplete involution will give rise to folliculitis as in the adolescent or adult. On the contrary, an appendix with an early and complete involution cannot acquire a folliculitis, since this is the fundamental lesion of an appendicitis, but the intestinal infection which would otherwise have given rise to an appendicitis, will produce a typhlitis with perityphlitic and paratyphlitic abscess whose site and extent varies.

Clinically senile appendicitis is met with in three forms: 1, iliac abscess—usually very large; 2, neoplastic appendicitis; 3, hernial appendicitis. The first two types constitute the intraabdominal evolution of the senile appendix, while the extraabdominal is represented by the third type, hernial appendicitis, which has been studied more thoroughly. In the first two types the commencement of the process is insidious with a torpid evolution, while the attenuated local and general reactions favor diagnostic errors. It is necessary to detect those symptoms which lead to a correct diagnosis and which are constantly present in order to prevent the patient from dying from various septicemic complications, and if in doubt it is quite legitimate to make an exploratory incision in the right iliac region.

#### HAS WAR INCREASED DRUG ADDICTION?

In an interview published in the *New York Times* for April 29th, one of our foremost champions for righteousness in matters of drugs, alcoholics, etc., makes many statements which will excite wonder and apprehension. He believes that "the war in Europe has resulted in a tremendous and unnecessary increase in the use of habit-forming drugs." He goes on to cite instances he has seen personally and says that he is going to urge the President to take the necessary measures to protect our own soldiers from this menace. There are several factors which have combined to produce this unfortunate result. One is the fact that armies are followed, as has been the case since the dawn of history, by a motley mass of parasites, prostitutes, thugs, in short, crooks of all kinds. One of the most profitable pursuits of these camp followers is the vending of drugs. Temptation is thus put in the soldier's way. The tremendous excitement of battle is followed by a reaction during which the soldier feels "down and out," he seeks the companionship of the loose woman or the dealer in bad booze and these suggest to him a tablet or a pill, a "sniff" or a "shot" may be the specific remedy for his depression. Sooner or later he yields to these importunities, takes the fatal step, and from then on follows the usual path of the drug addict.

Another point stressed is the acquirement of the habit while recovering from wounds in the hospitals. It is natural for the medical and nursing staff of the war hospital to look upon wounded soldiers as heroes and to wish to do everything in their power to alleviate the pain which they are enduring because of wounds received in serving their country. Through mistaken kindness, then, the nurses supply these men with morphine in comparatively large quantities. To quote our source: "As soon as the patients were able to help themselves and to use a hypodermic a mixture of this morphine solution was put on a table within their reach, and they were allowed to use it as often as they felt inclined." The perniciousness of this procedure need hardly be pointed out. One soldier said: "The nurses never refused morphine to anyone who asked for it!" It seems that the introduction of gas attacks into warfare has been responsible for many of these addictions. Soldiers who have been "gassed" are carried into the hospital, sat up against a wall—they are not able to breathe lying down—and put under the influence of morphine, it having been found that that drug was the only thing that would relieve them. By the time the effects of the gas had worn off these men had become addicted.

It is possible, of course, that such accounts are somewhat exaggerated as it seems the information was largely acquired from one patient who had been in the English Army and had acquired the habit of being given the drug after a gas attack. Still it is quite easy to see how mistaken kindness toward wounded soldiers might serve to do them real injury. Aside from that, it is a well known fact, as King has pointed out (*The Use of Habit Forming Drugs by Enlisted Men, Military Surgeon*, September-October, 1916), that the soldier is encouraged by camp followers to become a drug addict, and many such cases occur among the rank and file.

Now that the United States is actually at war, the profession must bear in mind this warning. The admiration and pity felt for soldiers who have risked their lives for their country and who bear the red badge of courage must not blind us to duty. Morphine and other narcotics should be dispensed with the same care that obtains in ordinary hospital practice, with very rare exceptions. For example, after the Jutland naval battle, according to the surgeons who were present, all the wounded on board ships were given two thirds of a grain of morphine, which kept them comfortable until their turn was reached by the surgeon. But this was an especial case, where there were a large number of wounded at the same time, a small number of surgeons, and no possibility of securing help. With the exception of such occasions, narcotics should be administered only by the

physician, and he should consider the needs of each case before prescribing them. Furthermore, a determined effort should be made to stamp out the illicit traffic in drugs which obtains about camps. Such devil's work is despicable enough in time of peace, but in time of war it is a menace to the safety of the nation and those engaging in it should be dealt with as traitors to their country.

### PROTECTIVE MECHANISMS AGAINST POLIOMYELITIS.

The important question of the rôle of the nasopharyngeal mucous membranes in the pathology of epidemic poliomyelitis has not been left out of account in the studies just published in *The Journal of Experimental Medicine* (Vol. xxv, No. 4, April, 1917). It relates to both phases of the problem—the dissemination of the infection through healthy carriers and the exposure to it of the person who has in this manner come into contact with it.

For both the ingress and egress of the virus are now generally believed to be by these passages. Normally the meningochoroid plexus complex excludes the virus from the central nervous system. The very slightest change, however, in this complex is sufficient to destroy its protective power. Such a disturbance of the complex has been produced artificially by injection of normal serum or other irritant fluids, by replacement of cerebrospinal fluid of one monkey with that of another, or by lumbar puncture in which even a slight hemorrhage has occurred, when infection took place.

Infection enters much more easily experimentally from the nasal mucosa than from the blood, apparently permeating the nervous organs continuously through the olfactory nerves. The protective defense exists, therefore, in the nasal and pharyngeal mucosa itself in the form of a neutralizing or inactivating constituent in the secretions. Experiments seem to show that this is a variable power depending upon temporary conditions of these passages. Inflammation removes or diminishes it and its occurrence and effectiveness are apparently subject to other conditions.

Too much weight cannot as yet be laid upon this defensive factor, however, since its actual power as merely an accessory defense measure or a more effective one is not yet a matter of knowledge. It is suggestive of an explanation for the escape of certain carriers from infection by the virus present in these passages and of rendering the virus harmless to others as well as themselves. It emphasizes also the importance to be attached to the condition of this mucosa that there may be no predisposition to infection through them.

## News Items

**Permanent Hospitals at the Plattsburg Camp.**—Work has been begun on six permanent hospital buildings at Plattsburg, N. Y., which it is expected will provide facilities for a camp of 10,000 men.

**Health Board Bill Vetoed.**—Mayor Mitchel has vetoed the bill passed by the Legislature for the reorganization of the Department of Health and the appointment of a deputy health commissioner in Brooklyn and Queens.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, May 28th, North Branch of the County Medical Society, Section in General Medicine of the College of Physicians; Tuesday, May 29th, Aid Association, board of directors; Thursday, May 31st, Physicians' Business Association; Friday, June 1st, Physicians' Motor Club (directors).

**Appointments at Postgraduate.**—At a recent meeting of the faculty of the New York Postgraduate Medical School and Hospital the following appointments were made: Dr. Edward Wadsworth Peterson, professor of surgery; Dr. Robert Hurtin Halsey, professor of medicine; Dr. Henry Dawson Furniss, professor of gynecology; Dr. Joseph Francis McCarthy, professor of urology.

**Meeting of the American Association of Anesthetists.**—The fifth annual meeting of the American Association of Anesthetists will be held in the Blue Room of the Hotel McAlpin, New York, on June 2d, under the presidency of Dr. Walter M. Boothby, of Boston. Programs can be obtained from the secretary, Dr. James T. Gwathmey, 40 East Forty-first Street.

**American Pediatric Society.**—The twenty-ninth annual meeting of this society will be held in the Greenbrier, White Sulphur Springs, W. Va., May 28th, 29th, and 30th, under the presidency of Dr. F. S. Churchill, of Chicago. An excellent program has been prepared, and the meeting gives promise of being unusually interesting. Dr. Howard Childs Carpenter, of Philadelphia, is secretary of the society and will supply programs to all who are interested.

**Confederate Medical Officers to Meet in Washington.**—The Association of Medical Officers of the Army and Navy of the Confederate States will hold its twentieth annual meeting in the New Willard Hotel, Washington, D. C., June 4th to 8th, inclusive, under the presidency of Dr. Carroll Kendrick, of Kendrick, Miss. Further information regarding the meeting may be obtained from the secretary, Dr. Samuel E. Lewis, 1418 Fourteenth Street, N. W., Washington, D. C.

**Vaccination against Smallpox Advised by the Health Department.**—The State Department of Health calls attention to the fact that smallpox has appeared in various sections of New York State, eighteen or more cases having occurred since April 1st, and that the disease has been epidemic in Connecticut since June, 1916. The desirability of vaccination is pointed out by the department, especially of those persons who are traveling about, in view of the possibility of becoming infected on railway trains, etc.

**Spanish Physicians Organize.**—Dr. Antonio M. Crispin has been elected temporary president of the Sociedad Medica Hispano-Americana, a newly formed organization composed of Spanish speaking physicians practising in New York. Among the physicians who attended the first meeting were Dr. Ramon Guiteras, Dr. J. Julio Hanna, Dr. J. M. Marxuach, and Dr. Victoriano Agostini. Dr. Anibal Zelaya and Dr. M. Uribe Troncoso were elected secretaries of the society, and Dr. J. L. Medina was elected chairman of the committee on the admission of new members.

**Medical Society of the County of New York.**—At a stated meeting of this society, which was held in Hosack Hall, New York Academy of Medicine, Monday evening, May 28th, Mr. Willard Straight, chairman of the Mayor's Committee for National Defense, will describe the organization and the work of the committee. Dr. S. S. Goldwater, chairman of the Committee on Hospital and Medical Facilities of the Mayor's Committee for National Defense, will describe the organization and work of his committee. Dr. Francis C. Wood will read a paper on Medical Schools in the War, and Captain A. N. Tasker, Medical Corps, will discuss the Medical Corps of the United States Army.



**Mental Clinics at Training Camps.**—The State Hospital Commission has offered to establish mental clinics or dispensaries at each of the larger military camps in New York State, with the medical service provided by the State Hospital Commission. The Mental Hygiene Committee of the State Charities Aid Association is prepared to cooperate with the commission.

**Army Units Reach England.**—Base Hospital No. 4, of Cleveland, commanded by Major Harry L. Gilchrist, Medical Corps, and under the direction of Dr. George W. Crile, reached England on May 18th. The Harvard Medical Unit, Base Hospital No. 5, arrived in England on May 22d. This unit is commanded by Major Robert U. Patterson, Medical Corps, with Dr. Harvey Cushing as director.

**Medical Officers at Fort Myer.**—The following named officers of the Medical Officers' Reserve Corps are assigned to active duty and will proceed to Fort Myer, Va., and report in person to the commanding officer of that post for duty: Major Charles L. G. Anderson, Captain John J. Repetti, First Lieutenant Ira C. Tyndall, First Lieutenant William J. Manning, and First Lieutenant Edward B. Macon. First Lieutenant Howard Hume and First Lieutenant Arthur M. Zinkhan have been relieved from duty at Fort Myer, and will proceed to Washington, D. C., and report to the commandant of the Army Medical School.

**First Nurses Killed in the War.**—Last Saturday the American liner *Mongolia* sailed for Europe with 265 surgeons, Red Cross nurses, and enlisted men belonging to Base Hospital No. 12 of Northwestern University, of which Dr. F. A. Besley, of Chicago, was director. On Sunday afternoon the naval gunners were firing the stern gun at a floating target, when a defective shell exploded immediately after leaving the muzzle and killed Mrs. Edith Ayres and Miss Helen Burnett Wood, of Chicago, and wounded Miss Emma Matzen, of Columbus, Neb., all of whom were nurses attached to the hospital unit. The vessel returned to port with the bodies. An investigation was at once ordered by the Navy Department.

**Civil Service Examinations.**—Among the positions for which the New York State Civil Service Commission will hold examinations on June 23d are the following: Assistant medical inspector of schools, open to men only; \$3,000. Assistant in Pathology, State Institute for the Study of Malignant Disease, Buffalo; \$1,800. Bacteriologist-pathologist, State Department of Health, open to men and women; \$2,500. Physician to the State Institution for Feeble-minded Children, Syracuse; \$1,800 and maintenance. For application forms and further information, address the State Civil Service Commission, Albany, N. Y.

**The Sale of Skimmed Milk Legal.**—The bill introduced into the State Legislature by Senator Wicks legalizing the sale of skimmed milk has been signed by Governor Whitman. This bill provides for the following amendment to the agricultural law: "The prohibition contained in this article against the sale of adulterated milk shall not apply to skimmed milk, which is clean, pure, healthy, wholesome, and unadulterated, except by skimming, if it is sold for and as skimmed milk. The prohibitions in this article against the sale of cheese made from adulterated milk or cream shall not apply to the pure skim-cheese made from milk which is clean, pure, healthy, wholesome, and unadulterated, except by skimming. This act shall take effect immediately."

**American Medicopsychological Association.**—The seventy-third annual meeting of this association will be held at the Hotel Astor, New York, May 20th, 30th, and 31st, and June 1st, under the presidency of Dr. Charles G. Wagner, of Binghamton. An excellent scientific program has been prepared, and the local committee of arrangements, of which Dr. Carlos F. MacDonald is chairman, has made provision for the social entertainment of visitors. On Wednesday evening, at 8:30 o'clock, Professor Edward Grant Conklin, of Princeton University, will deliver the annual address, his subject being the Development of the Personality. After the address there will be a reception at the Hotel Astor. On Friday afternoon, at 2:30 o'clock, a special meeting will be held at which the Hon. Carl Vrooman, assistant secretary of agriculture, will deliver an address on the food situation in this country. A scientific exhibit illustrating the special work in hospitals for the insane has been arranged on the eighth floor of the hotel.

**Canadian Medical Association.**—The annual meeting of this association will be held in Montreal, June 13th, 14th, and 15th, under the presidency of Dr. Murray MacLaren, of St. John, New Brunswick. Sir Thomas Roddick, of Montreal, is honorary president, and Dr. A. D. Blackader is president-elect. Dr. Theodore C. Janeway, of Baltimore, will deliver the address in medicine; Dr. F. J. Shepherd, of Montreal, the address in surgery, and Dr. Charles J. Hastings, of Toronto, the address in public health and preventive medicine. Dr. D. G. Campbell, 251 Prince Arthur Street, West, Montreal, is local secretary of the society and will be glad to furnish full information.

**Psychiatric Units for Base Hospitals.**—The National Committee for Mental Hygiene has appointed a special committee to furnish hospital units for mental and nervous diseases to the United States Government. Dr. Thomas W. Salmon, Dr. Pearce Bailey, and Dr. Stewart Paton, who have just returned from a visit of inspection to base hospitals along the Mexican border, believe a psychiatric unit of 110 beds should be attached to the base hospital nearest the largest concentration of troops and that similar units of thirty beds each should be attached to base hospitals elsewhere as required. The committee recommends that these psychiatric units be made integral parts of the military hospitals, and the alienists medical officers of the army.

**Assignments to Medical Officers by War Department.**—Major Elbert E. Persons, Army Medical Corps, has been ordered to Philadelphia to organize motor ambulance companies for service in Europe in connection with American army hospital units. He will be assisted in this work by Major Percy L. Jones, Medical Corps.

First Lieutenant Meredith R. Johnston, Medical Officers' Reserve Corps, is ordered to active duty and will report in person to the officer in charge at the Medical Supply Depot, St. Louis, Mo., for duty.

Major Winford H. Smith, Medical Officers' Reserve Corps, is assigned to active duty and will proceed to Washington, D. C., and report in person to the Surgeon General of the Army for duty in his office.

Captain Walter M. Brickner, Medical Officers' Reserve Corps, is assigned to active duty, with station in New York, N. Y., for the purpose of conducting the examination of the enlisted reserve personnel connected with the Mount Sinai Hospital, New York, and upon the completion of this duty will stand relieved from further active duty.

Captain Louis A. Maloney, Captain Charles T. Hunt, and First Lieutenant J. Louis Ransohoff, of the Medical Officers' Reserve Corps, will proceed to Fort Thomas, Ky., and report in person to the commanding officer of that post for duty.

Major Theodore C. Lyster, Medical Corps, is placed in charge of the physical examination of all applicants for duty with the Aviation Section, Signal Officers' Reserve Corps. He will proceed with the least practicable delay to Philadelphia, Pa.; New York, N. Y.; New Haven, Conn.; Boston, Mass.; Ithaca, N. Y.; Detroit, Mich.; Ann Arbor, Mich.; Chicago, Ill.; Madison, Wis.; Minneapolis, Minn.; Champlain, Ill.; Indianapolis, Ind.; St. Louis, Mo.; Kansas City, Mo.; Memphis, Tenn.; Cincinnati, O.; Cleveland, O.; Buffalo, N. Y.; Pittsburgh, Pa., and Washington, D. C., for the purpose of making the examinations. Major Lyster will proceed at such time as may be necessary to Richmond, Va.; Charleston, S. C.; Atlanta, Ga.; Savannah, Ga.; Birmingham, Ala.; New Orleans, La.; Los Angeles, Cal.; San Francisco, Cal.; Seattle, Wash.; Portland, Ore.; Butte, Mont.; Minneapolis, Minn., and Washington, D. C., for the purpose of making the examinations.

Each of the following named officers of the Medical Officers' Reserve Corps is assigned to active duty and will proceed to the place specified after his name and report for duty at the mobilization camp thereat: Captain Clarence B. Ingraham, Jr., Golden, Colo.; First Lieutenant Albert W. Lindberg, Springfield, Ill.; Captain Hans Hansen, Fort Des Moines, Ia.; Captain Edward S. Parker, Camp Dodge, Ia.; Captain Herbert Atkins, Fort Riley, Kans.; First Lieutenant Constant M. Colignon, Camp Grayling, Mich.; First Lieutenant Harry B. Zimmerman, Fort Snelling, Minn.; First Lieutenant Robert R. Glynn, Nevada, Mo.; First Lieutenant Joseph M. Shramek, Fort Crook, Neb.; First Lieutenant Hugo Mella, Fort Lincoln, N. D.; First Lieutenant Benjamin I. Harrison, Camp Perry, O.; First Lieutenant Lee W. Cary, Camp Douglas, Wis.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

*(Continued from page 947.)*

The prevailing high cost of atropine justifies an inquiry into the possibility of substituting for it, in cases in which the relatively less expensive crude drugs cannot be employed, one of the other mydriatic alkaloids, hyoscyamine or scopolamine.

As is well known, hyoscyamine is from the standpoint of molecular composition identical with atropine, from which it differs only in respect of its optical properties or, more specifically, its power to turn the plane of light polarization when a solution of it is examined with the polarimeter. Atropine, which corresponds to a mixture in equal parts of levorotatory and of dextrorotatory hyoscyamine, is optically inactive; but hyoscyamine, as obtained from solanaceous plants and used in medicine, is essentially a levorotatory substance. The importance of this distinction lies in the fact that the pharmacological action of the compound varies in some respects according to the degree of optical activity. Whereas, according to the investigations of Cushny and his coworkers, atropine and hyoscyamine act alike on the brain centres, pure hyoscyamine of the ordinary levorotatory type acts almost twice as strongly as atropine on the peripheral nerve endings. For central effects, therefore, substitution of hyoscyamine for atropine would be disadvantageous, as the peripheral actions in checking secretions, etc., would appear more strongly than after atropine, and the patient be unnecessarily inconvenienced. Where a peripheral effect is, on the other hand, desired, as in the prevention or arrest of excessive sweating, the relief of the acute paroxysm of bronchial asthma, or in the case of the localized actions demanded of atropine in the eye or stomach, hyoscyamine could, if cheaper, be substituted for atropine without unpleasant consequences. A sulphate of hyoscyamine is still sometimes obtainable at a price less than that of atropine, and the effects just mentioned can therefore be secured with some reduction of expense. It is to be borne in mind, however, that hyoscyamine sulphate, being no longer recognized in the U. S. Pharmacopoeia, the sample of it secured may not come up to the level of official standards. The hyoscyamine, instead of being strongly levorotatory, may contain a considerable proportion of dextrorotatory hyoscyamine and approach the inactive or atropine condition, thus losing a portion of its activity on the peripheral nerve endings; or, it may embody as impurity a trace of the sedative scopolamine (hyoscine) from which hyoscyamine is separated only with some difficulty. Thus, where hyoscyamine is substituted for the more stable and uniform substance, atropine, the former had best be used somewhat cautiously and tentatively at first,

until first hand knowledge of the manner and extent of action of the sample of hyoscyamine purchased.

In case hyoscyamine is not obtainable at a price advantageous as compared to that of atropine, the possibility of substituting scopolamine for the latter may, for certain purposes, be considered. While clearly different from atropine in molecular composition, scopolamine is nevertheless closely allied to it, and the peripheral effects of the two alkaloids are likewise almost the same, though the central effects show a marked divergence. Like the ordinary hyoscyamine, scopolamine is levorotatory, and its action on nerve terminations exhibits the same reinforcement as compared to the optically inactive atropine as exists in the case of hyoscyamine and atropine. While optically inactive and therefore weaker specimens of the alkaloid have at times been marketed under the older appellation hyoscine hydrobromide, the new Pharmacopoeia, from which hyoscine has been deleted, requires a definite extent of levorotatory activity, viz., at least  $-22^\circ$  under stated conditions, from scopolamine hydrobromide, thus insuring an almost or quite maximal power in the action of the compound on peripheral nerve structures.

As pointed out by Sollmann (1917), the peripheral actions of scopolamine, though agreeing qualitatively with those of atropine, differ somewhat quantitatively, the actions on the oculomotor autonomic fibres and the secretions being relatively stronger and the vagus actions relatively weaker with scopolamine than with atropine. Substitution of the former for the latter would thus be more advantageous for mydriatic and cycloplegic purposes and for the relief of excessive sweating, salivation, coryza or rhinorrhea, etc., than for accelerating the heart or securing the peculiar peristaltic and spasm relieving effects of atropine. Scopolamine is stated to be effective in the eye in one fifth the concentration required in the case of atropine—0.2 instead of a one per cent. solution—and is likewise advantageous in that its effects on this organ pass off more rapidly. Since, as mentioned in the preceding issue, scopolamine hydrobromide is now only about one fourth more costly, weight for weight, than atropine sulphate, it is plain that when therapeutically applied the former agent is but one fourth as expensive as the latter, on account of the much smaller quantity used.

Scopolamine has, to be sure, the disadvantages, as compared to atropine, of being a depressant to the central nervous system, especially in full doses, and probably, of more often causing untoward symptoms through idiosyncrasy. In view of the smaller concentrations required, however, and with due attention to the total amount administered and to the fact that scopolamine is contraindicated in the presence of circulatory or general weakness or somnolence, there is little to be apprehended from this direction. For checking excessive secretions minute amounts



will in many instances suffice, and where an immediate effect is not required the inexpensive whole drug stramonium can be used instead. This applies also where peristalsis is to be modified or spasm overcome in the alimentary tract, cases in which substitution of scopolamine for atropine is likely to be less advantageous.

Homatropine hydrobromide, the rapidly acting mydriatic and cycloplegic, is now at least twenty times more expensive in practical use than scopolamine hydrobromide. Where quick disappearance rather than prompt onset of the effects is the chief desideratum, expense might be greatly reduced in appropriate cases by employing scopolamine and, after the ophthalmic examination has been made, instilling eserine to counteract the mydriasis and cycloplegia.

(To be continued.)

**Treatment of Hyperhidrosis.**—A. W. Stillians (*Journal of Tropical Medicine and Hygiene*, February 1, 1917) asserts that a twenty-five per cent. solution of aluminium chloride in distilled water, dabbed gently on the affected part every second or third day and allowed to dry on, rapidly reduces the excessive sweating. Three applications usually suffice, after which one may wait for a recurrence before resuming treatment; or one application a week may be made to prevent recurrence. Excessive use is to be avoided, as it will cause sharp itching or stinging locally. Clothing should not touch the area until the solution has thoroughly dried. If itching should occur, an ointment of cold cream containing twelve per cent. of boric acid, or a calamine lotion with or without 0.5 per cent. of phenol, may be used. The treatment is effectual, not only in simple hyperhidrosis of the axillæ or feet, but also in persistent vesicular eruptions of the feet accompanied by excessive sweating. Any active inflammatory eruption present should be reduced before the aluminium chloride solution is applied.

**Application of the Carrel Method in Acute Mastoiditis.**—G. Mahn (*Presse médicale*, April 5, 1917) begins with a mastoidectomy or free opening of the mastoid, with curettement and careful removal of all diseased tissues, followed by irrigation of wound, meatus, and operative field with Dakin's solution and suture of the upper three fourths of the wound, i. e., leaving an opening of three centimetres below. Through this opening is introduced a drain of the calibre of a goose quill and fifteen centimetres long, closed at its extremity with a silk ligature but perforated with small openings throughout the embedded portion. Before introduction the drain is covered with a small gauze compress folded back along it like a paper filter. The end of the drain must not reach to the bottom of the wound. Outside are placed, above and below the drain, two additional small pleated gauze compresses, and covering these more gauze and wads of cotton, held by a slightly elastic bandage. The drain is fastened to the dressing with a sterile safety pin, and is purposely held kinked at this point with another bandage, to cut off communication of the wound with the external air. Every two hours one or two teaspoonfuls of Dakin's solution are run into the

wound under a pressure of sixty to eighty centimetres. Subsequent daily dressing consists in cleansing the margins and, if necessary, the open wound with Dakin's solution, taking all possible aseptic precautions. The meatus should likewise be washed out until the discharge ceases. At each dressing a little discharge should be aseptically collected at the entrance of and within the wound and examined on slides after drying and staining with one in 1000 phenolthionin solution. When, in a few days, but one bacterium on the average is to be noted in a whole microscopic field, the patient's general and local condition meanwhile remaining satisfactory, the rest of the wound may be closed with aluminium bronze sutures, inserted as deeply as possible. Immediately before this the operative field should have been carefully cleansed with ether and alcohol and the interior of the wound washed out with Dakin's solution. Any remaining dead space is filled by an appropriate pressure dressing. In the author's cases suture was possible after from two to fifteen days of sterilization. Complete healing was thus obtained in about one third the time required with ordinary dressings.

**Indications for Operation in Acute Mastoiditis.**—J. Warren White (*Virginia Medical Semi-Monthly*, March 9, 1917) notes a distinct diversity of opinion on this subject among various surgeons. He believes that if, in acute mastoiditis, one can maintain good drainage through the drum many cases may be aborted. One myringotomy, followed by expectant treatment, is insufficient. The canal should be thoroughly examined daily, and if there is the slightest retention of pus, several myringotomies should be performed if needed, and the canal irrigated with some hot solution every two or three hours. Thorough irrigation to prevent clotting which would block drainage should immediately follow a myringotomy. In uncomplicated acute mastoiditis in children, even if there is edema of the mastoid, free myringotomy and drainage should be secured before deciding to operate. Waiting from thirty-six to forty-eight hours before operating affords time to observe the case, ascertain the character of the infection, and permit improvement of body resistance and a shutting off of the veins in the mastoid. In the aged, however, complications are much to be feared. In acute mastoiditis superimposed on a chronic middle ear suppuration immediate operation is indicated. A total white cell and differential count facilitates the decision to operate. Again, if pain persists after one is satisfied there is good drainage from the ear, operation is called for. Headache is a symptom not to be overlooked; if it is severe, a lumbar puncture should be done. The x rays are of aid if they show the walls broken down between the mastoid cells, but the various degrees of cloudiness of the cells are difficult to interpret. In acute mastoiditis in diabetics, operation should be avoided unless imperative. The character of the discharge and the appearance of the canal wall and drum are always of great assistance in the decision. A culture should be taken in all cases. The smouldering cases with *Streptococcus mucosus capsulatus* infection should not be watched for longer than three weeks.



**Static Electricity in the Treatment of Chorea.**

—José Suarez de Figueroa (*Revista de Medicina y Cirugía Práticas*, March 28, 1917) reports an extremely grave case of chorea which had resisted the most varied and persistent treatment and in which as a last resort electricity was tried. The galvanic and faradic currents only served to aggravate the choreic movements, but on the employment of the static current an immediate improvement was noticed which progressed gradually and steadily to complete cure. The treatments were of thirty minutes' duration given daily for a fortnight, and afterward every four days for six months, at the end of which time recovery was complete. An interesting feature of the case was the fact that there was a definite history of the chorea coming on suddenly from fright two years before the treatment was begun.

**Action of Digitalis in Heart Disease.**—G. A.

Sutherland (*Lancet*, March 31, 1917) enters into an extensive discussion of the action of digitalis on the heart, in which he seeks to establish its sole action of therapeutical value as being due to vagal stimulation and consequent slowing of the heart. Emphasis is laid upon the fact that pharmacological investigations have been made only with amounts of digitalis far above those suitable for therapeutical use and that the results are therefore not strictly applicable to man. It is further emphasized that all of the clinical phenomena of digitalis action on the human heart can be induced by stimulation of the vagi by pressure. Only those cases of cardiac insufficiency associated with increased heart rate are benefited by digitalis, and among these such as fail to respond to its use by slowing of the rate always fail to manifest clinical evidences of improvement. The therapeutical value of digitalis, therefore, lies in its ability to stimulate the vagus and slow the whole heart, or to cause some degree of heart block, thus slowing the ventricular rate. This leads to rest, better filling of the ventricle and, as a result of both, to greater force of contraction.

**Intestinal Action of Absorptive Agents.**—William F. Petersen (*Journal A. M. A.*, April 28,

1917) recalls the recent therapeutical use of fuller's earth and kaolin for the control of various forms of diarrhea and points out that the former is more effective as an absorbent than kaolin, due to the fact that it carries a positive electrical charge which gives it an affinity for negatively charged colloids, the lipoids, etc. The precise mode of action of fuller's earth in therapeutics, however, is not understood and test tube experiments have shown that it has no influence of value on the ordinary intestinal flora. The author's investigation with normal human digestive fluids shows that fuller's earth greatly reduced the activity of both diastatic and proteolytic ferments and almost wholly that of the lipolytic ferments. This was the only demonstrable action of the earth. Such an action might be beneficial through diminishing the amount of the partially hydrolyzed protein split products which are toxic when absorbed, and possibly indirectly modify the intestinal flora through an alteration in the substrate. The latter theory seems supported by the clinical results obtained in bacillary diarrhea.

**Surgical Treatment of Intestinal Stasis.**—J. S.

Horsley (*Virginia Medical Semi-Monthly*, April 13, 1917) asserts that while the symptoms described by Lane, viz., flabby, muddy skin, headache, anorexia, etc., often exist, it remains to be proved whether they are due to so marked a change in the structure of the colon as would demand excision of the latter. Incompetency of the ileocecal valve has also been overemphasized. The colon being the normal recipient of the putrefactive bacteria from the intestinal tract and the organ from which water is chiefly absorbed, its extensive removal without good cause is unjustifiable. Correction of angulations and ptosis by suturing, as in the Coffey operation, and division of obstructing bands, will possibly correct the condition in most cases. In some instances in which the cecum has become a cesspool and is greatly dilated, anastomosis with the sigmoid seems indicated. Occasionally, if the cecum is greatly dilated, resection of the cecum and ascending colon may be advisable, but even then the ileocecal valve should, if possible, be preserved. At times an apparently indicated operation will yield brilliant results, in other instances only disappointment. On the whole, it should be remembered that many patients can be benefited or cured without operation, by regulation of diet and the ingestion of enough water and of a good mineral oil. If there is no improvement after months of such treatment faithfully executed, surgical treatment has much to offer.

**Continuous Aspiration in Infected Wounds.**—

A. Grimberg (*Paris médical*, March 31, 1917) states that to reduce the burden on the attendants and prevent fatigue of the patient in the irrigation treatment of wounds, he brings Dakin's solution into one side of the wound through a drain or cannula and causes it to pass out from the other side through a drain connected with an aspirating device. The latter consists of a bottle with an inlet above and a cock below. This bottle is placed on a footstool or box near the floor, with a bucket below to receive the outflow from the cock. The bottle and tube leading to the wound above being filled with water, and the cock opened, negative pressure is exerted, which effectually drains the wound, into which the Dakin's solution is introduced from a reservoir at a level slightly higher than that of the patient. The inflow through the rubber tube is regulated by a screw clamp and that through the aspirating bottle correspondingly adjusted by means of the cock. The inflow drain consists of a piece of rubber tubing five to six millimetres in diameter, the open end of which is surrounded for a distance of four or five centimetres with absorbent cotton held in place by a piece of gauze and a thread. The outflow tube is riddled for a distance of five or six centimetres from its open extremity with openings three or four millimetres in diameter, and is surrounded by a mass of cotton corresponding to the size of the wound, likewise held by gauze and thread. All the cotton must be directly in the wound, to prevent lateral spreading and loss of the solution. Under this treatment, foul odors disappear promptly, the appearance of the wounds is quickly improved, the temperature soon descends to normal, pain is allayed, and the patient feels better.

**Treatment of Placenta prævia.**—C. Meyer Wirz (*Correspondenzblatt für Schweizer Aerzte*, February 24, 1917) states that more than twice as many women die from placenta prævia when treated at home as when cared for in hospitals. The majority of deaths are due to lacerations of the cervix and septic infection, the direct consequences of therapeutic measures, and therefore our endeavors should be to prevent such lacerations and infection. The danger of embolism can scarcely be controlled. Placenta prævia patients should be sent to the hospital whenever it is possible, and no vaginal examination should be made prior to the admission. The vagina should not be tamponed because the dangers attendant on that procedure are greater than the resulting benefit. Expectant treatment of hemorrhages in pregnancy caused by placenta prævia is contraindicated. When the pains are good, the fetus in a proper position and the placenta prævia lateral, the bag of waters should be punctured and pituitrin administered, but this should not be done unless the labor pains are good. In general practice combined version is preferable to dilatation, while in the hospital the latter is to be preferred in certain cases because of the better prognosis for the child. He thinks that abdominal Cæsarean section should be performed more often in hospitals, in cases that are not infected and present no other contraindication, as the chances for the children are considerably improved by this operation, without making those for the mother any worse than by other methods of delivery.

**Principles in the Drainage of Wounds.**—William Pearson (*Lancet*, March 24, 1917) draws upon an experience of more than two years of active service both at the front and in home hospitals and reaches the conclusion that the most effective method of combating sepsis in a wound is by proper and adequate drainage. The use of antiseptics and of hypertonic salt dressings is of little value and tends to give a false and dangerous sense of security. Drainage to be adequate should be provided to meet the following conditions: 1. Very free incisions; 2, drain with gravity; 3, drainage tubes of sufficient size, properly used and adjusted; 4, removal of all mechanical obstructions such as pockets, flaps, herniated muscle, foreign bodies, etc., and the avoidance of tight gauze packing; 5, avoidance of obstruction by tight bandages, splints, bedding, etc. All wounds should be incised so as to convert them into funnel shaped cavities and when gauze is used for capillary drainage it should be laid loosely, wicks of it should extend into all portions of the wound, and no spaces should be left between it and the wound surface and none between the layers of the gauze itself. The dressings employed should be light and exposed to the air to permit evaporation of the discharges. Continuous irrigation mechanically removes discharge and thus aids disinfection, but it is not necessary and is not applicable where many cases have to be cared for. Rest and the administration of an abundance of fluids are of the greatest importance in the treatment. Vaccines are of little or no value in military wounds. Complications and delayed healing are nearly always due to inefficient drainage.

**An Oil Ether Mixture for the Treatment of Wounds.**—G. Duchesne (*Bulletin de l'Académie de médecine*, April 3, 1917), referring to suppurating wounds, asserts that, the time honored wet dressing with impermeable covering having been abandoned as inconvenient, the wet dressings of hydrogen peroxide, potassium permanganate, or plain boiled water subsequently used soon dried out, with corresponding suffering of the patient and retardation of repair when the adherent dressings were renewed. In the effort to secure a harmless, sufficiently antiseptic, and eminently healing dressing, the following mixture was finally resorted to: Camphor, five grams; balsam of Peru, ten grams; gomenol, twenty-five grams; ether and liquid petrolatum or almond oil, of each 500 c. c. This combination proved very satisfactory in a five months' trial. It is highly diffusible, penetrating into all wound recesses, and obviates adhesion of dressings. Healing is distinctly accelerated, repair of extensive wounds taking place in a few weeks. In some cases healing at the wound margins was observed to progress half a centimetre a day. Carbuncles were rapidly overcome by incision with the thermocautery, wet dressings until the necrotic core was eliminated, followed by application of the oil ether mixture.

**Methylphenol Serum in Gonorrhea.**—F. G. Cano, T. M. Townsend, and J. J. Valentine (*Medical Record*, April 28, 1917) outline their treatment for gonorrhea as follows: As the result of laboratory work, a serum was produced which was impregnated with phenol and methyl blue. Its safety was proved by animal experimentation and the medication was used in more than three thousand patients with the following results: Intravenous injections of the methylphenol serum prevent complications. Pain, discomfort, and other symptoms usually disappear at or before the fifth injection, and clinical and bacteriological cures are effected in six weeks, or less. Ten injections are generally sufficient. Syphilis requires its proper additional treatment, and local complications and systemic manifestations disappear promptly. Intravenous and intraprostatic injections are an excellent, rapid, and efficient combination. An intravenous administration of ten c. c. of methylphenol serum, or a more ample injection, into the prostate of normal phenol serum, or both combined, in no way jeopardizes the patient's life. Methylene blue prevents the phenol from exerting its usual action upon the red blood corpuscles, and ensures rapid elimination through healthy kidneys. It preserves the antiseptic power of the phenol and prevents that phenol from interfering with the chemicobiological function of the white and red blood cells. The serum component favors chemotaxis, it strengthens bodily defense, it prevents anaphylaxis even in debilitated patients, and it replaces the resistance which has been impaired by the demands that have already been made upon it. The interdependence of gonorrheal urethritis and prostatitis is so frequent and so close that as soon as an extension of the infection is recognized an injection of normal phenol serum—phenol with methyl blue dissolved in anaphylactic serum—directly into the prostate gland must be given in addition to the intravenous treatment.



### Radium in Carcinoma of Bladder and Prostate.

—B. S. Barringer (*Journal A. M. A.*, April 28, 1917) reports the results of a year's work with the use of radium in seventeen cases of carcinoma of the prostate and sixteen of the bladder. Eight of the prostatic cases were regarded as hopeless, but of these three patients have certainly been greatly improved and one was at work seven months after a single treatment. Nine prostatic cases were fairly early, but not in the operative class, and of these four patients have been greatly improved, the remaining five having been treated too recently for a verdict. Of the bladder cases, four have been cured, cystoscopically demonstrated, one patient for ten, one for five months, and two recently. It is admitted that the results are too recent to give any proof of permanency, but the promise of such seems good and the relief of symptoms was pronounced in all. For prostatic cases the radium was applied in the tip of a long needle which was inserted directly into the gland through the perineum after local anesthetization with novocaine. The treatment was usually repeated at intervals of two to three months. Reactions were at times fairly severe after large doses, but small ones seemed quite as effective and did not cause marked reactions. In bladder cases the radium was applied in tubes, screened with silver and rubber and inserted into the bladder through the cystoscope.

**Observations on Dysentery.**—T. J. Carey Evans (*British Medical Journal*, March 31, 1917) brings forth his personal experiences in support of the belief that flies are the usual means of spreading the bacillary forms of dysentery and that one of the most effective preventive measures is the proper disinfection and disposal of the human dejecta, combined with proper and adequate screening. Irrespective of the type of dysentery all these patients should be given prolonged rest in bed and a very light diet, controlled by daily inspection of the stools to determine whether the digestion of any article of food is not complete. If such is the case that article should be reduced in amount or eliminated from the dietary. The less of soups and broths used the better, but kumyss or sour milk is excellent. The best solid food to begin with is thoroughly boiled rice. The initial treatment of acute bacillary cases should be the administration of eight grams of magnesium sulphate every two hours until the stools become feculent, or until sixty grams have been taken. If there is no improvement from this plan, combined with rest and diet, then 0.6 gram of bismuth salicylate and an equal amount of salol should be given three times a day for three or four days and the magnesium sulphate treatment then repeated. Under such a plan of treatment it is possible to cure ninety per cent. of these patients in two weeks. For intense pain hot applications should be made over the lower abdomen, or 0.6 mil of camphorodine, or 0.6 gram of Dover's powder may be given. Emetine should be reserved for cases which are proved to be of amebic origin. Chronic dysentery is very intractable and there is no very satisfactory method of treatment. Perhaps the best would be ileocolostomy and appendicostomy with lavage.

### Lumbar Puncture for Delirium in Pneumonia.

—John H. Musser, Jr., and Henry K. B. Hafford (*Journal A. M. A.*, April 28, 1917) secured prompt relief of delirium in seven severe cases of pneumonia by lumbar puncture and the removal of spinal fluid until the pressure was reduced to normal. In only two cases was a large amount of fluid removed, but in all it was found to be under somewhat increased pressure. In these same cases the previous efforts to relieve or control the delirium by sedatives had met with failure. Further, the use of sedatives seemed to the authors to be ill advised where there was already material depression of the vital centres as a result of the disease. The mechanism of the relief by lumbar puncture of this form of delirium has not been determined, but the similar effects obtained in delirium tremens suggest that the relief may be due to reduction of pressure, with which there may also be the removal of toxic materials.

**Heart Massage.**—Echlin S. Molyneux (*British Medical Journal*, March 31, 1917) reports the successful practice of massage of the heart through the diaphragm in two cases in which it had stopped beating during operation. In both cases the massage was accomplished by placing one hand on the chest over the heart and passing the other up under the diaphragm so as to be able to compress the heart rhythmically between the two at a rate of from forty to fifty times per minute. During the massage artificial respiration was also maintained. In one of the patients the first period of cardiac massage did not restore the heart's action, but after this had been repeated for about five minutes the patient's condition was restored to such a point that operation was successfully completed. The author suggests that one should be ready in any case to take the risk of opening the abdomen to massage the heart when it has failed during an operation rather than delay too long, trusting to other means of revival.

**Treatment of Paresis and Tabes, with Special Reference to Intradural Remedies.**—John D. O'Brien (*Ohio State Journal of Medicine*, May, 1917) concludes that the efficacy of the treatment depends upon the early diagnosis of paresis, the prompt institution of treatment, and the physical condition of the patient at the time the treatment is instituted. Advanced cases usually show no clinical change, but they may show a biological change. The biological changes are the direct result of treatment. Tabetic patients respond more readily to treatment than those with general paresis. He regards intraspinal treatment as one of the most notable achievements of modern medicine and claims that the intracranial route is not an absolute necessity, as the same results are obtained by the intraspinal route. Injections, instead of being given biweekly, should be given every five to eight days. He considers the Ogilvie method superior to the Swift-Elis plan, as the dose of salvarsan can be better governed. The dose varies from  $\frac{1}{8}$  to  $\frac{1}{4}$  mgm. A comparison of the cases that have remissions without treatment with those that improve under treatment shows that in the former the percentage is four, while in the latter it is about thirty-five.



# Miscellany from Home and Foreign Journals

**Clinical Information Supplied by Blood Examination after Wounds.**—P. Govaerts (*Presse médicale*, March 29, 1917) refers in particular to the acute asthenia frequently noted in severe wound cases, with marked fall in blood pressure, nervous depression, and a considerable lowering of temperature. This condition is often coexisting with shock, acute infection, and hemorrhage, and the author lays stress on careful estimation of the last—the most easily ascertainable—of these factors as an indication of the type of treatment required in the individual case. While the red cell count, in the first few hours after the injury, does not bear a direct relationship to the severity of the hemorrhage, Govaert's experience seems to have shown that if, within the first six hours, the red cell count falls as low as 4,000,000 and the white cell count rises above 30,000, the hemorrhage is a dangerous one, with grave prognosis. In such cases injection of saline solution sometimes proves useless and transfusion is clearly indicated. Again, where there are reasons for suspecting a marked internal hemorrhage, as in an abdominal contusion without surface wound, the observation of a very high leucocytosis soon after the injury may be of assistance in the diagnosis and contribute to a decision to operate. Thus, in a case of abdominal contusion due to a kick by a horse, the red cell count was normal seven hours after the accident, but the white cell count 31,600. Celiotomy revealed a complete rupture of the spleen. In the course of the treatment in a wounded subject a sudden rise in the red cell count should lead to the suspicion of a peritoneal reaction or of an effusion into a serous cavity.

**Electrocardiograph in Diagnosis of Valvular Lesions.**—Harold E. B. Pardee (*Journal A. M. A.*, April 28, 1917) points out the value of the electrocardiograph as an aid to the diagnosis of cardiac valvular lesions through the tracing upon the cardiogram of disturbed mass relations in the heart as a result of localized hypertrophy. Indicating the three leads by Arabic numerals, it is stated that hypertrophy of the auricles is indicated by increased height in the P waves in all leads to more than two millimetres; hypertrophy of the right ventricle by the deflection downward of  $R_1$ ; of the left ventricle by downward deflection of  $R_3$ . Dilatation of the heart does not disturb the mass relations and hence does not alter the electrocardiogram. Suspicion of any single valve lesion can be confirmed or refuted readily by observation of the electrocardiogram. Thus mitral stenosis leads to hypertrophy of the left auricle and right ventricle and would be shown by increased height of the P waves and a downward  $R_1$ , downward  $R_3$  would be found in aortic insufficiency and in mitral insufficiency, between which the murmurs would help to differentiate. In the latter valve lesion there is also often a secondary hypertrophy of the left auricle and right ventricle which would lead to a balanced mass and absence of changes in the electrocardiogram. The same would be true in mitral stenosis

combined with aortic insufficiency. With evident mitral stenotic physical signs and suspected aortic leak the presence of a downward  $R_1$  would exclude the latter. The Flint murmur may be distinguished from a true mitral stenotic murmur when combined with an aortic leak by the occurrence of a downward  $R_3$  of left ventricular hypertrophy. Where there is marked preponderance of either ventricle  $R_2$  will be found deflected downward in addition to the R typical of the ventricle. Such congenital lesions as patent ductus arteriosus, patent interventricular septum and pulmonic stenosis lead to right ventricular hypertrophy of extreme degree with downward  $R_1$  and  $R_2$ . In general, the evidence yielded from the electrocardiogram should be read in conjunction with the physical signs and the systolic and diastolic blood pressures should always be measured to determine the presence of left ventricular hypertrophy from high blood pressure. Finally, it is often impossible to distinguish clinically between cardiac hypertrophy and dilatation, but this is simple when an electrocardiogram is taken, the former showing the deflection of the R waves or change in the P, while the latter gives a normal cardiogram.

**Röntgen Ray Diagnosis of Pyloric Stenosis.**—A. L. Gray (*Virginia Medical Semi-Monthly*, April 13, 1917) refers in particular to the borderline or partially developed case of infantile pyloric stenosis which is difficult to recognize, though gradually starving out the little patient as effectively as a more pronounced lesion. In attempting the x ray diagnosis he administers the opaque material in warm mother's milk, if practicable; if not, in a modified milk corresponding to the child's age. Overdistention is avoided. The appearance of the stomach just after the meal is observed with the fluoroscope or plates, and excessive peristalsis within the first half hour carefully watched for. The examinations are repeated at half to one hour intervals for four hours and again, if necessary, in six hours, to note the progress and quantity of opaque material in the small intestine. A characteristic sign of pyloric stenosis is an unavailing hyperperistalsis, which gives way to a period of rest, followed in turn by renewed attempts at expulsion. Not more opaque material than two thirds to three fourths the normal gastric capacity should have been given, to obviate prolongation of even the normal emptying time through overdistention. Pylorospasm and atonic gastritis might prove confusing in that each may cause a marked retardation of stomach emptying. In the former, however, there is apt to be an early escape of a small amount of material from the stomach before the spasm completely arrests passage; after a considerable time the spasm will relax, and a relatively large amount is likely to be extruded at each ejection before the spasm again blocks the way. Entire absence of peristalsis for a prolonged period, with perhaps a slight leakage from the pylorus, would indicate atonic dilatation; this would be ascertained only by observation.

**Simultaneous Occurrence of Carcinoma and Sarcoma in the Uterus.**—G. W. Outerbridge (*American Journal of Obstetrics*, April, 1917) collected twenty-seven cases of this condition from the literature and adds two personal observations. One of his patients was a woman of seventy-three years, with uterus enlarged by a partly necrotic submucous tumor containing both sarcomatous and carcinomatous elements; the condition had apparently arisen by sarcomatous degeneration of a submucous myoma, with carcinoma of the overlying endometrium. In the second patient, forty-eight years of age, a small but definite adenocarcinoma in the fundus was removed by curettage and after a subsequent hysterectomy a small intramural node was found in the posterior wall, histologically a myoma with sarcomatous areas. The writer believes the combined condition due to mere coincidence, this accounting for the occurrence among the reported twenty-nine cases of all possible relations between the two tumors. Thus in some cases intimate mixture of the two tissues existed in considerable areas, in others there was sarcoma in the corpus and carcinoma in the cervix, etc. Of the twenty-seven cases from the literature twelve occurred in the sixth decade and seven in the seventh decade of life. Though highly malignant, the combined condition does not seem more so than either tumor alone. In nearly all the cases the metastases and recurrences showed merely sarcoma, this apparently being the more malignant tissue. Where the tumors exist intermingled Outerbridge believes they have arisen separately and subsequently grown together.

**Infection of Hemothorax by Anaerobic Gas Producing Bacilli.**—T. R. Elliott and Herbert Henry (*British Medical Journal*, March 31, 1917) state that they have studied 500 consecutive cases of traumatic hemothorax occurring during the course of the war and found 195 to be septic, and of these eighty-seven, or nearly forty-four per cent. of the septic cases, to be infected with anaerobic gas bacilli. Two forms were distinguishable: the one in which the infection was generalized throughout the hemothorax fluid from the onset; the other in which the infection was localized in a mass of blood clot at first and only become generalized later. The gas often formed very rapidly and led to greatly increased intrathoracic pressure which produced displacement of the heart and mediastinum. In addition to this there was often a dry pleurisy produced on the opposite side; less frequently infection of the pericardium; and at times the infection entered the circulation with the production of a general septicemia. The physical signs were generally those of pneumothorax and the occurrence of anaerobic infection was only indicated by the development of pain and tenderness over the thorax, increasing dyspnea, progressive icterus, increasing restlessness and rising pulse rate. The diagnosis was found to be strongly suggested by such symptoms but confirmed only by the insertion of a needle into the thorax with culture of the fluid and its gross examination as well as the microscopic search of stained films for suggestive organisms. If the tap were made at

the time when the gas was still loculated it might be missed and the cultures might prove sterile, but tapping in another place usually revealed the presence of foul smelling gas under some pressure and the films from such a locality usually showed suggestive organisms. In the generalized form the gas was often found to be under a positive pressure amounting to as much as fifteen to twenty centimetres of water. Fluoroscopical examination also proved of considerable diagnostic value. Cultures showed various forms of anaerobic gas producers usually in association with the common pyogenic organisms, but sometimes in pure culture.

**The Exudative Diathesis and a Study of the Acetone Bodies in the Blood of Nine Cases.**—Martin F. Engman and Richard S. Weiss (*Journal of Cutaneous Diseases*, November, 1916) state that they studied the exudative diathesis, a class of cases which can be separated from infantile eczema. Two views have been held in reference to this affection, one is that it is a disturbance of fat metabolism and the other that it is a disturbance of salt metabolism. If this was due to a disturbance of the fat metabolism, an increase of the acetone bodies of the blood might be expected, provided the disturbance be concerned with the faulty oxidation of fatty acid in the body. Marriott's figures for normal children were as follows: the acetone plus diacetic acid varies from 0.5 mgm. to 0.8 mgm. per 100 gm. blood. The beta-oxybutyric acid varied from 1.4 mgm. to 4.4 mgm. per 100 gm. blood. The authors examined the blood of nine patients, all of whom had at the time of examination some external manifestations of the exudative diathesis. The authors conclude that there is no acetone body acidosis connected with the exudative diathesis.

**Paget's Disease of the Nipple.**—W. Sampson Handley (*Lancet*, April 7, 1917) discusses the pathology and etiology of this affection and brings forth arguments supported by microscopical evidence to prove that the cutaneous lesion is secondary to carcinoma of the breast. He gives the pathology of the condition as follows: There is a primary duct carcinoma of the breast, usually not producing a palpable tumor; this permeates the breast lymphatics widely, blocking them so that the lymph cannot return from the region of the nipple; the skin of the nipple and the lining of its ducts begin to show changes due to the lymph obstruction and of a nutritional character, and the dermis becomes thickened by a solid lymphatic edema; cancer cells then begin to enter the lymphatics of the upper layers of the dermis. Later a perilymphatic fibrosis begins with round cell infiltration and the deposition of fibrous tissue which contracts and destroys the cancer cells through constriction. The fibrous tissue organization may become complete in the later stages with disappearance of the round cells and destruction of the skin papillae. Similar changes may take place in the larger ducts and in rare cases the carcinoma may be completely destroyed. It is evident from this that Paget's eczema is not the cause of a subsequent carcinoma, but the result of one already present, and the treatment should, therefore, be that of cancer.



**Cultivation of the Malarial Parasites in Vitro.**—Leonard S. Dudgeon and Cecil Clarke (*Lancet*, April 7, 1917) describe methods by which they were apparently able to cultivate the plasmodia of the malignant estivoautumnal form and to a less extent of the tertian. They raise the question as to whether there was true increase in the number of parasites in their cultures and believe that the evidence indicated that such was the case. The method enabled the authors to make positive diagnosis of malaria in a number of cases in which the most careful examination of blood films had failed to reveal any parasites. The technic of culture and the morphological characters of the cultivated organisms are described.

**Relation Between Diabetes Mellitus and Clinical Syphilis.**—Jacob Rosenbloom (*Journal A. M. A.*, April 28, 1917) made a careful analysis of sixty-two cases of diabetes mellitus and found positive evidence of syphilis in seven, or slightly over ten per cent. These figures agreed closely with the findings of other investigators. Five of the seven syphilitic patients were given antisyphilitic treatment, but in none was there any resulting increased tolerance for carbohydrate. Theoretically there are several ways in which syphilitic infection might frequently result in diabetes, but the results of the present study seemed to indicate that there was no such causal relation.

**Acrodermatitis Hiemalis.**—M. B. Hartzell (*Journal of Cutaneous Diseases*, November, 1916) reports a number of instances of this disease, which consists of a limited number of dull red, small, flat papules, erythematous patches, and a few discrete vesicles, strictly limited to the fingers in a majority of cases. It rarely occurs in the toes and ears. It comes out in small crops, at intervals of two to three weeks, in the autumn and winter only and is accompanied by severe itching and burning. All the cases occurred in young adults who were apparently in normal health except that one exhibited a marked cyanosis of the hand in cold weather. In the other reported cases pustulation and scarring formed part of the clinical picture, but not so in the cases reported by the author. The best local application is ichthylol in a twenty-five to thirty per cent. solution in water. This gave considerable relief.

**A Rare Form of Scleroderma.**—A. Ravogli (*Journal of Cutaneous Diseases*, January, 1917) reports an extensive case of scleroderma occurring in a man of thirty-two years, apparently in good health, following exposure to a rain storm. The patient was compelled to remain in his wet clothes for some hours. He then had various pains, followed by patches of scleroderma on his arms and legs which followed closely the distribution of the cutaneous nerves. On his legs, in addition to the scleroderma, ulcers made their appearance. After reviewing the various theories relative to this affection, the author concludes that the internal secretions of the various glands, such as the adrenal, thyroid, etc., are the underlying factors in this disease; that exposure is often the determining factor; and that this particular case was probably of nerve origin. The internal treatment consisted of small doses of calomel twice a day and a saturated solution of potassium iodide three times a day.

**Calcium in the Blood in Tuberculosis.**—John O. Halverson, Henry K. Mohler, and Olaf Bergeim (*Journal A. M. A.*, May 5, 1917) point out that many recommendations have been given for the use of calcium, either as a drug or in the form of a high calcium diet, in the treatment of tuberculosis. It is also brought out that there has been very little if any scientific basis for such recommendations. Studies were therefore made upon the blood calcium in two groups of tuberculous patients, the one being of improved, the other of unimproved cases. The results showed very little difference from the normal figure for the blood calcium in either group, too little to be of any significance. It was also noted that there was no reason to believe that calcium deficiency could have any part in the progress of tuberculosis, since the body was always in possession of an enormous excess of this element.

**The Relation of Diets to Seborrhea.**—Douglas W. Montgomery (*Journal of Cutaneous Diseases*, December, 1916) states that he looks upon the skin as an enormous fat organ which rests upon a thick, fatty cushion. Clinically in seborrhea, it looks as if the entire fat of this large organ undergoes a change. In seborrhea there is an alteration in the amount of fat in the epithelium. For the proper cornification of the epithelium, it is essential to have a normal state of the fat metabolism of the skin. When any organ is engaged in the storage or secretion of any class of foods, it is natural to suspect that abuses in the intake of those foods may account for some of the aberrations of that organ. As we have seen, the skin is eminently a fat organ, therefore a consideration of the fat producing foods might readily furnish an explanation of some of its diseased conditions, and particularly of seborrhea, in which, as we have seen, the cutaneous fat is especially affected. In the discussion of the various foods the author includes starches, sugars, and fats.

**Gunshot Fractures of the Skull.**—Kellogg Speed (*Journal A. M. A.*, May 5, 1917) offers the following conclusions from his own experience of seventy-five cases of this form of injury and an analysis of the recent literature. No other treatment than rest and dressing of the wound is required in a large proportion of the cases and most of the patients recover. Those wounds which involve the cranium alone are of good prognosis. Of the penetrating wounds those of the frontal region without deep penetration offer the best prognosis, but no conclusions as to possible mortality can be drawn from the location of the wound alone. A large majority of the fatalities are due to infection and, while hernia cerebri is not necessarily fatal, it is prone to late and fatal infection. A poor prognosis is indicated by the finding of a large number of leucocytes or bacteria in the spinal fluid. Gas infections of the brain are not of necessity fatal, and recovery from even very serious symptoms is possible with a foreign body still in the brain. The purpose of any operative interference should be to clean up the wound and remove loose fragments, to decompress, preferably in a clean area, and to remove superficial foreign bodies. Deep foreign bodies should not be removed as a general rule and the dura should not be opened if not torn by the missile.



# Proceedings of Local and National Societies

## THE AMERICAN CONGRESS ON INTERNAL MEDICINE.

*Stated Meeting, Held December 28 and 29, 1916.*

The President, Dr. REYNOLD WEBB WILCOX, in the Chair.

**Domain of Internal Medicine and the Purport of the Congress.**—Dr. REYNOLD WEBB WILCOX, president of the American Congress on Internal Medicine, said that, although the range and scope of internal medicine was well defined, it was a fact that the average physician and surgeon and the laity did not differentiate between the general practitioner and the internist. It was true even that the internist, as such, had no official standing in the United States. While the *American Medical Directory*, published by the American Medical Association, recognized every one of the specialties in medicine and surgery, it refused to designate the internist, contending that every general practitioner was of necessity an internist. This, of course, was a deplorable error. The trend of modern medicine was by no means toward specialism. A practitioner might devote especial attention to a certain limited field, but the days of the out and out stomach specialist, neurologist, pediatricist, etc., were counted. The public today demanded a thoroughly educated physician, an internist, and not a practitioner who had trained himself in the superficialities of a closely circumscribed field. Specialists of this class could only exist in a transitional period. The functions of all the organs of the body were closely associated and physiology had to do with the coherent process of activity and compensation. The internist understood this connection and the present and future were his. The internist was in the first place a diagnostician. It was he who dominated, or at least who ought to dominate, the field; he determined whether or not the patient was to be operated upon or treated by other means. It was the internist to whom had fallen the heritage of the earlier physicians. He was the master; the others were his handmaidens.

The American Congress on Internal Medicine had been called into life, 1, to procure the official standing of the internist; 2, to define the scope of internal medicine in the United States; 3, to link the internists together; 4, to induce a feeling of solidarity amongst them; 5, to further the interests of internists in general, and, 6, to advance the science of biological medicine. The American Congress on Internal Medicine was governed by four officers: the president, vice-president, treasurer, and secretary-general, and a council of twenty-five councillors. The business office of the Congress was situated in New York city. Any member of the medical profession who was in good standing and whose interests lay along the lines of internal medicine was eligible to fellowship. There was no initiation fee, and the annual dues were five dollars. The Congress intended to publish various magazines which would cover the entire field of internal medicine. The Congress would meet once a year. While its

meetings would be largely clinical, the great questions of the day, especially those pertaining to internal and biological medicine, would be fully ventilated. For this purpose a referee and a coreferee would be appointed by the Committee on Scientific Work some months before the meetings, whose business it should be to report upon the questions submitted to them. General discussions upon these questions would be a special feature of the Congress.

The Council of the Congress on Internal Medicine was accorded the power to elect any fellow of the Congress, upon his application, to fellowship in the American College of Physicians, provided he had done meritorious work in any of the fields of internal medicine, as specified in the charter and the bylaws of this organization. The American College of Physicians convened once a year at the termination of the American Congress on Internal Medicine to confer the fellowships of the College. It was contemplated that, as far as possible, the officers and councillors of the Congress be also officers and councillors of the College. The fee for fellowship in the College, which was to be paid at once, was twenty-five dollars.

Besides granting fellowships to meritorious workers in the various branches of internal medicine, the American College of Physicians has the following objects and purposes: to promote the advancement of the science and practice of medicine; to further the study and knowledge of biological medicine among the fellows; to elevate the standard of preliminary education of physicians and a standard of medical education, and secure the enactment of just medical laws by the State and Federal government and of a Federal law providing for a national medical license; to attain the establishment of a National Board of Health; to promote friendly intercourse among physicians; to enlighten and direct public opinion in regard to the great problems of health and medicine.

**Ductless Glands in Cardiovascular Disease and Dementia Præcox.**—This paper, by Dr. CHARLES F. DEM. SAJOUS, of Philadelphia, is published in full in this issue of the JOURNAL.

**Relationship of the Ductless Glands to Arterial Diseases.**—Dr. JUDSON DALAND, of Philadelphia, said that Doctor Sajous, a pioneer in this field of work, had rendered a signal service in directing attention to the relationship of the ductless glands to arterial disease, and as a universally recognized authority on internal secretions, his opinions demanded thoughtful consideration. This subject was important because of the frequency and seriousness of diseases of the arteries, the alarming increase observed in recent years, the recent original views advanced as to the causation of arteriosclerosis by irregularities of the function of ductless glands, and the new measures advocated for prevention and treatment. Arteriosclerosis was erroneously employed as a synonym for diseases of the arteries, and led to confused concepts of pathology. It was a

subdivision of diseases of the arteries, and occurred as a usual or occasional result of different pathological processes due to different causes. Atheroma due to age should be sharply differentiated.

Accumulated evidence secured at the bedside and by experimentation clearly proved that overfunctioning adrenals or thyroids produced arteriosclerosis, more especially if long continued or recurring with sufficient frequency. The exact manner in which sclerosis was produced was open to question, and views of observers differed. The solution of the question was beset by many clinical and experimental difficulties and was further complicated by the frequent association of multiple causes. Bloodvessels varied congenitally. Some individuals possessed unusual resistance to disease, and a few showed sclerosis as early as the fifth or seventh year without apparent cause. It was conceivable that these vessel wall changes were not primary and structural, but might be secondary, due to hyperfunctioning ductless glands. Long continued excessive muscular work caused arteriosclerosis, and although the supply of adrenaline was increased, this increase was a physiological response to the needs of the musculature, and therefore overwork was the primary cause of the sclerosis. The large muscles of the blacksmith's right arm were occupational. Long continued excessive cerebral work caused sclerosis, more especially of the cerebral vessels, and here again the ductless glands were called upon for increased secretions, but the primary cause was excessive brain work. The habitual ingestion of several quarts of water daily by a brickmaker caused advanced arteriosclerosis, a part of which was due to excessive labor. The transportation by the circulatory apparatus of a weight represented by so large a quantity of water added greatly to the work of the cardiovascular system. Diabetes was often associated with the ingestion of large volumes of water, and in a similar manner produced arteriosclerosis, a part of which, however, was due to the products of altered metabolism, and an overactivity of the thyroid or adrenals. Syphilis caused endarteritis, often obliterative, and aneurysms were common. *Spirocheta pallida* had been observed in the wall of the artery, and this organism and its toxins were the cause of the endarteritis. Rheumatism was accepted as a cause of arteriosclerosis. Recently evidence had accumulated proving that rheumatism was in reality a secondary manifestation of a chronic septic focus, and was usually associated with one of the strains of streptococci which had been observed in the wall of the artery. Whatever rôle the ductless glands played in this disease it was secondary, and the toxic substances produced by the streptococci and by catabolism aided in the production of the vascular changes. Gonorrhea, tuberculosis, pneumonia, and typhoid caused arterial disease, and their specific organisms had been found in the arterial lesion. When tuberculosis, pneumonia, or gonorrhea were associated with mixed infection, arterial disease was most likely to occur. The ductless glands in these diseases played a secondary or associated rôle. Arteriosclerosis had followed scarlatina, variola, measles, influenza, typhoid, and typhus fever. It is possible

that the so called rheumatism and the communicable diseases already mentioned stimulated the ductless glands and secondarily produced the autolytic or adrenaline type of arteriosclerosis. On the other hand, it should not be forgotten that toxins made by pathogenic organisms might injure one or more coats of the artery, and so provide favorable conditions for their lodgment and growth.

Conflicting views existed as to the etiological relationship of tea, coffee, and tobacco to arterial disease. Although Russians consumed large quantities of tea, no effect was observed among the patients in many of the hospitals of Petrograd and Moscow. Coffee exerted a marked influence over the cardiovascular system and in excess might cause arteriosclerosis, especially observable in neurasthenia in Hungary, where this beverage was consumed in large quantities. The rôle of the ductless glands might be larger than hitherto supposed in arteriosclerosis occurring in neurasthenia. Tobacco produced a marked influence over the cardiovascular and nervous systems, and when used in excess might also cause degeneration of the nerve endings. It was difficult to assign to tobacco its exact value etiological in the production of arteriosclerosis, because it was almost constantly associated with the other causes of this disease. A typical example occurred in three brothers, all using tobacco in great excess, leading to the supposition that it was the chief cause of the arteriosclerosis. They were markedly neurotic, living a strenuous business life and at times indulging in excesses of food and wine. These patients may have suffered also from hypothyroidia and hypoadrenia.

The products of decomposition or fermentation of the intestinal contents produced arteriosclerosis, and might also stimulate the ductless glands. French observers had long maintained this opinion, some believing that paracresol and indol of intestinal origin due to the decomposition of nitrogenous materials were able to evoke arterial disease. All agreed that gout caused arteriosclerosis, although excess in food especially rich in protein with wine and insufficient exercise were the chief causes; many attacks occurred in the absence of these causes, apparently due to exhaustion or disturbance of the nervous system, well explained by Doctor Sajous's belief that catabolism might be induced by lessening of the activity of the adrenal centre, with consequent diminution of the adrenooxidase; and he furthermore believed that this explanation was equally true of lead poisoning. From the foregoing, it was clear that in a number of instances the primary cause of arteriosclerosis might be associated with hypoactivity or hyperactivity of the thyroid and adrenals.

Arteriosclerosis and hypertension usually accompanied kidney disease with renal inefficiency. The retention of unknown toxic substances in the blood at first caused arterial spasm and later sclerosis, hitherto supposed to be solely due to the direct action of these toxic agents upon the vessel walls. It was probable that hyperfunctioning ductless glands by increased functioning assisted this process. Hypertension was a usual secondary manifestation of arteriosclerosis, and also occurred in many other



diseases. When marked, it could cause or increase already existing arteriosclerosis by its physical effect, precisely as had been observed in sclerosis of the pulmonary arteries with no sclerosis elsewhere, due to emphysema. Hypertension might occur as a sign of presclerosis, or a danger signal of advanced sclerosis.

With notable uniformity Graves's disease was associated with degenerated and thickened arterial walls and increased blood pressure. It was believed that these changes were due primarily to hyperthyroidia and later to variations in this secretion. Additional unknown factors also probably existed, and at times there might be associated disease of the thymus. Recent observations had clearly shown that anxiety, worry, fear, and what is usually understood by the term "strenuous living" caused hyperadrenia which produced arteriosclerosis. These causes of arterial disease were chiefly responsible, in his judgment, for the remarkable increase in arterial disease in recent years. Doctor Sajous's classification by types served a useful purpose, not only by detailing sequentially the mechanism by which internal secretions produced sclerosis of the arteries, but also by stimulating inquiry, observation, and experimentation. In order to emphasize this aspect of the problem and to encourage discussion, the essential features of each type should be briefly summarized:

An important feature of the autolytic type was the fact that trypsin, pancreatic in origin, was the ferment in the leucocyte which made it a phagocyte, able to destroy bacteria in the intestinal tract, and after migrating caused metabolism of proteins when in an alkaline medium and evoked catabolism of toxic waste products, toxins, and bacteria. Tissue cells contained zymogen or proferment of trypsin. Proteins in excess sensitized the proferment, stimulated the thyroid and adrenals, and so converted harmful surplus of proteins in the tissue cells and blood into eliminable end products. If now more proteins were added, the stimulation of the thyroid and adrenals was increased, thereby increasing oxidation and causing fever, which activated the tissue cell proferment causing autolysis and initiating arteriosclerosis. The adrenal type was characterized by hyperadrenia, causing constriction of the vasa vasorum, or small or terminal arteries, which in turn caused lesions in the media and later in the other coats. The denutritional type was characterized by hypothyroidia and hypoadrenia, causing defective oxidation and metabolism, which in turn caused arteriosclerosis with low blood pressure. These conditions had been observed in myxedema, obesity, and advanced diabetes.

A study of the symptomatology of the three periods of development of arteriosclerosis was of importance in order to diagnose the participation of the ductless glands in the process. Hypertension, exaltation, nervousness, insomnia, pyrosis, hyperchlorhydria, venous engorgement, venous pulse, palpitation, and congestion of the face, most clinicians would ascribe to disturbances of the nervous and cardiovascular systems and would forget the ductless glands. When all or some of these symptoms were present and no other obvious explanation ex-

isted, they might be interpreted as the result of aberrations in the function of the adrenothyroid apparatus. Pallor of the face, coldness of the extremities or inability to withstand cold might be symptomatic of vasomotor constriction adrenal in origin.

The symptomatology of the autolytic and adrenal period of arteriosclerosis closely simulated that of neurasthenia, and this viewpoint opened a new field in the therapy of this group, care being first taken always to discover and remove the cause. It was desirable that a series of carefully observed cases presenting the symptoms of neurasthenia be studied to determine whether organotherapy was beneficial. A similar study should be made in the denutritional period, where definite results might be expected by alternately using and withholding adrenal, thyroid, or pancreatic extracts, the iodides, strophanthus, or digitalis. An intensive study of this character would give knowledge as to the occurrence of and variations in individual symptoms, and conditions under which each might appear or disappear, which would eventually establish a pathognomonic syndrome. A great need existed for a technic by which the ductless gland apparatus might be accurately tested. It had long been known that in hyperthyroidia, toxic symptoms were promptly induced by two or three grains of the extract of thyroid, and perhaps similar observations had been made in regard to hyperadrenia. Clinical observations of the effect of other substances should likewise be made, conjoined with a special study of the less characteristic symptoms. The recognition of the participation of the ductless glands in the production of symptoms occurring in arteriosclerosis fundamentally modified therapeutics and demanded the use of old and well tried remedies from this new point of view, as well as a more intelligent employment of organotherapy.

Practically, the diagnosis of the presclerotic stage of arterial disease was frequently impossible, always difficult, and usually only probable. Therefore when arteriosclerosis was suspected or diagnosed, prevention or arrest might be accomplished by the prompt detection and removal of one or more of the causes of arterial disease, coupling with this an estimate of the status of the ductless glands in order to give the maximum aid to the patient in the minimal time.

The importance of Doctor Sajous's contribution on Ductless Glands in Cardiovascular Disease consisted in the presentation of the principle that aberrations in the functions of the ductless glands, more especially of the thyroid and adrenals, caused arteriosclerosis. The acceptance of this principle added much to our resources in the prevention, management, and treatment of arterial disease, and gave reason to hope for a diminution in the morbidity and mortality of arteriosclerosis.

**Ductless Glands in Dementia Præcox.**—Dr. FRANCIS X. DERCUM, of Philadelphia, said that before entering into a consideration of the internal secretions in dementia præcox, it was necessary first to direct attention to several facts of general but great significance in order that the changes in the glands of internal secretion and the possible rôle they played might be viewed in their proper per-



spective. All observers are agreed as to the large proportion of cases of dementia præcox in which heredity seemed to be the great factor. Hereditary factors were variously estimated at from fifty-two per cent. by Schott, to ninety per cent. by Zablocka. No doubt the differences in the percentages were due to a divergence of view as to what should be included under hereditary factors, and as to what affections should be embraced by the general term dementia præcox. Kraepelin at one time found hereditary predisposition to mental disease in seventy per cent. of his cases, though he thought that this may possibly have been too high. He stated that when the inquiry was limited to the direct heredity, i. e., to the occurrence of mental disease, suicide, or severe brain affections in the parents, it yielded 33.7 per cent., which he again regarded as too low. From whatever point of view the subject was approached, however, the facts justified the general conclusion as to the frequency of neuropathic family histories in dementia præcox. Such histories presented not only instances of frank mental disease but also of eccentric or unusual personalities, criminals, prostitutes, tramps, vagabonds, and other degenerates. The wide range of the hereditary findings was also a fact of some significance. If the inquiry was limited to the direct transmission of dementia præcox, such transmission was found to be relatively infrequent, as a large number of individuals, especially the hebephrenics and catatonics, never reached parenthood. It was otherwise, however, if the older paranoid cases were included. Ruedin from studies made of Kraepelin's material came to the conclusion that dementia præcox was probably transmitted in accordance with the Mendelian law of heredity and appeared as a recessive quality. He regarded the marked predominance of the collateral and discontinuous inheritance over the direct inheritance, the increase of dementia præcox resulting from inbreeding, and the numerical relation of those attacked to those remaining normal as in favor of this view. The significance of a number of individuals of the same family suffering from dementia præcox could not be questioned. Doctor Dercum said he had personal knowledge of one family in which no less than five individuals had suffered from this disease. It was also significant that Ruedin, in keeping with what had been already said, found in the families which he studied other affections such as eccentric personalities and manicdepressive insanity. He also found that it was not at all infrequent for manicdepressive parents to produce children with dementia præcox, while the reverse, manicdepressive children from dementia præcox parents, was rare. Of equal significance were such facts as the following: Ruedin noted that the late or last born children of a family suffered more frequently from dementia præcox than the older children, and again, that immediately preceding or following the birth of a præcox patient there was frequently a history of miscarriage, premature birth, or stillbirth.

Other facts, the meaning of which was unmistakable, were those presented by the physical and psychological stigmata of deviation and arrest. Saiz placed the frequency of the physical stigmata at

seventy-five per cent. Among the latter are physical feebleness, retardation of growth, a too prolonged juvenile appearance, malformations or peculiarities of the shape of the skull, deep, narrow, and irregular palate, persistence of the intermaxillary bone, abnormalities of the ears, fingers, or toes, imperfections and anomalies of the teeth, and other morphological peculiarities. It might be correct to accept Ruedin's inferences as to the hereditary transmission of dementia præcox as a recessive quality in accordance with Mendelian law. However, the foregoing facts suggested that in addition the germ plasma might suffer from impairments that affected its general morphological and biological character and profoundly lowered its possibilities of growth and development. Among causes which might thus grossly impair the germ plasma, it was reasonable to include infections and intoxications affecting the parent. Pilcz, Kluttscheff, and others had published suggestive statistics as to the frequency of syphilis in the parents, while Diem, Fuhrmann, Ruedin, Wolfsohn, and others had published studies on alcoholism in the parents alike suggestive and significant. That syphilis played a rôle in a not inconsiderable number of cases was proved by the frequency of the Wassermann reaction in the patients themselves; Bahr, for instance, found it in as large a proportion as 32.1 per cent. Such facts did not mean that the patients were necessarily suffering from a syphilitic disease of the nervous system, but rather that the organism as a whole had been hampered, made deviate, and degenerate in its development by the presence of the spirochete and its toxins, i. e., that the development of the organism as a whole—and included in this was the development of the glands of internal secretion—had been so inhibited and altered that at a given point of its life the organism broke down by reason of an abnormal and toxic metabolism. Again, it was not necessary that the Wassermann or other tests should yield a positive result. It sufficed if the infection had damaged the germ plasma of the parent, and in keeping with this was the fact that clinical evidences of inherited syphilis were absent in the great mass of cases. Finally, that alcohol damaged the germ plasma of the parent must, Doctor Dercum believed, be freely conceded and its discussion need not be gone into further.

The question whether other poisons and infections also played a rôle in causing damage to the germ plasma could not be definitely answered, but such action was neither impossible nor improbable. In any event, however, their action must be vastly less important than that of syphilis or alcohol.

It might be possible that the germ plasma was laden with a direct tendency to the development of dementia præcox, which tendency was transmitted as a recessive quality, but that the germ plasma might also suffer gross impairments, the results of syphilis, alcoholic intoxication and other infections and intoxications must also be frankly admitted. Further, in keeping with this view was the fact that dementia præcox presented itself not as a specific, a sharply delimited clinical entity, but as a group of mental affections which possesses the common factor of endogenous deterioration.

The above considerations pointed clearly to the involvement of the organism as a whole. It should be remembered, too, that the existence of the various evidences of morphological deviation visible to clinical observation also implied that other and perhaps more fundamental deviations were present in the organism throughout. Such an organism must present not only abnormalities of structure but also abnormalities of function and especially of metabolism. That the internal secretions played a rôle in the general disturbance was extremely probable. Doctor Sajous had pointed out cogent facts indicating an important rôle played by the thymus gland. In keeping with the view he had presented, were not only the facts pointing to a defective nervous development but also the observations of Barbo and Haberkandl of the occurrence of osteomalacia in dementia præcox. However, Doctor Dercum believed that the drawing of our conclusions should be very carefully undertaken. Various facts pointed to other structures as well. Thus, that the thyroid gland might present abnormalities was a matter of common knowledge. Occasionally it was enlarged, more frequently in his experience it was small. Thus in seven of his own autopsies in which the thyroid gland was weighed, five were little more than half the normal weight, one was one fourth the normal, and only one approximated the normal. Again, out of eight pairs of adrenal glands, five were greatly in excess, one decidedly below normal, and two about normal. Such facts as these were of course impossible of detailed explanation; they merely pointed to a disturbance of the internal secretions. Changes in the glands of internal secretion were also found by Farrant. By far the most detailed study of the weight of the ductless glands in the insane was that made by Kojima in the Pathological Laboratory of the Claybury Asylum. As far as could be gathered from his tables, his results were practically in accord with those of Doctor Dercum for the cases labelled insanities of adolescence and dementia præcox. The thymus, pituitary, and parathyroid glands studied by Ellis and Dercum did not reveal changes capable of interpretation, though here and there the findings suggested pathological conditions. Of these thyroid glands, three out of the seven showed changes in the colloid material and four regressive changes in the acinous cells. The most constant finding in the adrenal picture was the small amount of fat in the cells of the cortex; possibly this indicated a lessened functional activity. However, the evidence strongly indicated that there were other glands which probably played a rôle in dementia præcox. Clinically attention was strongly attracted to the sex glands. Anomalies of menstruation and delayed and imperfect establishment of puberty on the one hand or sexual precocity on the other were constantly being presented. Again, there was the history of sexual excesses, vagaries, and perversions. A relation to the sex glands was further indicated by the accentuation of symptoms often observed during a menstrual epoch and by the fact that dementia præcox now and then had its incidence in a pregnancy or repeated pregnancies or a miscarriage, as though sex gland exhaustion played a rôle.

(To be continued.)

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Diseases of Infancy and Childhood.* Their Dietetic, Hygienic, and Medical Treatment. A Text-Book Designed for Practitioners and Students in Medicine. By LOUIS FISCHER, M. D., Attending Physician to the Willard Parker and Riverside Hospitals of New York City; Chief Attending Pediatricist to the Zion Hospital of Brooklyn; Attending Pediatricist to the Sydenham Hospital, etc. Seventh Edition. With Three Hundred and Five Illustrations, Several in Colors, and Forty-three Full-page Half-tone and Color Plates. Philadelphia: F. A. Davis Company, 1917. Pp. xx-947. (Price, \$6.50.)

This seventh edition of Fischer's book has been revised so as to bring it fairly well up to date on such points as the importance of vitamins in the dietary, the use of blood transfusion, the serum treatment of poliomyelitis, etc. Of course it is impossible for any considerable volume to be entirely up to date on all of the subjects with which it deals, for during the course of its preparation new discoveries are being reported which may greatly modify the conceptions held at the time of writing. Nevertheless the present volume lacks very little of being representative of the very latest views. It is rather unfortunate that the author should still have preserved many of the older usages in the nomenclature of drugs, such as morphia, codeia, etc., but these are minor matters which can be overlooked. A much more serious matter is some of the advice given under the head of rectal medication in children. For example it is stated that strychnine should be given only to children over ten years of age, yet the author recommends that one sixth of a grain of nux vomica be given in suppository for each two years of age. Thus for a child twelve years old the dose would be one grain. The author presumably means extract of nux vomica and, since this is assayed to contain five per cent. of strychnine such a dose would contain one twentieth of a grain of the alkaloid. In the case of the rectal dose of digitalis we also are astonished when we read that the maximum dose for each year of life is four drops of the tincture. For a child fifteen years old the dose would then be one dram, and it is not stated whether this is the daily amount or the dose for each administration. It would seem safer to be a little more explicit in dealing with such active drugs. In general, the author's therapeutics is the least appealing portion of his book and it is not easy to see the reason for the use of several of the agents suggested in given diseases. As a whole, however, the volume should make a useful and handy guide for the general practitioner who has to deal with children.

*Etudes cliniques sur l'insuffisance surrenales.* 1898-1914. Par EMILE SERGENT, médecin de l'hôpital de la charité. Paris: A. Maloine, 1914. Pp. 408.

In 1898, while serving in St. Antoine Hospital, Paris, the author's attention was so dramatically focussed upon a case of sudden death which subsequently proved to be due to a widespread caseous destruction of the adrenals, that from that time to the present he has made the study of adrenal loss or insufficiency a subject of special study.

From that time to the present he has recorded his observations in the current French literature as the clinical material presented itself. These communications have been collected, roughly grouped into a scheme, reprinted, and made into the present volume of approximately 500 pages. They thus represent the author's collected work upon one topic which, starting with a striking observation of adrenal insufficiency, have expanded themselves into a valuable series of discussions in the general problem of somatic inferiority of this important hormone source and the clinical syndrome related to the same.

The numerous important signs which constitute this syndrome must be consulted in this series of observations which are well worth reading. With Sergeant's studies



and Hart's recent collective abstract (*Medizinische Klinik*, 1914) the student of adrenal insufficiency, a not infrequent syndrome in this land of excitement and hurry—for suprarrenal insufficiencies come from under cover in response to the stress of extra demand, which is with us usually summarized as "hustle" and "punch"—such an observant student, we may say, will be well equipped to at least interpret what is going on. At all events, let us hope that the familiar trash baskets for ignorant diagnoses such as "neurasthenia," "autointoxication," "psychasthenia," and the like, will have something lifted from them by a genuine scientific curiosity that seeks for dynamic causes and not static descriptions.

*Studies in Pellagra: I, Tissue Alteration in Malnutrition and Pellagra.* By JOHN SUNDBALL. II, *Cultivation Experiments with the Blood and Spinal Fluid of Pellagrins.* By EDWARD FRANCIS. III, *Further Attempts to Transmit Pellagra to Monkeys.* By EDWARD FRANCIS. Hygienic Laboratory Bulletin No. 106, January, 1916, Treasury Department, United States Public Health Service. Washington: Government Printing Office, 1917. Pp. 130.

After a series of dietetic experiments with monkeys, white rats, guinea-pigs, and rabbits, and a comparison of the cellular changes with those in pellagra, Sundvall concludes that the changes due to malnutrition bear a very close resemblance to pellagrous lesions, that pellagra should be classified in the dietary diseases along with scurvy, rickets, and beriberi, that it is not a germ disease and that the pathological changes found in the disease are not unique, but are those of malnutrition. Francis examined the spinal fluid of twenty-one pellagra patients and found it sterile in every case. The rest of the bulletin is given up to description of attempts by Francis to transmit pellagra to monkeys by inoculation. He was as unsuccessful as Lavender, Grimm, Lorenz, and others have been. Altogether this bulletin adds several facts of positive and negative value to the study of pellagra.

*A Text Book of the Practice of Gynecology for Practitioners and Students.* By WILLIAM EASTERLY ASHTON, M.D., LL.D., Professor of Gynecology in the Graduate School of Medicine of the University of Pennsylvania; Fellow of the American Gynecological Society; One of the Founders of the Congrès International de Gynecologie, etc. With Ten Hundred and Fifty-two New Line Drawings Illustrating the Text. By John V. Altender. Sixth edition, thoroughly revised. Philadelphia and London: W. B. Saunders Company, 1916. Pp. 1097. (Price \$6.50.)

The object of this work has been admirably met, namely, to provide a treatise on medical and surgical gynecology suitable for the requirements of students and practitioners. A successful effort has been made to have this book pre-eminently practical and to furnish a wealth of details. The illustrations serve to clarify the text and to enable the student to see at a glance the details of the several procedures so that they may be intelligently followed. The arrangement of the book from an anatomic standpoint is original and permits a discussion of the methods of examining each organ before describing its diseases and does away with the usual chapter on physical examinations which, with its broad generalization, tends to confuse the student. This plan also enables the practitioner to study different methods step by step and to familiarize himself with the subject in a practical manner.

It would seem, however, that for the general practitioner the most valuable work on any specialty is one which is generous in its treatment of the subject from the etiological, hygienic, and prophylactic points of view. This is especially true of gynecology. The fate of these patients is largely in the hands of the general practitioner. He sees and is often perplexed by the sequelae of the various gynecological operations. He must be the saviour of the great number of cancer patients if they are to find relief before it is too late. Also, it is he who must care for the great army of so called nervous women who may apply to him for treatment.

The chapter on the causes of diseases peculiar to women and that on the effects of the removal of the ovaries are helpful. The paragraph on uterine cancer is clear, im-

pressive, and altogether adequate to the grave importance of the prophylaxis of this dread condition. It is the general practitioner who observes how frequently functional diseases of the nervous system are associated with diseases of the sexual organs and that the treatment is often properly psychological rather than medical or surgical. For that reason some reference to that branch of therapy should be made in a work on gynecology.

Professor Ashton recognizes and discusses briefly the influence of the emotions. He might have advantageously given more attention to this phase of the subject. There has been, during the past decade, a great increase in the knowledge of the physiology and therapeutical application of the ductless glands. The close connection between the secretions of the kinetic system and the ovary makes the subject one of the greatest interest to the practitioner in his care of women patients. The book would have been more helpful if the author had written at greater length about ductless glands in relation to gynecology. These deficiencies serve to demonstrate the great difficulty of combining in one volume both the medical and surgical branches of gynecology, a subject which has made such rapid and progressive advances both as a science and art during the past decade. Professor Ashton has given the profession one of the most helpful volumes in the practice of gynecology. It is a book to be studied with profit by the student of gynecology.

## After Office Hours

The *Masses*, having once published an article by George Creel, are frantically appealing to him now not to suppress their clatter.

\* \* \*

We have tolerated the *Masses* when it was indecent, applauded it when it was clever, and laughed at it when it was amusing, but now that this country is at war for its life it seems to us that the bitter antimitarism of the June number and its impugning of the motives of the government, from the President down, are perilously like treason.

\* \* \*

So few white men understand the peculiarities of negro psychology that extra credit must be given to Ridgely Torrance, who has been having produced three wonderful plays dealing with this race. The best of these is "The Rider of Dreams," but the other two, especially "Granny Maumee," do not fall far behind.

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The *Survey* for May 5th gives a very inadequate account of the National Committee for Mental Hygiene's place for taking care of the nervous and mental cases from the army under the misleading title of "Special Hospitals for War Shock." Shock is a very general and vague way of describing the cases which will be taken care of by the excellent plan of this body, working with a committee containing such names as Salmon, Hoch, Meyer, and White.

\* \* \*

Theodore Dreiser, the most suppressed writer in America, says in the *Seven Arts* that Americans are the prey of a dull and narrow Puritanism. He speaks of works of art and literature being destroyed and banned by exponents of so called public morality and says that "in the main we are unbelievably dull and wishy washy." It is worthy of note that, while Mr. Dreiser's article has been commented on by many publications, these have, on the whole, agreed with him.

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*Extracts from the 1917 diary of Samuel Pepys, M.D.:* February 17th.—Up betimes, as it is war time, and the sick do call and send for me in greater numbers than ever before. And this, because, my good friends who, with me, make the practice of physick, in this district, have sailed across the seas, with the King's Armies. Which, is a right and proper way, and shews a patriotick temper, in chirurgeons, who are of the age for military service. The wants of the nation must come before all other things. And were I not forty-and-five years of age, I would answer the bidding of the War Office and march also. But, it is meet that some should stay behind and earn moneys to lend for the King's use. So, God be praised, I find that my



neighbours, even now, after so many years, have found out my greater skill in the practise of the noble art of physick. They do say that the *locum tenens* doth not understand infants and hysteric women. And so, I write to the banquer, that he may lend my gettings, at five *per centum*, to the King, his Chancellor. And do pray, that I may soon be able to pay for my new car from Amerique.— (Quoted from the *British Medical Journal*.)

\* \* \*

A young druggist of Ontario who was graduated from the Toronto College of Pharmacy only a few years ago tells in a most interesting way the experience of the first Ontario battalion on its journey *From the St. Lawrence to the Yser*. The story is told simply, directly, and without heroics; it is distinctly a personal narrative and though it lacks any attempt at fine writing it is one of the most interesting contributions to the voluminous literature of the war. Captain Curry saw some of the men who suffered from the first gas attack at Hill 60, and describes graphically the effect of the gas inhalation on the sufferers. He tells us that "Dr. G— of Queen's University, then serving as a subaltern in No. 2 Company, had been experimenting in private and devised a solution which varied only in the proportion of one of its elements from that adopted by the British Army, so we were probably the first brigade of the British Expeditionary Force to receive this protection." The gas helmet now in use, so he tells us, gives almost complete protection from gas.

## Meetings of Local Medical Societies

MONDAY, May 28th.—Medical Society of the County of New York.

TUESDAY, May 20th.—Medical Society of the County of Chautauqua, N. Y.

FRIDAY, June 1st.—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn; Practitioners' Society of New York; Corn-ing Medical Association; Alumni Association of Roosevelt Hospital.

SATURDAY, June 2nd.—Benjamin Rush Medical Society, New York.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending May 16, 1917:*

ACKER, R. B., Assistant Surgeon. Bureau letter dated April 17, 1917, granting him ten days' leave of absence from May 1, 1917, revoked.

CARTER, H. R., Assistant Surgeon General. Granted ten days' leave of absence from May 9, 1917.

COLLINS, G. L., Surgeon. Granted twelve days' leave of absence from May 15, 1917.

GARDNER, C. H., Surgeon. Granted one day's leave of absence, May 13, 1917.

LAUGHLIN, J. B., Assistant Surgeon. With the approval of the President, detailed to the American National Red Cross for duty on the ambulance ship *Surf*.

LIGHT, S. D. W., Acting Assistant Surgeon. Granted two days' additional leave of absence, May 14 and 15, 1917.

MOTTER, M. G., Technical Assistant. Ordered to represent the service at the conference on Drug Addiction in New York, N. Y., May 15, 1917.

PERRY, N. V., Constructing Engineer. Ordered to proceed to Cincinnati, Ohio, to make a general inspection of the building and mechanical equipment at the station.

ROBERTSON, H. McG., Surgeon. Granted three days' leave of absence from May 12, 1917.

SAFFORD, M. Victor, Assistant Surgeon. Granted two days' leave of absence on account of sickness, May 6 and 7, 1917.

TARBETT, R. E., Sanitary Engineer. Ordered to proceed to Kanuga, N. C., to make a sanitary survey of that place and vicinity.

WITTE, W. C., Assistant Surgeon. Detailed to deliver an address on rural sanitation at Jarrell, Texas, May 30, 1917.

YOUNG, G. B., Surgeon. Granted two days' leave of absence during April, 1917.

### Boards Convened.

Boards of commissioned medical officers convened June 4, 1917, for the purpose of making the physical examinations and conducting the mental examination of candidates for appointment as assistant surgeon, as follows: San Francisco, Senior Surgeon L. L. Williams, chairman; Assistant Surgeon, D. S. Baughman, recorder. Chicago, Surgeon J. O. Cobb, chairman; Assistant Surgeon H. C. Yarbrough, recorder. St. Louis, Mo., Surgeon M. J. White, chairman; Assistant Surgeon A. R. Sweeney, recorder. Seattle, Wash., Surgeon B. J. Lloyd, chairman; Passed Assistant Surgeon E. Krulish, recorder. Galveston, Texas, Surgeon L. P. H. Bahrenburg, chairman; Surgeon R. L. Wilson, recorder. Cincinnati, Ohio, Surgeon W. H. Frost, chairman; Passed Assistant Surgeon Paul Preble, recorder. New Orleans, La., Passed Assistant Surgeon F. Simpson, chairman; Passed Assistant Surgeon C. P. Knight, recorder.

## Births, Marriages, and Deaths

### Born.

ENGLISH.—In New Hartford, Conn., on Monday, May 7th, to Dr. Chester F. English and Mrs. English, a daughter.

### Married.

MOYER-FULLER.—In Lincoln, Neb., on Thursday, May 10th, Dr. Torrence C. Moyer and Miss Minerva Turrington Fuller.

THOMAS-NICHOLS.—In Rahn's Hill, Pa., on Thursday, May 10th, Dr. Barton K. Thomas, of Pottstown, Pa., and Miss Florence B. Nichols.

### Died.

ALDRICH.—In Philadelphia, Pa., on Thursday, May 10th, Dr. Herbert E. Aldrich, aged sixty-one years.

ANDERSON.—In New York, N. Y., on Tuesday, May 8th, Dr. Winslow Anderson, of San Francisco, Cal., aged fifty-seven years.

BROWN.—In Boston, Mass., on Wednesday, May 16th, Dr. Francis H. Brown, aged eighty-two years.

CHAPMAN.—In Old Mystic, Conn., on Friday, May 11th, Dr. Albert Taylor Chapman, aged seventy-eight years.

CROWLEY.—In Newport, Ky., on Wednesday, May 9th, Dr. James W. Crowley, aged sixty-five years.

GUILLAUME.—In Utica, N. Y., on Thursday, May 10th, Dr. Clement T. Guillaume, aged sixty-one years.

HAROLD.—In Carmel, Ind., on Monday, May 7th, Dr. Nathan G. Harold, aged seventy-one years.

INGLE.—In Gainesville, Tex., on Saturday, May 5th, Dr. Henry Ingle, aged eighty-four years.

KILTY.—In Shenandoah, Pa., on Saturday, May 5th, Dr. Harry F. Kilty, aged twenty-eight years.

KING.—In Lancaster, Pa., on Monday, May 14th, Dr. George P. King, aged fifty-nine years.

LINE.—In Columbus, Mont., on Saturday, April 7th, Dr. Lemuel Line, aged fifty-five years.

MATTHEWS.—In Anniston, Ala., on Saturday, May 12th, Dr. George A. Matthews, aged seventy-seven years.

ORWIG.—In Toledo, O., on Thursday, May 10th, Dr. James B. Orwig, aged forty-three years.

POSEY.—In Philadelphia, Pa., on Tuesday, May 15th, Dr. Louis P. Posey, aged fifty-four years.

SMITH.—In Rutland, Mass., on Tuesday, May 15th, Dr. William Francis Smith, aged twenty-seven years.

WETZEL.—In Ravenswood, W. Va., on Thursday, April 10th, Dr. John H. Wetzel, aged sixty-two years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 22.

NEW YORK, SATURDAY, JUNE 2, 1917.

WHOLE No. 2009.

## Original Communications

### SYSTEMATIZED BOARDING OUT VS. INSTITUTIONAL CARE FOR INFANTS AND YOUNG CHILDREN.\*

By HENRY DWIGHT CHAPIN, M. D.,  
New York.

The heavy morbidity and mortality that have long existed among neglected and abandoned infants are a chronic source of anxiety and reproach to workers in this field. There are only two plans for handling these cases. The children can either be boarded out or collected in institutions. Both methods have fallen short in certain ways, but the important question is, which plan offers the better opportunity for successful operation? The object of this paper is to try and reach some conclusions upon this question.

It is well known that the mortality in institutions has always been high. Improvements in infant hygiene and feeding have not had as favorable effects inside as outside of the institutions. The following tables arranged from the annual reports of the State Board of Charities show the number of deaths of infants and little children in institutions in New York State during the past three years. Hospitals for the treatment of acutely sick infants are not included in these figures.

CASES DISCHARGED FROM INFANT ASYLUMS YEAR ENDING SEPT. 30, 1914.									
Length of Time in Institution.		Less than One Year.				From One to Two Years.			
Age When Discharged.	Under 3	3 to 6	6 to 12	1 to 2	2 to 5	1 to 2	Years.	Years.	Years.
Total.....	1306	540	582	504	614	318			
Died.....	956	303	261	96	22	74			

CASES DISCHARGED FROM INFANT ASYLUMS YEAR ENDING SEPT. 30, 1915.									
Length of Time in Institution.		Less than One Year.				From One to Two Years.			
Age When Discharged.	Under 3	3 to 6	6 to 12	1 to 2	2 to 5	1 to 2	Years.	Years.	Years.
Total.....	1035	621	746	666	671	313			
Died.....	674	389	350	122	22	74			

CASES DISCHARGED FROM INFANT ASYLUMS YEAR ENDING SEPT. 30, 1916.									
Length of Time in Institution.		Less than One Year.				From One to Two Years.			
Age When Discharged.	Under 3	3 to 6	6 to 12	1 to 2	2 to 5	1 to 2	Years.	Years.	Years.
Total.....	758	370	439	403	518	297			
Died.....	450	221	188	81	21	59			

The actual mortality rate cannot be given, as the whole number of infants in the institution at one time is not stated. It needs but a glance at the tables, however, to show that there was a very high death rate, especially in the early months. The statistics given by most institutions are very incomplete and unsatisfactory (1). In 1914 the writer

\*Read before the section in Pediatrics of the New York Academy of Medicine, May 10, 1917.

reported statistics from ten institutions in various parts of the country, basing the death rate on the ratio between yearly admissions and deaths. The following were the rates among children under two years of age, according to this plan of figuring: 53.17 per cent.; 40.6 per cent.; 40 per cent.; 60 per cent.; 31.7 per cent.; 75 per cent.; 65.8 per cent.; 47.7 per cent.; 36.1 per cent.; 49.5 per cent. In all but one of these institutions deaths included all infants under two years. The ages of the deaths were not given in the reports, but as the greatest mortality is under one year the showing would be worse if restricted to this age limit (2). In this city the report of the medical board of the New York Foundling Hospital gives the mortality for children up to two years of age as follows: 1914, general mortality, 21.27 per cent.; mortality under one year, 34.4 per cent.; 1915, general mortality, 16.7 per cent.; mortality under one year, 26.7 per cent. (3). At the Hebrew Infant Asylum, the mortality of infants under one year of age from 1911 to 1915 is reported as 16.3 per cent. and 8 per cent. from one to two years of age (4). The lowest infant institutional death rate known to the writer came to his notice at Portland, Oregon. An institution known as the Baby Home, with an average of sixty-two inmates, claimed a mortality during 1914 and 1915 of between three and four per cent. This was such an unusual showing for this sort of work that an endeavor was made to find, if possible, the cause of the low death rate. The house was detached and surrounded by small grounds, but it was not modern and at first sight did not seem well adapted to the work. A broad piazza running the whole length of the building on both sides offered some explanation. The mild climate allowed the babies to be kept in their cribs in this open air space all day and during all seasons. There were not very many young babies, and they also came from a more vigorous stock apparently than is seen in the crowded centres of the East.

There are two factors that militate in favor of a high death rate in institutions: 1, lack of individual care; 2, lack of fresh air. Any lowering in institutional mortality must work along these lines of improvement. There is rarely, if ever, a sufficient number of nurses to give the constant attention needed by this class of infants. This is particularly true at night. One attendant to twenty, thirty, or even forty babies will necessarily result in a neglect

that frequently leads to serious illness. A restless, uncomfortable night will undo the work of many days of care in feeble infants. They kick off the clothes, are exposed to drafts, and lie in soiled napkins that should be quickly changed. The difference between success and failure in this class of cases often lies in a close margin. It may be the neglect of some small detail that ministers to the infant's comfort that will be largely responsible for the failure. Here is where the lack of individual care becomes a most important factor.

The cubic air space is usually insufficient in institutions and the opportunity to get plenty of fresh air constantly delivered without draft is often limited. The collection of many infants in one room, even if it be large, is not desirable. It is best to always work in small units.

In comparing the mortality of institution infants with the same class boarded out, we are frequently confronted with the same difficulty of procuring reliable statistics as to the latter plan. Several experiments in recent years, however, will afford favorable ground for comparison. The term boarding out has been rather loosely employed to cover all kinds of homes with little or no oversight. In an attempt at comparison we shall here only consider boarding out that is properly regulated. A large amount of personal care and attention should be given to boarded out babies. The home must be carefully selected and a doctor and nurse kept in constant touch with the case. All successful plans of boarding out embrace these requirements.

The Speedwell Society boards out in units which will allow intensive working in small fields. The unit is preferably located in a certain district of country noted for healthful conditions. Here a salaried physician and nurse give constant attention to diet and hygiene. A number of foster mothers in the neighborhood are thus trained to take care of infants in their homes and become fairly expert in handling them under conditions totally unlike those offered by institutions and usually far superior to them. The Speedwell has worked for fifteen years at Morristown, N. J., but hopes to see other units established in various country districts around the city, each in charge of a doctor and nurse operating in connection with a local committee (5). Briefly, this plan means daily oversight and attention for boarded out babies by experienced persons. In the last three years the mortality of babies under six months, most of them atrophic when received, has been sixteen per cent. They had to be kept on the bottle, and it is safe to say that nearly all of these babies would have died if kept in an institution. The mortality of all cases, including, however, many older children, was 2.5 per cent. (6).

A more immediately striking comparison between institutional and boarding out mortality is afforded by the results obtained by the Sage Foundation and Department of Health with babies taken from the marasmus ward of the New York Foundling Hospital (7). This ward receives only the chronic cases of extreme atrophy that have always ended in death. In boarding out a number of these babies, an extra bonus of five dollars per month was given to selected women. A doctor and nurse were furnished for every ten babies. A few were returned to the

institution, but eighty-nine babies remained in the various homes, with an eventual mortality of forty-six per cent. Thus nearly half of the babies were saved in the homes who were bound to die in the institution (8). We must note the way this boarding out was done. Constant supervision and intensive working produced the results. Boarding out has very rarely been properly and systematically handled, as only haphazard methods have usually been employed. Incidentally, the sum of ten dollars a month commonly paid is too small for favorable results. It is not right to exploit poor women in applying this system.

An interesting undertaking in San Francisco along the same lines has come to a successful issue. Doctor Holsclaw and Doctor Rude report that the mortality in the founding asylums of that city formerly averaged fifty per cent. The authorities of these institutions consented to a fair trial of boarding out with a result that the mortality in the same class of cases has been reduced to twelve per cent. (9). This boarding out, however, has been carefully systematized. A group of young college women has undertaken the follow up work, and once a week all the babies report to a central station for weighing and general advice. The babies have thus been kept in constant touch with a doctor and nurse, who also visit the homes upon request of the lay visitor. The foster mothers have shown much interest in their charges and many seem enthusiastic in the work.

The Children's Department of the Massachusetts General Hospital has shown what can be accomplished by intensive work with babies in tenement houses. Dr. Richard M. Smith reports that during 1915, 263 babies under two and one half years of age, of which 151 were under six months old, were supervised in their homes and only fifteen died, a little over 0.5 per cent. (10). It is true that these babies were not boarded out; they lived in homes of poverty, probably combined with much ignorance, but they had careful and constant oversight. In New York State it was found that during four years the death rate of infants under two years of age was only one fifth of that of children in institutions (11). It is true that feeble, ailing babies are frequently sent to institutions, but it is also true that the latter start with many well, or comparatively well, babies who run down while in the care of the institution. Boarding out has likewise to contend with a goodly number of puny infants.

When it comes to morbidity, there are no figures throwing light on the subject that are available from institutions. In a general way, we know that a high death rate predicates a large amount of sickness. There is thus always a great deal of illness in the institutions, and the question naturally arises as to how the collection of many children in one place tends to produce or aggravate disease. A certain amount of illness is doubtless unavoidable and bears no particular relation to the institution. When it comes to communicable diseases and cross infection, the case is different. Here the child contracts the disease *because* of its surroundings.

With varying degrees of care, there is hardly any institution that is not swept by epidemics occurring



with more or less frequency. It may be scarlet fever, measles, whooping cough, diphtheria, or gonococcus vaginitis, to mention only the severest visitations. These epidemics form alike the danger and the scourge of institutional life. Measles and whooping cough are the most difficult to control and frequently do the most ultimate harm. It would be interesting if institutions would report the number of cases of communicable disease occurring each year. A fair judgment of the operation of any system, moreover, will involve not only a study of any available statistics, but a consideration of the known results that frequently follow certain conditions in the relation of cause and effect. We know that measles and whooping cough frequently light up a latent tuberculosis in a feeble child, and hence there may be a double danger in contracting these diseases. The cross infections from ordinary colds, influenzas, and other respiratory diseases are always liable to be dangerous where many individuals are kept in close proximity.

By boarding out, the dangers of spreading communicable diseases are reduced to a minimum. When it does happen, the disease is localized and hence cannot be widely spread. The Speedwell Society in its fifteen years of operation, during which it has boarded out 2,875 children, has had very little spread of infection. A study of the operation in recent years shows that from September 21, 1911, to May 1, 1917, 1,094 children have been received and treated. Their stay in the boarding homes varied from a few weeks to several months, with an average of about four months. During these years, and among this number of children, only twenty-one cases of communicable disease occurred, as follows: Seven cases of chicken pox, seven cases of whooping cough, three cases of measles, one case of German measles, two cases of diphtheria—one nasal and only one bacterial—and one case of scarlet fever. These cases were nearly all in the stage-of incubation when sent out, so that the disease was not contracted owing to the operation of the system. Two cases of chicken pox and one of whooping cough were contracted in the boarding homes. As far as can be learned, few, if any, of the local children have been infected by our cases. We know of no other plan that could handle such a large number of children of this type with so little spread of infection.

Finally, even if kept free from disease, infants who are retained very long in institutions are not apt to be vigorous, while in a boarding home they are usually as strong as other children in the family if they do not succumb to actual disease.

Aside from illness or death, there are economic and social factors that should be considered in a comparison of these two systems. Boarding out if properly employed will not only give better results but it is cheaper in operation. As concerns the institutions, the money locked up in the original cost of the plant must be added to the cost of operation and likewise the remission of taxes, which are paid by the community at large in the shape of additional taxation to make up the deficit. We are not here recommending that institutions be taxed, but this element must be taken into account in considering the real expense of this kind of work. In boarding

out, money goes into aiding the upkeep of normal homes and thus helps the problem of poverty. It also goes to trained human instruments, such as doctors and nurses, rather than being expended in overhead charges for operating large buildings. The emphasis is placed on human agents rather than on bricks and mortar. The system calls for workers who believe in it, who respond to the inspiration of a cause, and who never shirk. They must also have tact and sympathetic human feeling in dealing with the abandoned infants and the homes that shelter them. The educational effort can work for much social uplift. The constant oversight of a doctor and nurse will help each foster mother in the care of her own children. These visits may be the means of raising the whole standard of living among many poor families. We believe this has been accomplished in not a few cases in our Speedwell work. It should form one of the constructive aims of the system, and hence kept constantly in the minds of the visitors.

Let us raise the cry, "Back to the home." Though poor and imperfect, it is better in the long run for the little child than the institution. Let us thus stress our efforts in improving the home. We must strive at the same time to help both the abandoned child and the home that shelters it. We will hope that some of the interest and affection that even the poorest mother usually gives her own will be shared by the newcomer. Children are generally brought into the world singly and not in droves, so that Nature evidently intended them to be brought up in small groups of which the family is the unit. The further we get away from this natural family unit, the greater the disadvantage to the little child.

A wide social outlook and vision should be included in the plan of intensive boarding out when properly systematized. We must always remember that the problems of inefficiency, of ignorance, of ill health, and even of poverty must always be first attacked in the home. Let the homeless infant be the messenger of help in attempting the solution of these problems. It will amply repay any care or affection that may be given. We must never forget that the little child craves love; it may even have a therapeutic effect. That close human observer, Jane Addams, with sympathetic vision puts it thus: "We are told that the will to live is aroused in each baby by his mother's irresistible desire to play with him, the physiological value of joy that a child is born, and that the high death rate in institutions is increased by the discontented babies whom no one persuades into living."

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## GONORRHEAL SALPINGITIS.\*

*Consideration and Treatment.*

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Titanic calamities, world conflagrations, and world catastrophes are generally traced to their source and their responsibility placed. As a result, many of the horrifying and terrifying epidemic diseases such as smallpox and bubonic plague have declined or disappeared with the centuries. This is not true of the heinous scourge, venereal infection. And who is responsible for the widespread devastation of the venereal diseases that cause more misery, unhappiness, sorrow, greater material loss, physical and mental deformity, and a greater degree in general of morbidity and mortality than all the infectious diseases combined? Our governments, national, state, and municipal, spend huge sums of money to isolate and control measles, diphtheria, scarlet fever, small pox, infantile paralysis, chicken-pox, and whooping cough, but for the diseases that tend more to depopulate the world than any other condition comparatively insignificant sums are expended and venereal diseases are allowed to run their hell consuming course.

Pennsylvania is spending this year 145,000 good round shining silver dollars for the conduct of its health department, and the meritorious work accomplished by Doctor Dixon, its director, is well known. Little of this sum, however, is devoted to the control of venereal infection. New York city distributed from its treasury in 1916, \$1,902,352.17 for the conduct of its health department. New York state in 1915 spent \$388,000 for the same purpose, but only \$7,000 was directed to the control of the venereal infections. During the past summer, New York city spent \$329,451.87 in its fight against poliomyelitis. None of the ordinary infectious diseases exact the same toll and cause as many cripples, lame, halt, blind, feeble-minded, and insane, as do the venereal diseases. Who is responsible for this frightful holocaust? Is there no one to stand and battle to protect our boys and girls from this black scourge? Must we be compelled simply to stand complacently with folded arms and see eighty per cent. of our boys and about twenty to forty per cent. of our girls infected with gonorrhea or syphilis? Is it not the duty of the medical profession to bring this matter to a head, to force an issue, and overcome the false modesty that has been spelling damnation to the world for over three thousand years?

Gonorrhea is as old as time. Its nature was known to the children of Israel, and Moses tried to stamp it out. It has been rampant through all the ages and very little has been done in a corrective way to place it under proper control. The European war has brought home to the people of Continental Europe and those of the British Isles how terrible this scourge is. The war has brought vividly to all of the belligerent nations the dangers of venereal infection and it has demonstrated to the widest circles the necessity for energetic measures

to combat the disease, in the restraint and control of which the human family has for more than three thousand years been reticent and modest. Humanity, at last, is beginning to interpret properly the signs, and it is to be hoped that before long, drastic and efficient regulations will be placed over the conditions that are as horrible as was the pest in ages past.

*History.*—Historically, Luys says, that gonorrhea is as old as man and that urethral discharges have been known throughout all the ages. It is generally conceded by all authors that the earliest description of gonorrhea dates back to about fifteen hundred years before Christ, and Moses in the fifteenth chapter of Leviticus refers to the individual with a "running issue." Moses, moreover, recognized the danger and contagiousness of gonorrhea and emphasized the importance of isolation and cleanliness.

Anglada states that the disease was prevalent among the early Jews and that circumcision was devised in order to guard against balanitis, one of the common complications of gonorrhea. Luys states, however, that the first scientific paper on the subject was written at least twelve centuries later. This was compiled by the celebrated Hippocrates, who, history teaches, wrote voluminously at the age of thirty years or about 330 B. C. He described the disease, its symptoms, and complications, both in the male and female. All of the great thinkers of Greece wrote of the disease, including Aristotle, Plato, Seneca, and others. Celsus, writing in the period of Augustus, was the first to attribute the disease to an ulcerated urethra. Galen, writing in the second century of our era, was the first to apply the term gonorrhea. He regarded the disease as an involuntary discharge of semen, and it was Erataus who first distinguished gonorrhea from other urethral discharges.

Venereal diseases in general were described by all the writers through the following centuries until about the beginning of the sixteenth century, when Vigo published his work making a clear distinction between gonorrhea and syphilis, and, according to this author, syphilis made its first appearance about 1494. Up until the time of Rabelais in the sixteenth century, all the authors were in accord as to the distinctiveness of gonorrhea and syphilis, but confusion arose when Brassavole published his work in 1551 asserting that gonorrhea was a phase of syphilitic infection, and, like his predecessors, he dated the outbreak of syphilis back to the siege of Naples. The venereal diseases for a period then were regarded as one. This view was held by Ambrosio Paré (1564) and all the men who followed him, including the celebrated John Hunter, and it was left for Benjamin Bell, in 1793, to establish definitely the distinction between gonorrhea and syphilis, and in 1812, Hernandes of Tulon, by inoculation experiments, proved conclusively that gonorrhea was never followed by syphilitic lesions.

In 1872, Hallier discovered the presence of micro-organisms in the pus cells of gonorrheal discharge, and in 1879, Albert Neisser, of Breslau, discovered the gonococcus. His researches were confirmed by other men, and in 1884, Bumm succeeded in growing pure cultures of this germ.

\*Read before the Mercer County Medical Society, Trenton, N. J., March 6, 1917.



*Frequency.*—One cannot possibly estimate the prevalence of venereal disease, because these infections are largely concealed and they are not under the jurisdiction of our health departments, and therefore, they are not reported. These diseases are clothed in the deceptive and dangerous garb of secrecy and hence their high degree of danger. Why should diseases more pernicious and noxious than all infectious diseases combined be allowed to run rampant? Whooping cough and chickenpox are recorded and those infected isolated, but the diseases that are infinitely more destructive to the human family are allowed to go unchecked.

In 1901 a Commission of Seven, in New York city, according to Norris, estimated that there were 220,000 venereal victims in that city, and this, the author says, was confirmed by medical investigation. This committee believed that the figures should be multiplied by at least seven, therefore, making 1,400,000 sufferers from venereal infection. Would one be going too far to aver that even more cases are present than this, because it is well known to all that a great army of individuals walk about wholly innocent of their condition and unconscious of harboring infection. A committee on venereal disease in the state of Washington quoted statistics showing that eighty per cent. of the men in the large cities and forty-five per cent. of the women have had gonorrhea once or several times and that forty-five per cent. of the married men infect their wives. These figures seem rather high. Doctor Morrow, of New York city, states that venereal disease causes twice as high a degree of morbidity and mortality as do all other infectious diseases placed together. In 1906 the doctors of Baltimore treated 2,210 cases of infectious disease and 9,450 cases of venereal disease. In New York city there are annually 41,000 cases of infectious disease and at least 220,000 cases of venereal disease. In 1910 a canvass made throughout Germany showed that 100,000 cases of venereal diseases were treated every day. (Norris.)

*Economic phase.*—Prostitution is the most common medium of the dissemination of gonorrhea and it is stated that 500,000 prostitutes are found in the large cities of this country, and that at least 40,000 of these unfortunate women, at just about their period of highest usefulness, die annually as a direct result of their nefarious calling. It is impossible to say how many women die as a result of gonorrheal infection, but we do know that the number is extremely large and that the majority of the mutilating and sacrificial operations upon the generative structures are caused by gonorrhea. It is stated that at least seventy-five per cent. of the operations for inflammatory conditions of the ovaries and tubes result from this disease. Think of the economic loss from prostitution alone as a result of, first, chronic invalidism and incapacity, and second, from the tremendous death rate! Norris states that it costs the world annually \$125,000,000.00 for prostitution and it is said that the city of Chicago spends \$15,000,000.00 every year for this vicious practice. Think of the enormous loss that results primarily from women who die as a result of operations upon the uterine appendages—women, dying at a time of their greatest efficiency and highest value to their country, at a time of early motherhood with

frequently other children dependent upon them. Or in the second place, think of the number of mutilating and sacrificial operations upon the pelvic structures necessarily followed by sterility and the loss of thousands of potential lives to the nation. And third, think of the great economic loss of these women who after infection and operation remain incompetent and semiinvalids the balance of their days.

Kelly estimates that the venereal diseases cost this country \$3,000,000,000.00 a year and Norris thinks that "these figures are underestimated rather than exaggerated."

The question of venereal infection is a very vital one and in an economic sense forms one of the most consuming problems of our time. The destructiveness of these diseases both in a material and human way is almost beyond the power of mind to comprehend. It is impossible to conceive why more study and thought have not been applied to a pest that has been present with increasing destructiveness for a period of 3,500 years. Yet, during all this time, no definite steps have been taken to place the disease under distinct economic, civic, governmental, or medical control.

Venereal disease is largely preventable and it has been estimated that the annual cost to this country from preventable disease alone amounts to billions of dollars, and venereal disease forms a large part of this tremendous economic waste. One reads constantly of the methods established by our civic organizations and medical societies to prevent life destruction and favor life extension, but seldom a word concerning the control of the black scourge. Today, economics and conservation form the most burning topics of our time, and these questions occupy the public mind at the present more than at any period since the beginning of man. The intrinsic qualities of these factors are more fully appreciated than ever before. They have assumed a new and vital significance and are referred to constantly. The conservation of human life and health is the most supreme function given to mankind and the principles of conservation bear a distinct relation to medicine and the laws of life in general. Economics bear a similar relation and it is unusual to hear a medical subject considered without special reference being made to its economic phase.

The consideration of this character of medicine in general has given birth to the intensive study and practice of preventive medicine. The questions of conservation and economics apply with striking force especially to the functions that are essentially concerned with the reproduction and propagation of life, and these factors constitute the greatest concern of the nations of the world today. This is particularly true of the battle torn countries of Europe, where the destruction of humanity stands unparalleled in all history.

The question of life conservation is a very vital one and hence are we not justified in assuming that the destructiveness of gonorrheal infection, a disease that is responsible for such a tremendous morbidity and mortality, a disease that asserts itself primarily on the structures fundamentally associated with the reproduction and propagation of life, forms one of the big human economic themes of our life



today? On the prolongation, extension, and preservation of humanity and its economic control depend the existence of the human family and the future of all mankind.

The medical profession at last has been awakened to this important problem, and the desire to preserve and extend the life of man has been responsible for the advancement made in medicine and surgery in the passing years. Today, economic and conservative surgery are practised with feverish anxiety, and in all time the efforts of the laboratory worker, the internist, and the surgeon have been directed to decrease morbidity and diminish mortality. The European War emphasizes this fact with poignant intensity, for today in the blood stained battlefields of quaking Europe, medicine and surgery are practised with a single eye to preservation and conservation. Never in the history of medicine and surgery have these words been fraught with such anxiety. To the nation which gives the greatest attention to these factors, victory is sure, but to the indifferent nation it may spell defeat. The loss in things material and things human as a result of gonorrheal infection is incalculable, because, as previously stated, it works havoc with the structures fundamentally involved in life production.

Albert Neisser states that, with the exception of measles, gonorrhea is the most widespread of all diseases. Nearly everyone has had measles. Norris states that "it is the most potent factor in the production of involuntary race suicide and by sterilization and abortion does more to depopulate the world than any other known cause." He further says that "no other disease known to the medical profession has caused so much suffering throughout the civilized world as has gonorrhea." Morrow states that the venereal diseases contribute a total of morbidity nearly double that of all other infectious diseases both acute and chronic combined, and he states that 1,500,000 men are annually infected with gonorrhea in this country (Norris).

Gonorrhea causes at least fifty to seventy per cent. or more of all pelvic inflammations in women and the sterility resulting therefrom is tremendous. By most observers it is reckoned at from thirty to sixty per cent. Accurate statistics have been compiled in France and it has been found in 10,000,000 families (Norris) that 2,000,000 are childless. These results, according to Neisser, would tend to show that "gonorrhea is responsible for nearly 1,000,000 sterile marriages in that country." This does not include the vast number of one child sterilities due to this condition. Incidentally I would like to add that one of the most horrifying morbidities wrought by gonorrheal infection is that of ophthalmia, and it is said there are 1,000,000 blind persons in this country and that twenty-five per cent. or 250,000 of these have resulted from gonorrhea.

*Prophylaxis.*—Nearly all the work of a preventive character that has been instituted in this country has been inaugurated by our medical societies and civic organizations. Our national, state, and municipal governments have done but very little in a public way, but they have appreciated the problem from the military side.

In February, 1905, the American Society of Sanitary and Moral Prophylaxis was organized, and

many branches of this association have been established throughout the country. This society has undoubtedly accomplished considerable good in an educational way, but to become a definite and beneficent factor it must be supported by our national, state, and municipal governments. Similar organizations have been established in nearly all the countries of Europe. The importance of the control of the venereal diseases has assumed a new phase to the belligerent nations of Europe, and a report recently issued by a special committee of the *Münchener Aerzliche Verein*, a medical association to study questions affecting the promotion and preservation of racial vigor, states that "the venereal diseases are, next to alcohol and tuberculosis, the most dangerous enemies of the human race." In treating this report, editorially, the *Münchener Medizinische Wochenschrift* states that "the full importance of these questions are realized by only a small part of far seeing men, but the war, by revealing the dangers threatening the race from the declining birth rate, has awakened all to make energetic efforts to combat the causes of birth rate decline." This paper asserts that "the venereal diseases are among the worst enemies of mankind, and it is our duty to restrict their death dealing action on the nation." This journal urges compulsory notification and compulsory treatment as the only measures that promise results.

The Munich society also adopted resolutions recommending a similar measure. There are in addition several other national organizations of a like character. Some go so far as to demand that the venereal diseases be included in the "regulations regarding epidemic diseases." This question is also receiving widespread consideration in Great Britain. The English Parliament appointed a committee on November 1, 1913, to study the problem. This committee made an extensive investigation and reported their results on March 1, 1916, and the report and recommendations of the committee were adopted by the English Local Government Board on July 13, 1916, four months after presentation. The law instituted by the Government Board is not so rigorous or sweeping as the methods recommended in Germany, but is more restrained and temperate. It urges educational measures and does not recommend compulsory notification or compulsory treatment. Its main objections to these are that "it would do actual harm by deterring persons from seeking treatment and drive them more than ever to unqualified persons or quacks."

The act adopted by the Local Government Board provides for universal free diagnosis and free treatment, and the cost of this work is to be met, seventy-five per cent. from the Imperial Treasury and twenty-five per cent. from the local government funds. The order is in many respects, as stated editorially by the *Journal of the American Medical Association*, "epoch making, and it marks the first effort of any English speaking country, or indeed of any large state, to deal directly with the venereal problem on a large scale." This is a remarkable change in the English public mind, for ten years ago it was absolutely impossible to have the English government appoint a commission to consider the venereal disease problem, and today it forces into

law the recommendations of a commission four months after the commission submits its report. Western Australia has adopted more efficient laws and requires all venereals to be treated until cured under penalty of fine or imprisonment. Publication of advertisements on the subject is absolutely prohibited.

*Treatment.*—The present treatment of acute gonorrheal infection of the Fallopian tubes and of the pelvic structures in general, in other words, in acute gonorrheal pelvic peritonitis, is distinctly along conservative lines, and decidedly more so than prior to a few years ago. This change is a fortunate one for the human race. We have discovered by instituting less radical methods and by getting away from the belief that pelvic infections were surgical emergencies that our results both in morbidity and mortality have been materially decreased. The changes in the mode of treatment of these infections have resulted largely from the lessons we have learned from modern immunology.

Watkin says that our treatment today is based largely on our knowledge of immunity. Pelvic infections were formerly looked upon as local processes and recovery was attributed to local changes. Immunology has taught us that these infections are chiefly general and that recovery is largely due to systemic autovaccination. Watkin states that the important progress made in our treatment of these cases has been due to a better understanding of the question of natural immunity.

The general teaching now concerning inflammatory exudate is that it is protective and not a destructive process, i. e., a conserving element and nature's method of protection. It is well known that pelvic infection is especially favorable to the development of immunity, in fact more so than in any other section of the body. Nature reacts more acutely in this field, not tardily, but quickly, by throwing up barriers of protection, and these confine and destroy the invading bacterial agents. It is well known that natural processes rapidly render pelvic infections innocuous and commonly sterilize or destroy the causative factor.

In discussing the question of gonorrheal infection of the Fallopian tubes and the pelvic contents we must naturally consider the treatment as applied first to the acute period of the disease and second to the relics or sequelæ that result from the acute process.

Our primary aim in treating these lesions by whatever method should be essentially economic or conservative, and in the acute stage, unlike acute infections in other organs of the body, this function is best served by first instituting medical measures and not by applying hasty or meddlesome surgery. By the institution of medical means we shall be able to reduce the morbidity, decrease mortality, frequently avoid mutilating surgery and sacrificial operations, and, therefore, often conserve anatomical structures with retained function. Numerous clinical case records confirm this view.

All writers cite cases of acute gonorrheal infection of a very extensive nature treated along medical lines, in which the patients subsequently became pregnant once or oftener. Unfortunately this is not the common result of specific infection of

the Fallopian tubes, but it illustrates nature's wonderful power to destroy infection and preserve the reproductive processes of the generative organs.

The treatment we employ in our service in Jefferson and St. Joseph's hospitals is to obtain for these patients, first, absolute rest. Whenever obtainable, we place them in a quiet room. Otherwise, they are isolated in one end of the ward and screened off. We expose them to all the sunlight and fresh air possible. Whenever necessary, we move or change their beds in order to secure the benefit of these wonderful allies of nature. An abundance of fresh air is given to these patients both by day and by night. The airiest section of the room is provided, and wherever possible these patients should be placed on roof gardens or outside of closed rooms. Nervous excitement and emotion are absolutely prohibited, and visiting is discouraged and restricted to a minimum. Nature's powers are fortified by the free administration of food and therefore no embargo is placed on the diet. Liquid food never assisted an individual to destroy invading microorganisms. We feed these patients frequently with concentrated food and push it to the maximum of gastric tolerance. Water is given freely and the quantity is increased by the administration of saline solution by the bowel. Purgation is absolutely prohibited. It is harmful and destructive. It stimulates intestinal peristalsis and tends to extend localized infection in the pelvis and beyond. We depend on mild laxatives or preferably low enemas and do not resort to the old orthodox method of "draining the peritoneal cavity" by the administration of powerful saline cathartics.

If there is a tendency to unusual peristaltic action we give these patients small doses of morphine. This agent not only splints the intestines and favors localization, but at the same time relieves pain and obtains additional rest for the patient. We have employed serums and vaccines, but the results have not been pleasing and we have discontinued their use. Blood transfusion is recommended by some men and some assert they have obtained excellent results. It may have possibilities. How great these will be will depend on the results derived from its more extended employment; we have had no experience with this method of treatment. Other agents to increase natural forces of resistance have been utilized for a long period. We have also employed these materials, but the results have not been gratifying. Locally we also apply warm water bottles to the abdomen and use hot vaginal douches of one per cent. Lugol's solution (liquor iodi compositus), one gallon, at a temperature of 110° F. twice daily. These agents are comforting and perhaps have a beneficent influence on the healing process. We endeavor to pursue this plan of treatment in all primary infections, for, despite the gravity of the symptoms of acute gonorrheal infection, the danger to life is extremely slight. Moreover, if the method we have outlined is resorted to, the majority of the patients will recover, at least, symptomatically, and a certain percentage, functionally.

*Surgical treatment.*—The question of when to operate is a very vital one, but in all first attacks during the acute stage, early surgical intervention is not indicated, and its employment is vicious and



meddlesome. In cases of repeated exacerbations of an old infection, medical treatment will only avail in a small number of instances, and in these surgery should be resorted to. The teaching today concerning the surgical treatment of acute pelvic inflammation to "wait until the temperature reaches normal and then operate" is wise instruction, but it does not completely cover the premises. With the fall of temperature or during, as it were, the afebrile stage of the disease, Nature's therapeutical agencies are just becoming operative. Give them a chance. Wait until the temperature reaches normal and then still wait, for in so doing one may avoid a dangerous and mutilating operation and preserve structures with powers of future function.

If, however, after a reasonable period of time, the symptoms do not yield or subside one will be compelled to institute operative interference, and when this decision is finally reached, the thought of the surgeon from that period should be, how much can I save? His whole aim should be conservation of tissue with preservation of health and function. When extensive and destructive lesions involve both tubes naturally it will be necessary to sacrifice them. In cases where the disease is localized to one side, one may be compelled to remove this, but efforts should be made to preserve the opposite or less affected side. In cases not associated with extensive changes in the tubal wall one may be able to milk out the pus from its canal and partially, at least, sterilize the interior by carrying into its lumen a probe covered with iodine. I have done this on several occasions, and I recall a patient upon whom this operation was performed two years ago. The right ovary and tube were removed. The left tube was milked and iodine was carried into its canal. Recently the family doctor informed me that this patient is four months pregnant.

The disposition of the uterus in cases where the disease is so extensive as to necessitate the removal of the tubes and ovaries should not form any question for decision. It is infinitely better surgery to remove this organ with the tubes, because if allowed to remain it is a source of persistent irritation, frequently causing prolonged and irritating discharge and may occasionally require a subsequent abdominal operation. It is more practical to remove this structure in all cases requiring a double tubal extirpation, because one not only removes a source of persistent annoyance, but it enables one better to control hemorrhage and leave the pelvic cavity in a more surgically refined condition. The question of ovarian conservation is a very important one, and whenever possible one or both or a portion of both ovaries or one should be saved. This is particularly true of infections occurring before the age of forty, and unfortunately they nearly all do. After forty years it makes very little difference as to their disposal, and then perhaps it would be better were they removed with the other structures. Removal before forty, however, results constitutionally in extensive alteration in the vital systems of the body and locally in marked atrophic changes. Their removal may also result in the loss of sexual desire and the atrophy of the vaginal walls may be responsible for a great deal of marital unhappiness.

In case of extensive tubal infection associated with suppuration in the pouch of Douglas, our plan is to make a preliminary posterior vaginal incision allowing the pus to escape and then gently mop out and not irrigate the pelvic cavity. Drainage is established either with gauze, a large rubber tube, or both for a period of five or six days or longer, and then if necessary we subsequently open the abdomen. By this measure one removes a considerable quantity of infectious matter and reduces the morbidity and mortality of the subsequent abdominal operation.

Occasionally, this method will relieve the patient permanently, providing, of course, the tubes have been infected to a minimum degree and the material has drained into the dependent portion of the pelvis. In the majority of cases of extensive pelvic infection where we feel impelled to remove infected structures we begin our operative procedure by making a preliminary posterior vaginal incision, evacuating as much material as possible, with the primary view of establishing drainage through this channel. We feel that it offers a great many advantages. We utilize it in practically all cases and rarely do we drain through the abdominal incision. However, when we do, it is only in combination with the vaginal drain.

Finally, let me say that our whole aim in the treatment of acute and chronic infections of the Fallopian tubes and pelvic viscera should be along the lines of economization and conservation, first, of life, and second, of tissue, and that in many instances these factors are best accomplished by trusting to the powers of nature and the utilization of conservative medical measures, rather than by early and hasty institution of dangerous and mutilating surgery.

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1621 SPRUCE STREET.

## REDUCTION OF BLOOD PRESSURE BY THE REMOVAL OF AN ADRENAL GLAND.

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The internal secretions, their action upon the organism and their interaction upon each other, are today subjects of the greatest medical interest. Physiologists have sought to solve these problems in order to elucidate some of the still hidden processes of growth, health, and metabolic balance. The clinician has eagerly awaited these physiological findings so as to understand better well recognized pathological states and to appreciate the complexities of disease processes and the therapeutical requirements in each case.

The results of deranged thyroid secretion in producing cretinism, myxedema, cachexia strumipriva, exophthalmic goitre, and tetany are well known. That of the pituitary body in inducing acromegaly



and degenerate adiposogenitalis is also commonly recognized. The internal secretion of the liver, pancreas, kidney, and of the reproductive organs present today problems which show that there are still worlds to conquer.

The action of the secretion of the adrenal bodies, because of its well known physiological functions and its relationship to certain well defined diseases and to distinct pathological processes either *propter hoc* or *post hoc*, has become one of the most engrossing problems in internal medicine.

The adrenal gland consists of two distinct organs in the lower animals and these two have become fused into one in the higher vertebrates. These two separate organs respectively form, after fusion, the cortex and the medulla of the human adrenal gland. The medulla is a part of the chromaffin system<sup>1</sup> and therefore is in close association with the sympathetic nervous system which controls the vital processes—nutrition, growth, and secretion.

Neusser regarded the adrenal glands as the end organs of the sympathetic nervous system, and Balfour asserts that their origin is from the sympathetic.

The importance of the adrenal glands to the economy is shown by the fact that in the early stages of the embryo they are larger than the kidneys and remain relatively large all through fetal life. At birth they are one third the size of the kidneys and in adult life, after development has been completed, one thirtieth. The secretion in adult life is only four times that at birth. They share with the brain and liver the distinction of having the greatest development during fetal life, and therefore are markedly influential in early growth.<sup>2</sup> The blood and nerve supply in consonance with its importance to the economy is very abundant.

Animals die after the removal of both adrenals, though there may have been some exceptions, probably due to accessory adrenal tissue (the chromaffin cells). *Decrease in the secretion of the adrenal bodies* manifests itself by vital symptoms as general muscular weakness, defective nutrition, loss of weight, loss of body heat, lower blood pressure, diarrhea, coma, or epileptiform convulsions. Excessive action of the adrenal glands is fatal and the animal dies in convulsions with general hyperemia and marked edema of the lungs.

Addison, in 1849, first recognized the association of disease of the adrenal glands with the symptom complex now generally called Addison's disease. In 1894, Oliver and Schafer made the remarkable dis-

covery that the secretion of the medulla of the adrenal gland increased the blood pressure, a finding confirmed by so many investigators that it is now universally accepted.

The secretion of the adrenal glands from its physiological association with the sympathetic nervous system stimulates the vasoconstrictors and also directly the smooth muscular fibres of the blood-vessels and those of the heart, thus inducing increased blood pressure.

Hypertrophy of the adrenal glands with increased secretion has been induced in animals by alcoholic intoxication, poisoning by lead and by mercury, infusions of tobacco, muscular activity—prolonged intense work diminished the secretion<sup>3</sup>—injections of kidney tissue, and narcotics—prolonged narcosis lessens the secretion.

Lowsley, in the *American Journal of Physiology*, March, 1911, states that all types of prolonged exercise show a rise in systolic and diastolic blood pressures. Then the pressures fall below normal and remain in the subnormal condition for a period dependent upon the exhaustive nature of the exercise. Rapid exercises which are fatiguing and exhausting are followed by a fall of pressure below normal, which lasts longer than after moderate exercise, even if the fatiguing exercise is very short and the moderate exercise covers a considerable period of time. Barach showed that there was a fall of about twenty per cent. directly after violent exercise, i. e., Marathon racing.

The adrenal bodies respond in a marvelous way to every psychical and physical insult, fright, anger, excitement, direct injury to the brain, infections,<sup>4</sup> and toxins of all kinds. It would seem as if the adrenal glands were the outposts of the organism to warn the body against every kind of danger and to provide means of effective resistance.

The diseases in which high blood pressure is a dominating symptom are chronic interstitial nephritis, arteriosclerosis, and diabetes.

Fiessenger found that in 160 patients with permanently high blood pressure eighty-four had interstitial nephritis; forty-four had arteriosclerosis without kidney lesion; thirty were obese,<sup>5</sup> but free from kidney and aortic disease; two had astyole; i. e., the left ventricle failed to contract normally. Janeway made the clinical diagnosis in 700 patients with high blood pressure: Seventy-nine had chronic nephritis; eight had arteriosclerosis, general and coronary; seven had diabetes; three had aortic disease; two had myocardial disease; one had hypertension without nephritis, evident arteriosclerosis,

<sup>1</sup>The chromaffin bodies give the same macrochemical and microchemical reactions as the secretion of the adrenal glands, and are found in any part of the body into which the sympathetic nervous system extends. The medulla of the adrenal glands is composed of chromaffin cells, but more highly specialized and elaborated into a definitely glandular organ. These cells are so named because they have a special affinity for chromic acid and stain yellow therewith.

<sup>2</sup>Kasten found in imbeciles and Zander in fifty-six hemiplegics a marked hypoplasia of adrenal glands. With the same condition there has also been found underdeveloped sexual organs, small vascular system, and the status thymicolymphaticus. The status thymicus is always accompanied by a marked increase of the chromaffin tissue, an autogenerator, as the thymus contains much cholin which is antagonistic to the secretion of the adrenal glands. Sudden death, *Thymus Tod*, may be due to acute poisoning from the injection into the circulation of large quantities of adrenal secretion, especially during narcosis, which is a marked irritant to the chromaffin system. Status lymphaticus, on the other hand, is associated with a hypoplasia of the chromaffin system. Deaths in status lymphaticus are associated with a diminution of the adrenal secretion after a relatively too great demand. Herbert Spencer has shown that visceral hemorrhages, especially into the suprarenal capsules, are frequent in stillborn infants.

<sup>3</sup>H. L. K. Shaw found, some years ago, that all eight members of a university crew after a four mile boat race, showed marked reductions in arterial tension ranging from 120 to 110 mm. Hg., in the least to 145 to 80 in the greatest fall (Gartner instrument used). *Unpublished notes*. Schmorl's classic case was that of a bicyclist who rode many hours without cessation then suddenly died. Autopsy findings were negative, except that the adrenal medulla showed complete absence of secretion. Deaths from heat prostration may be due to the same cause.

<sup>4</sup>In infections an unusually large number of microorganisms are found in the adrenals. Moltschanoff in autopsies upon cases of diphtheria and scarlet fever with experiments on animals found specially in animals that the functional activity of the adrenals was increased, then exhaustion with atrophy followed. This final insufficiency causes serious symptoms and at times the patients die from these alone. Lextrain has recently called attention to the fact that in typhoid an acute inflammation of the adrenals may be the only pathological finding and he associates this finding with death in typhoid.

<sup>5</sup>High blood pressure in the obese is due to diminished activity and a tendency to constipation favoring intestinal putrefaction.

or cardiac disease. J. Fischer examined 550 patients with continuously high blood pressure; sixty-two per cent. of those with pressure above 140 presented signs of pronounced kidney disease; eighty per cent. of those with pressure above 160; forty-two post mortem examinations showed anatomical changes indicating progressive kidney disease, even in those in which there had been no clinical evidence of it. Congested kidney or idiopathic dilatation of the heart had been diagnosed.

The question at once arises, Is the high blood pressure a cause, a result, or a concomitant from the same etiological factors? Is the oversecretion of the adrenals, i. e., clinically arterial hypertension, in chronic nephritis due to an associated hyperemia of the adrenals; is it the result of the toxemia of the nephritis; or is it the expression of the same toxemia, the hypertension often appearing at an earlier period than the clinical evidence of the nephritis?

Josué believes that arteriosclerosis is the result of an increased activity of the adrenals. Braun has shown that the changes in the aorta are prevented when the action of the adrenal secretion in the induction of high blood pressure is counteracted by amyl nitrite. Goldzieher avers that the chronic hyperfunction of the chromaffin cells produces a toxic injury to the walls of the vessels and that there is a constant association between hyperfunction of the adrenals and arteriosclerosis. This, however, is denied by Landau, Aschoff, and Schmorl.

Traube, Huchard, Lenhouse, and Senator believe that arteriosclerosis develops from a permanent increase of blood pressure in the arteries. Its early occurrence is especially due to psychical influences. Of forty-nine young arteriosclerotics, thirty-seven had more or less severe neurasthenia. The deposit of lime is a secondary process, purely protective, making the arteries stronger.

The only way apparently by which the organism is able to defend itself from the results of psychical, toxic, and chemical insults is by the circulation. The heart responds by increased or decreased power and the vascular system by dilatation or contraction, either local or general. The two agents which can influence the vascular system are the sympathetic nervous system and the secretion of the adrenals, which are in reality a part of that system. The organism, therefore, has apparently two avenues of response more or less interwoven—the nervous response, which is practically instantaneous, and the chemical, the secretion of the adrenals, which though rapid is much slower than the nervous, but likewise more or less evanescent. The increased secretion of the glands is probably an effort to combat fall in blood pressure and other detrimental factors resulting from any demand made upon or any insult to the body.

The adrenal secretion, too, has a special affinity for the vessels of the kidneys. Small quantities, though they have no effect on the general blood pressure, will induce a contraction of the vessels of the kidneys, thus affecting unfavorably the nutrition of those organs and inducing a sclerotic condition of the vessels.

CASE I.—E. A. K., forty-four years old, undertaker, married, one child, Gloversville, N. Y., on December 2, 1911,

consulted me on account of sick headaches. He slept soundly and awoke each morning with a frontal headache which extended back to the occiput and lasted several hours. He had nausea and a desire to vomit. The stomach was distended with gas and he raised a little white foam. He was a very active, nervous man, and worked hard under great pressure the rest of the day. His family history was negative and his previous health had always been excellent, except for constipation and flatulence. Used no alcoholic stimulants, smoked moderately, and denied venereal disease. The physical examination (abbreviated) showed a hypertrophied heart, markedly accentuated second aortic sound, a strong, regular, incompressible pulse, with a blood pressure above 260 mm. (Stanton). His urine was acid, 1,012, faintest trace of albumin, no sugar, no indican, no bile, and a very few hyaline and granular casts. The blood was negative, except a slight anemia. The gastric contents gave a total acidity 88. Free hydrochloric acid 68. No blood. Microscopically there were epithelial cells and long and short bacilli. X ray examination of the gastrointestinal tract by Doctor Holding showed a high stomach with no retention. Six hours after ingestion, the bismuth filled the ascending and transverse colon. There was a pronounced ptosis and doubling over at the hepatic flexure. The bismuth was retained in the colon longer than twenty-four hours and persisted in the cecum in apparently the same quantity after twenty-four hours, as had been shown at eight hours.

Treatment was directed to the intestinal tract and for a brief time he seemed improved. Then his condition rapidly grew worse with markedly dilated heart, mitral, and aortic murmurs, palpable liver, rapid pulse, with urine containing a large quantity of albumin and many casts. He died within six months from uremia.

When first seen, the patient was indignant upon being told that he was seriously ill, and stated that only a short time before he had been accepted for ten thousand dollars' life insurance. In spite of efficient treatment at home and later at a well known sanitarium, he progressively failed.

His death aroused the thought whether something more could not have been done for him when first seen and when outwardly he appeared in good, even robust, condition.

No line of treatment was able to prevent the rapidly oncoming nephritis, but it does seem as if his tremendously high blood pressure should in some way have been reduced. This did not yield materially to any kind of therapeutics and might in part have been responsible for his nephritis. The analogy to the hypersecretion of the thyroid and the correction of that condition by the removal of part of that gland is striking, and suggestive of the removal of an adrenal in whole or in part for its chronic hypersecretion.

CASE II.—D. L. H., aged fifty-two years, widower, collector, of Cobleskill, N. Y.; patient of Dr. John J. Beard; became ill on January 10, 1913, with nausea and vomiting, after having been out part of the day collecting for an industrial insurance company. The following night he suffered still more from nausea and severe vomiting. Not improving, he consulted, on January 14, 1913, Dr. E. A. Vander Veer, who sent him to the Albany Hospital and referred him to the writer. He entered the hospital, complaining of nausea, vomiting, and a dull pain in the nape of the neck which extended over his head. He stated that during July, 1912, he had had a series of chills each night, at times with nausea and sweating, and lasting three weeks. He made a partial recovery, but felt dragged out all last summer. His sight became impaired and albumin was then found in his urine. Friends stated that he became involved in an altercation, on July 4, 1911, and received some blows upon his head, which they believed caused his severe headaches and made him thereafter forgetful and act strangely at times.

Family history was unknown; the patient had the usual diseases of childhood and a severe attack of typhoid fever, twenty years ago, lasting three months. Venereal infection



denied. He rode a bicycle about the country in collecting. He was a man of powerful physique and accustomed to ride up steep grades. He used whiskey and malt beverages in excess. He had been badly constipated for the last two or three years and had continuously taken medicine. The physical examination (abbreviated) showed cardiac dullness increased to the left, with the apex beat in the nipple line. The second aortic sound was a sharp, loud click, while the second pulmonic sound was normal. No murmurs determined at any of the orifices. Lungs negative. Liver dullness began at fifth interspace and extended one finger's breadth below the free margin of the ribs. Spleen normal to percussion, not palpable. No tenderness over abdomen. Pulse regular, 74, strong, and incompressible. Blood pressure (systolic), 280 mm. (Stanton). The urine 1,010, amber, acid, albumin strongly positive, sugar negative. Microscopically hyaline and granular casts, epithelia, and crystals. Blood: Red cells, 3,000,000; white cells, 10,000; polymorphonuclears, ninety per cent.; lymphocytes, small, 5.7 per cent.; lymphocytes, large, 1.8 per cent.; transitional cells, 2.5 per cent. Wassermann-Noguchi reaction was negative. Cystoscopic examination by Dr. James N. Vander Veer: Meatus small; no malformations. Urethra easily patent to No. 28. No especial tenderness. Cystoscope passed without anesthesia; bladder capacity, twelve ounces. Phenolsulphonphthalein test: First appeared through catheter in fifteen minutes. First hour, nine per cent.; second hour, three per cent.

Examination of the eyes, by Dr. C. H. Moore, showed pupils normal in size and reaction. In the right eye the outline of disc was somewhat indistinct. Veins tortuous and the arteries smaller than normal. Several yellowish white particles of exudation irregularly placed and varying in size between the optic nerve and macula. None observed at the macula. In the left eye the outline was also slightly indistinct, the veins were tortuous and arteries small. A few scattered spots of exudation at temporal side of optic nerve, but not as many or as marked as in the right eye.

He was put to bed, placed upon a low diet of buttermilk and water and received calomel. Complained of severe headache, was nauseated and vomited. Nitroglycerin, grain 1/100, prescribed at first, every four hours, then every two hours, and then grain 1/50 every hour, with no appreciable effect upon the blood pressure. Saline enemata per rectum, sixteen ounces, three times a day, by Murphy drip, when the stomach was irritable. On January 24th, twenty ounces of blood were removed with a slight reduction of the blood pressure for only a few hours. The nausea and vomiting temporarily ceased, but he became confused mentally and at times was very dull and apathetic. At other times, he complained of his severe and almost unbearable headache.

On January 30th, a lumbar puncture was done and several ounces of clear fluid withdrawn under apparently increased pressure. The systolic pressure fell from 260 to 220 for a few hours and then it returned to 250 mm. Hg.

The headaches became so unbearable and his general mental condition so bad, that the patient and his friends willingly consented to operative procedure when it was suggested that the removal of one adrenal might modify his condition. January 31st he was operated upon by Dr. E. A. Vander Veer under ether anesthesia and the left adrenal was removed. He took the anesthetic exceedingly well, and during the operation his blood pressure fell from 250 to 130 mm. It then gradually rose until it reached 200 mm. one hour after the operation. Immediately after this, it fell rapidly and within another hour it reached 100 mm.

His condition seemed very grave and Cheyne-

Stokes respirations appeared. Adrenaline, one in 1,000, intravenously, camphorated oil, digitaline and morphine hypodermically, and saline infusions were administered. The blood pressure gradually rose to 120 mm. and continued to rise during the night, so that the following morning it was 150 mm. The following day, he seemed better mentally than he had been since his entrance into the hospital and his general condition was excellent. There now developed a suppression of urine, and in twenty-four hours only three ounces were obtained by catheter and in the following twenty-four hours thirteen ounces. He then began to vomit almost constantly, and this continued for two days, when it occurred only at intervals. On February 6th he had a severe general convulsion, was restless and delirious. February 7th and 8th were fairly good days with practically no vomiting and the secretion of large quantities of urine. On February 9th, he was manifestly weaker, became restless, and edema of the lungs developed with dyspnea. His condition gradually grew more serious and he died on February 10th from edema of the lungs.

#### POST MORTEM FINDINGS.\*

Post mortem examination at the Albany Hospital, February 10, 1917, for Doctor MacFarlane by Doctor Bernstein and Doctor Fox. Damon Huff, aged fifty-two years, nine hours post mortem. The body is that of a fairly well developed and well nourished white male. Rigor mortis is present, and there is moderate lividity of the dependent parts. The pupils are midwide and equal. Edema is absent.

*Heart.* Weight, 480 grams. The right heart is markedly distended and contains a small amount of bloody fluid and crural clot. The left heart is firmly contracted. The consistence of the cardiac muscle is normal.

*Lungs.* Crepitus is present throughout both lungs, but diminished in the right lower lobe posteriorly.

*Spleen.* Weight, 150 grams; somewhat softer than normal.

*Gastrointestinal tract.* The stomach is moderately distended and contains a large amount of semisolid yellowish mucoid material.

*Kidneys.* Combined weight, 290 grams. Cut surface is of a grayish red color. The cortex measures six mm. The capsule strips readily, exposing a coarsely granular surface. There is a large amount of peripelvic fat. The left kidney is surrounded by many firm adhesions and a small amount of old hemorrhage. These adhesions bind it everywhere to the surrounding tissues.

*Adrenals.* The left adrenal is absent. The right adrenal is not remarkable.

*Aorta.* It contains many elevated areas of yellowish color, varying in size. Some are soft in consistence, and others are calcified. The circumference of the thoracic aorta is apparently larger than normal.

*Brain.* Weight, 1,230 grams. The consistence of the hemispheres is normal. The cortical vessels are markedly engorged. The pia mater shows marked opacity, particularly in the sulci. In places the pia mater is elevated by an accumulation of clear fluid. The circle of Willis shows marked sclerosis, there being numerous ring deposits scattered along the course of the vessel. The sulci are well marked over the frontal lobes. Serial section of the cerebral hemispheres, basal nuclei, pons, cerebellum, and medulla reveals nothing remarkable. There is no evidence of hemorrhage, tumor, or softening. The vessels in the floor of the lateral ventricle are markedly engorged. The sinuses contain crural clot. The middle ears are negative. The mastoid cells are normal. Base of brain is normal.

*Anatomical diagnoses.* Chronic interstitial nephritis; chronic perinephritis (left); hypertrophy of heart; chronic hepatitis; chronic pleuritis; chronic pancreatitis; chronic prostatitis; chronic cystitis; chronic leptomenigitis; acute congestion and edema of lungs; acute congestion and

\*Only the essentials are given. Absence of comment means a normal condition.



edema of brain; hypertrophy of prostate; absence of left adrenal; arteriosclerosis.

*Histology.* Heart negative. Many of the alveolar spaces of lungs are slightly dilated and filled with a serous exudate. There are marked hyaline changes in the walls of the smaller bloodvessels of the spleen.

There is an increase of the interstitial connective tissue of the kidneys. The glomerular tufts show thickening of the epithelium, and occasionally a marked hyperplasia of the cells of Bowman's capsule. Many of the glomeruli show complete sclerosis. The epithelium of the tubules in some areas is poorly preserved, the protoplasm granular, and the nuclei absent. Tubular casts are frequent. The smaller vessels show a marked thickening of the intima. The capsule is infiltrated with small round cells, and on the external surface there is organizing blood clot.

## ALLERGY AND VACCINES IN PROPHYLAXIS AND TREATMENT.\*

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Omaha.

Immunity is that state of the body cells and fluids which is resistant to the injurious effects of bacterial and other foreign proteins. It may be natural or acquired, active or passive. We speak of immunity to colloidal substances such as proteins, and of tolerance to crystalloid substances like the alkaloids. It is well known that one attack of many contagious and infectious diseases, such as measles, scarlet fever, smallpox, and typhoid fever, renders the body highly resistant, for a long time, perhaps for life, to a second attack of that disease, but no other, i. e., the immunity is specific. Jenner discovered in 1796 that smallpox, in the modified form after passage through the cow, could be transmitted to human beings, and this rendered them almost as immune as an attack of the disease itself.

Pasteur showed that the modified living organisms of chicken cholera and anthrax could be inoculated into animals and thus render them immune to subsequent infection by these same organisms, even if virulent. In his work on rabies, Pasteur took advantage of the long incubation period to inject a modified virus, and thus render animals already infected immune. This work is really prophylactic, not curative. From this time forth, many experiments were performed on men and animals by injecting dead or modified living germs for protection from a variety of diseases.

Dead and living organisms have been treated by their own immune serums and thus prepared for the immediate action of complement when injected. But these methods have been used with success, up to the present time, only in typhoid and paratyphoid fevers, and to a less extent in cholera and plague. Specific vaccines have been successful, as prophylactics, in these few diseases only, but in the great majority of infections, in men and animals, the results have not been promising; and yet, according to our fundamental principles of immunity, we have here the greatest field for the action of vaccines, as we naturally could not expect as good results, when the vaccine was introduced after the disease had commenced, as earlier. Thus, Jenner knew that vaccination with cowpox, after the onset of smallpox, did not influence the course of the disease. Pasteur

and all workers since his time, knowing the possibilities of curative as well as prophylactic therapy, report practically no remarkable results. In animal pathology, as far as I know, there are no natural diseases in which curative vaccines are of real value. Great hopes were based on serum therapy, but only diphtheria and tetanus toxins produce antitoxins in sufficient quantities to be available in the prophylaxis and treatment of the disease.

Koch's work on tuberculin in 1890 was the first attempt to apply vaccine therapy to human beings, and was a failure on account of the too large doses used at that time. Many attempts have since been made with all sorts of modifications of the bacilli, but a curative vaccine has not yet been found. However, tuberculin, when used with care and discrimination, is of value in immunizing against the tuberculous toxin. In 1895 Matthes (1) demonstrated that the reaction considered specific for tuberculin could be produced when deutoalbumose was used, and showed that what difference there was, could be explained by the fact that tuberculin contained toxic peptones in addition; he even suggested that all fever was caused by protein split products due to proteolytic ferments, thus antedating the work of Vaughn and Abderhalden on allergy.

The history of the use of vaccines in typhoid is quite similar. Fraenkel in 1893 demonstrated in a series of cases the value of dead typhoid bacilli injected subcutaneously. Rumpf followed with a series of cases showing as good results when *Bacillus pyocyaneus* vaccine was used, thus questioning the specificity of curative vaccines. The recent discussions about the Schäfer vaccine may be thus explained, as many competent observers assert that it does, at times, produce striking results in infectious diseases. Whether or not it is a good remedy we will not discuss, but it certainly is not specific. Wright (2) says: "All those who have had much experience with vaccines will have seen cases where therapeutical effects lying quite outside the range of the particular vaccine employed, and therefore, as we thought, not quite creditable to science, have been obtained by vaccine therapy." R. Schmidt in 1910 (3) asserted that, following vaccine therapy of any kind, the body becomes resistant to a variety of the commoner infections.

But it is in the treatment of typhoid fever that the greatest progress has been made in this direction. Numerous vaccines have been made and used subcutaneously during recent years and the results have been encouraging, but it was not until the intravenous use was begun that complete abortion of the disease was obtained. Then Ichikawa (4) found that his paratyphoid patients recovered with typhoid vaccine. Likewise Kraus (5) found that colon vaccine gave the same result; and that typhoid vaccine greatly benefited certain cases of pelvic inflammation. Then Ludke (6) used a nonbacterial protein split product, a deutoalbumose, with equally good results (7). Besides these protein split products and the effects of homologous and heterologous serums there are observations on the effect of egg albumen, of milk injected intramuscularly, and of the leucocytic extract of His and Zinsser.

Mueller and Weiss (8) report striking results in

\*Read before the Southwestern Iowa Medical Society, February 15, 1917.

arthritis, especially gonorrheal arthritis, by the intra-gluteal injection of sterile milk and sodium nucleinate, both of which cause a marked reaction. L. D. Smith (9) shows that in gonorrheal infections an anaphylactic reaction obtained with horse serum, whether normal or gonococcic, is of great benefit, provided only that the allergy is sufficient. Equally good results are reported by Miller and Lusk (10) in acute and chronic arthritic conditions, by intravenous injection of typhoid vaccines and proteoses. Scattered throughout the literature are reports of many observations that in the treatment of infections, both acute and chronic, good results have followed the use of nonspecific substances, but since they were not in keeping with the dominating conception of specificity they were regarded with incredulity. These results were obtained with various suspensions of organisms, normal horse serum, diphtheria antitoxin, and various protein solutions, all of which when given in sufficient dose gave rise to febrile and leucocytic reactions, which were followed by at least temporary clinical improvement. There is no evidence, according to Mathers (11), that the specific in any way excels the nonspecific antigen. He has also observed that citrated human blood produces reactions exactly similar, when given, as is usually done, in transfusions. Naturally the interpretation given was that these were specific responses, but now we are inclined to think them nonspecific, and of the same nature as those following injection of any foreign protein. In regard to the sources of the antibodies, we formerly regarded the body cells as the chief place of origin, but Becht and Leuckhart (12) have shown that the hematopoietic organs are the chief source, and anything which stimulates them would flood the body and blood with antibodies and overcome the infection. Thus the present conception is that the antibodies do not reach the blood by the lymph, as they must if formed by tissue cells. Wright thought that injection of vaccines was followed by a negative phase of less resistance. But Bull (13) has shown that the intravenous injection of typhoid vaccine into immunized rabbits was followed by a rapid increase in the antibodies and no negative phase. Dunklin (14) finds that a marked increase in the antibodies follows the intravenous injection of proteoses in immunized rabbits. Hence, in a general way this mechanism of immunization and cure consists of a selective stimulation of the hematopoietic system by nonspecific substances resulting in the production of specific antibodies and allergic phenomena.

My own experience with vaccines, which began in 1906, has included a great variety of infections, both acute and chronic. I have seen in colon infections and in arthritic cases, definite reactions, with chill, fever, leucocytosis, followed by definite improvement. This is a common experience, especially with those who use large doses of vaccines, and has usually been explained as the specific response of the body to its autogenous virus. But the present tendency is to regard such reactions as nonspecific and purely protein in nature. Wright, as I said before, regarded this method of treatment in acute infections as irrational and contraindicated, but the facts here marshalled show that the undoubted curative effects

are due to the nonspecific factors in the vaccines rather than the specific substances.

Jobling and Peterson, and Gay and his coworkers regard the hyperpyrexia and leucocytosis, which occurs in recovery from typhoid in this form of therapy, as due to the stimulation of the hematopoietic tissues, which results in flooding the body with antibodies, which are specific though the stimulus may not be so.

In many infections, such as the local staphylococcus infections of the skin and in some others, so many good reports have appeared that it is possible that the immediate results are due to the nonspecific foreign protein, curing by allergy with the specific portion of the protein molecule working to prevent recurrence. Thus, where both curative and prophylactic effect is desired, the autogenous vaccine would be indicated, rather than any other foreign protein, which might have only a curative action.

Subcutaneous injections of foreign proteins behave similarly to intravenous injections, when the doses are large enough, but the reactions are less sudden and severe. The severe reactions after the intravenous injections, while apparently alarming, have, so far as present reports show, been entirely free from danger and no harm has resulted. Great numbers of patients are now being treated and will continue to be treated by vaccines, for all sorts of diseases, and much harm is being done, so, I think, we should take a conservative position and advise against the haphazard use of unstandardized bacterial proteins in all kinds of obscure conditions. If it is proved that, for therapeutical purposes, a foreign protein may be used, then some form which can be sterilized and standardized and its dose accurately measured should be adopted, such as a proteose, but this cannot take the place of the specific bacterial protein in sensitized, or ordinary vaccine for immunizing purposes.

*Summary.*—Parenteral injection, especially intravenous, of foreign proteins causes a chill, high fever, and leucocytosis as well as certain changes in the blood, especially an increase in the proteolytic ferments. These proteins may be bacterial or they may be serum, milk, or proteoses. After such an injection, when followed by a definite reaction, marked improvement or permanent cure may result in typhoid fever and arthritic and gonorrheal affections. Whether this is due to the pyrexia, leucocytosis, or ferment increase we do not as yet know. At present, the possibilities are many, and the outlook bright for the cure by this means of many diseases in men and animals. The chief use of specific vaccines is protective, of the nonspecific protein therapy, through allergy, curative.

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## CLINICAL SURVEY OF ACUTE PULMONARY AFFECTIONS OF 1916.

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The gripe and pneumonia epidemic of 1916 gave us an opportunity to study an interesting and varied number of pneumonic invasions which seemed of sufficient clinical importance to report. Our material consisted of twenty-seven patients admitted between January 1 and April 1, 1916. These were investigated from the following standpoints:

1. *White cell count.*—This was studied because of its possible bearing on prognosis and differential diagnosis. In a few instances, a leucopenia suggestive of tuberculosis was present, but later clinical development and repeated sputum examinations showed that tuberculosis could be excluded. In one instance of leucopenia in a man of sixty years of age with an acute pneumonic involvement of the right upper lobe, marked cyanosis, and toxic symptoms, the leucocyte count on admission was 6,000 cells per cubic millimetre; twenty-four hours later it dropped to 4,000. The patient died the same night. This is the lowest count which occurred in our series; it was apparently indicative of the patient's very low resisting power. In the case of a man with pulmonary involvement of the left lower and part of the right lower lobes, the daily leucocyte count was 5,000 until the day of the crisis; the white cell count then became normal and remained so until laryngeal complications supervened two weeks later. A third patient was a man with consolidation of the left lower lobe; pleurisy with effusion developed one week later. There was a persistently low leucocyte count of 6,000. Suspicious physical signs of tuberculosis were present at the left apex. Later physical and fluoroscopic examinations and the clinical course excluded the presence of tuberculosis. A fourth patient had pneumonia of the left base and of the right lower lobe. The disease lasted five weeks. The leucocytes varied between 7,000 and 14,000, the differential count was normal, except at one examination, when it was 18,000, and the polymorphonuclear percentage, ninety-three. There was no correlation between this irregular leucocytic picture and change in the clinical course or symptomatology of the disease.

Though all types of invasions, localizations, toxicity, and complications were encountered, the highest leucocytosis in our series was 25,000. We did not meet with the sharp rise in leucocytosis sometimes encountered in pneumonia, and so suggestive of a pneumonic involvement in a new lobe or further spread of the inflammation in the same lung.

*Blood Pressure.*—According to the so called "Gibson law," a systolic blood pressure in millimetres of mercury corresponding roughly to the cardiac rate in pneumonia is of good prognostic import. When the cardiac rate exceeds the systolic blood

pressure, it presumably marks a poor prognosis. Though we have not attempted a detailed study of this phenomenon, our blood pressure readings taken every two or three days do not bear out Gibson's assertion. In a previous careful study made by one of us (S. N.) to determine the accuracy of this observation, not even a rough clinical approximation of any prognostic value could be discovered between pulse rate and blood pressure. In the present series of cases, we have reached the same conclusion; indeed, except in fatal cases in the agonal stages, the blood pressure bore no tangible relation to toxicity, pulse rapidity, nor to any clinical phase of the pneumonia.

*Therapy.*—Our drug therapy has consisted in the main of some preparation of digitalis, usually the tincture, given in fifteen minim doses, three times daily or oftener; digalen fifteen minims intravenously; of caffeine sodium benzoate, five grains every four hours hypodermically; of a twenty per cent. camphor in oil solution, fifteen to twenty minims every four hours hypodermically; or of strychnine, *per os* or subcutaneously. While the above were the usual doses administered, their size and frequency were changed to correspond with such indications as cyanosis, dyspnea, and toxicity. With the commencement of expectoration, ten to fifteen minims of liquor ammoniæ anisatus, every hour or two, was added. Whiskey was given only occasionally. At times, adrenaline was used. At the inception of the disease, when pain was present, sufficient morphine was given to make the patient comfortable.

For the relief of abdominal distention, a daily soapsuds enema and one half c. c. of a hypodermic solution of pituitrin was given; ten minutes after the hypodermic, a rectal tube was inserted. These procedures were usually followed by relief of the distention.

We deemed it advisable to use cardiac stimulants early, in order to avoid, if possible, later circulatory failure. In the few cases of auricular fibrillation that occurred in the course of the pneumonia, we noted no effect of digitalis upon the cardiac rate; the cardiac irregularity continued or ceased without any reference to the type, amount, or time of stimulation. Further, we did not discern any effect upon the toxicity, the course of the disease, or upon the time of crisis from stimulation.

It has recently been asserted that camphor in oil has a definite chemotactic action in pneumonia, especially when one or two large doses are given subcutaneously. We used the drug not only in this manner, but also in smaller and more frequent doses. We persisted in its use despite the fact there exists good experimental evidence against its presumed chemotactic properties. For example, Winternitz and Herschfelder (1), in a series of experiments in animals in which pneumonia was artificially induced, found that the camphor oil injections did not prevent the usual fatal outcome, nor lessen the toxicity of the disease. In our series of cases we have noted no effect of any kind upon the pneumonia as the result of camphor oil therapy.

Venesection was used in patients who were mark-



edly cyanotic or who had pulmonary edema; the amount withdrawn varied from six to ten ounces. Cyanosis was usually temporarily relieved. In one or two instances the procedure seemed to have a definite therapeutic effect upon the final outcome of the disease.

In a few of our cases, antipneumococcus serum was given intravenously. The serum was obtained through the courtesy of the Health Department of the City of New York and that of the Rockefeller Institute of New York city. The method for obtaining these specific organisms was as follows: The

corroboration of the organism may find an appropriate place in private practice. Because of the small number of cases in which the serum was used, we do not feel warranted in making any deductions.

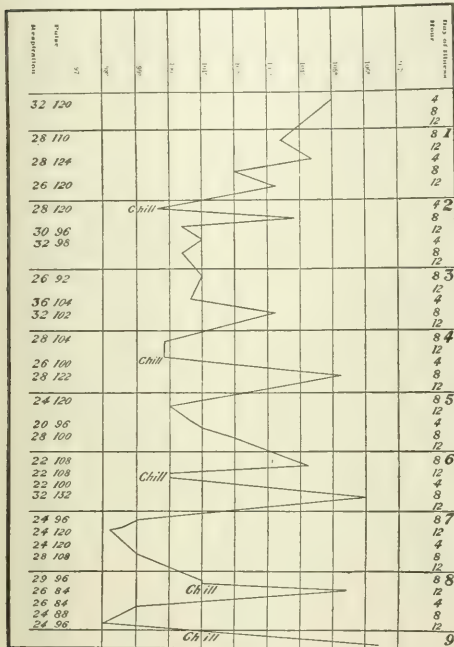
*Pulse irregularities.*—The most common arrhythmias encountered were sinus arrhythmias and extrasystoles; these occurred at the crisis and were occasionally accompanied by precordial pain in the left nipple region. Dyspnea or other evidence of endocardial or myocardial involvement was not present. The arrhythmias usually disappeared in two or three days without medication.

In one of our series, a patient fifty-two years of age, in whom at necropsy marked cardiosclerosis was found, auricular fibrillation was present when he was admitted to the hospital; this continued throughout the course of the pneumonia. From the necropsy findings, it seemed probable that the fibrillation was due to the chronic cardiac disease and antedated his pneumonia. One other case of fibrillation developed during the course of pneumonia.

Another patient, a man thirty-seven years old, with an acute pneumonic involvement of the left upper lobe and an apparently normal cardiovascular system, entered the hospital one week after the onset of the disease. The temperature ranged between 101° and 103° F. During the entire febrile period of six days, the pulse and ventricular rate was sometimes as low as fifty-four beats per minute; only once did it reach 100. The average rate was sixty-six beats per minute. Polygraphic tracings showed normal sequential rhythm. There was no correlation between this true bradycardia and other clinical evidence of vagus excitation. In a third patient with acute toxic lobar pneumonia, a pulse rate of sixty developed on the day of the crisis; the bradycardia lasted one week. A fourth patient manifested an arrhythmia three days after the crisis; polygraphic tracings showed it to be due to sinus slowing and extrasystoles.

There is an impression that the presence of arrhythmias in pneumonia is a sign of toxic involvement of the myocardium, endocardium, or of both. It is our belief, on the contrary, that the cardiac arrhythmias appearing during the course of, or at the crisis of, pneumonia, are probably due in some unknown manner to the neurotropic effect of pneumonic toxins upon normal cardiac nerve control. The assumption is to a certain extent substantiated by examinations after several years of other patients, who, during their pneumonia, had shown similar arrhythmias (S. N.). Even when auricular fibrillation had been present, we had not noticed that it or any other irregularity was a precursor of endocardial or myocardial disease.

When appearing at the crisis and not accompanied by heart failure from the pneumonia itself, medication for these irregularities is rarely required. An exception may be extrasystoles, which produce subjective sensations of faintness; here the bromides may be of value. If arrhythmias are accompanied by dyspnea, cyanosis, and signs of failing circulation, they are of serious import. As an instance, a man of sixty years, who had been ill two days with pneumonic involvement of the right base who showed marked dyspnea and cyanosis, died within



Temperature chart of a case of lung abscess following pneumonia.

patient's sputum, diluted in normal saline, was injected into the peritoneal cavity of white mice; at the end of about twelve hours, the microorganism was isolated from the resultant peritonitis. If Type I (Cole's classification) was present, fifty to 100 c. c. were injected into the patient intravenously. The gravity method, a technic somewhat similar to salvarsan injection, was employed; the warmed serum was poured into a glass funnel, which was connected by means of three feet of rubber tubing to a needle already *in situ* in one of the veins at the bend of the elbow. In urgent cases, we soon recognized the importance of immediate injection of the serum, even before laboratory reports were obtained, if favorable results were to be expected. We noted no harm from this time saving procedure, even though later laboratory reports did not corroborate the presence of organisms from Type I. Perhaps immediate serum injection and later laboratory

twenty-four hours of the development of auricular fibrillation; large doses of digitalis and other medication had no effect upon the arrhythmia or upon the circulatory failure.

*Rusty sputum and hemoptysis.*—Out of eighteen cases in which the sputum was carefully observed for this characteristic, typical rusty sputum was found in twelve. In two, hemoptysis was a marked feature. In the first of these, the patient expectorated six ounces of blood on the third day of his illness. In the second, a boy of seventeen years with pneumonia of both bases severe hemoptysis developed the fourth day of his illness. Both patients recovered without further complications.

*Nephritis.*—As evidenced by the presence of hyaline and granular casts, and of albumin, there were ten cases of nephritis. In two of these, the nephritis lasted one week; in the others, the average duration was two or three days. In one case alone was there a marked hemorrhagic nephritis. This patient entered the hospital with a toxic pneumonia and died four days after admission, apparently from toxemia rather than from the renal complication. In no other instance did the nephritis give rise to clinical symptoms or call for any special therapy; the nephritis seemed to be an index of the severity of the disease. We had no opportunity for further study of the urine of these patients after their discharge from the hospital.

*Diagnosis by physical signs and by fluoroscopy.*—We shall not here include pneumonic suppuration which is discussed separately. The tabulation describes in sufficient detail the localization of the pneumonic areas at the beginning of the disease. Frank physical signs of pneumonia were frequently absent upon hospital admission. Often, the only suggestive signs were a few localized crepitant or subcrepitant râles; sometimes in addition distant bronchovesicular breathing was found. Change in the percussion note was commonly absent. Though physical signs were thus often atypical, the acute onset and other clinical data were in every instance sufficient to establish the diagnosis immediately. Within a day or two the diagnosis was clinched by the addition of one or more classical signs. In a few instances of sudden massive involvement of large pulmonary areas, cavernous breathing suggestive of cavitation was present; this type of breathing disappeared with the onset of the *râle redux*.

In a number of our cases a fluoroscopic study of the pneumonic involvement was instituted. Most of the patients were examined several times. The patients were fluoroscoped in a sitting posture in an anterior and posterior position. By this means, much important and interesting information and data were obtained, especially in comparison with the findings upon physical examination. A few salient points stand out as a result of our study. In no instance did the fluoroscopic examination reveal pneumonia in areas not previously diagnosed by physical examination. The chief distinction lay in the amount and shape of the completely consolidated areas, facts we found it impossible to diagnose without fluoroscopy. Thus, in a few cases, the area of pneumonic involvement consisted of a sharply delineated triangle. Another patient, fluo-

roscoped and, later, röntgenographed, showed a well defined belt like infiltration. The physical signs pointed to much more massive involvement in the latter instance.

An interesting sidelight on the question of resolution in pneumonia was obtained by systematic fluoroscopic study of cases during convalescence. As a result of our observation we have concluded that localized crepitant and subcrepitant râles, sparse or numerous, heard in convalescent pneumonia and usually regarded as due to bronchitis alone, are actually the remains of pneumonic consolidation. In almost every instance, there was a distinct, though faint, fluoroscopic shadow denoting some consolidation over the area of localized râles. This observation is of importance because it would tend to show that complete resolution does not take place for some weeks after the crisis, and that the physical signs of localized bronchitis may be interpreted as evidence of incomplete resolution, even when the usual physical signs of consolidation are absent.

*Lung suppuration.*—Under this heading are included four cases with definite abscess formation. We agree with Manges (2) that the division into bronchiectatic and bronchopneumonic cavities is purely arbitrary and artificial, and that the term "pneumonic suppuration" best covers the clinical and pathological picture. Our four cases represent an unusually large percentage of suppurative conditions following pneumonia. Whether this is due to the type of the pneumonic infection prevailing this winter, or is merely fortuitous, we are not prepared to state. These cases are of sufficient clinical interest to report individually.

CASE I.—J. S., aged twenty-three years, entered the hospital on February 1, 1916. His past history is irrelevant; the present history began two weeks ago with a chill and sticking pain in the left side of the chest, aggravated by inspiration. Two days later, he developed a similar pain in the right chest. Upon admission the sputum was mucopurulent. For five days the temperature was irregularly remittent, and varied between 100° and 104° F. Physical examination revealed sibilant and sonorous râles over both lungs with no evidence of a localized pneumonic process. The blood pressure was normal. Two days later, physical examination revealed a small area of dullness and amphoric breathing near the right scapular border. Coin and succussion signs were absent. A diagnosis of lung abscess was made. This was later confirmed by fluoroscopy. Upon moving the patient from side to side, the level of the fluid was sharply demarcated in the x ray examination, even ripples being seen on the surface of the fluid. Two days later, the patient began to expectorate foul smelling sputum. This type of expectoration continued for five days, during which the temperature gradually reached normal. The abscess cavity again filled up, there was a slight exacerbation of the temperature and of the other symptoms; the relapse lasted a few days. Some weeks later, the patient was again examined and fluoroscoped; the lung appeared normal. Of added interest in this case was the fact that for several days before the appearance of the signs of abscess, the physical findings were those of a generalized bronchitis alone.

CASE II.—J. A., aged forty-four years, a very thickset individual, came to the hospital with the history that eleven days before admission he had irregular chills, headache, and general muscular pain. He at first expectorated "whitish" sputum, which four days later became blood tinged. He complained of sticking pains in the right axillar on deep inspiration. His previous history is of no etiological significance. Examination revealed a few crepitant râles in the lower part of the right axillary region, and an indefinite area of dullness over this site. The heart



and the left lung appeared normal. Three days later, when lying flat, there was a slight dullness, diminished fremitus, and breath sounds in the right infraclavicular region; in the sitting posture the breathing became vesicular. The temperature was irregularly remittent and ranged between  $101^{\circ}$  and  $104^{\circ}$  F. The leucocytes ranged between 20,000 and 23,000 with a polymorphonuclear count of eighty-four per cent. The sputum soon became mucopurulent and fetid. Though a lung abscess was diagnosed, its location could not be determined from the indefinite physical signs. Fluoroscopy and roentgenograms revealed a very large abscess in the middle of the right upper lobe. Upon exploratory chest puncture over the site of the abscess, a few drops of very offensive, grumous, bloody fluid were withdrawn. After two weeks of a decidedly septic course during which the patient was manifestly losing ground, operation was decided upon. Two days after operation the patient developed edema of the lungs and died. At necropsy, there was found a large single abscess, nontuberculous in character, the size of a small orange, involving chiefly the upper and a very small part of the middle lobe. The cavity was surrounded by a zone of pneumonic infiltration.

CASE III.—F. P. aged twenty-eight years, had always been a heavy whiskey drinker and a heavy smoker. His illness began four days before admission with chills, fever, dry cough, and pain in the right side of the chest. Upon physical examination, typical signs of pneumonia at the right base were found. Fluoroscopically and by means of roentgenograms, the pneumonic area was seen to be triangular in outline. The temperature ranged between  $103^{\circ}$  and  $104^{\circ}$  F. The patient was very delirious, probably partly attributable to alcoholism. After one week, the temperature became somewhat lower and the delirium less marked. The fever ranged between  $101^{\circ}$  and  $102^{\circ}$  F.; flatness and distant bronchial breathing developed at the right base posteriorly. The chest was aspirated and pus was withdrawn. A diagnosis of empyema was made. The patient was operated upon, a piece of rib resected and a drainage tube was inserted. One week after the operation the temperature still ranged between  $101^{\circ}$  and  $102^{\circ}$  F. Pneumonia and later empyema developed in the upper lobe of the right lung. A needle was introduced into the third right interspace anteriorly and pus was withdrawn. The patient was again operated upon forty-seven days after admission. A part of the third rib was then resected anteriorly, and drainage tubes introduced. For a few days, the fever became less; it then rose, with septic remissions, to  $104^{\circ}$  F. daily. The drainage tubes in the upper and lower chest wounds were frequently examined but were found in proper position and draining well. With the last septic rise of temperature, examination revealed signs of amphoric breathing at the right apex over a small area, supraclavicularly and infraclavicularly. The diagnosis of lung abscess was made. This was corroborated by fluoroscopic examination and roentgenograms. About ten days after the second operation, there was a sudden gush of pus through the upper drainage tubes, apparently due to the abscess breaking through the empyema incision. The signs of cavitation at the right apex rapidly disappeared. Within a few days, the temperature became normal and remained so. Thereafter the patient enjoyed an uninterrupted convalescence.

CASE IV.—P. H., twenty-five years of age, gave no family or other history connected with his present illness. Three days before admission, he had a chill and severe headache. The following morning he developed severe generalized muscular pains, especially over the right shoulder. He also vomited. He had no cough. On admission he complained of severe headache, general weakness, and some slight stiffness of the neck. The urine frequently showed a few white and red blood cells. His throat was somewhat red. His white blood count was 7,000, polymorphonuclears, seventy-one per cent. The only abnormal physical signs in the chest were sibilant and sonorous râles over both lungs, more marked on the right side. Widal's and blood culture were negative. The urine was cultured and found negative. The spinal fluid was normal upon cytological and chemical examination, and its culture showed no growth. Plasmodia were not found in the blood. The eyegrounds were normal. As shown by the chart, the temperature ran a very irregular and peculiar course. There were severe chills once or twice daily,

the temperature rising as high as  $106^{\circ}$  F., and falling to normal within a few hours. Repeated blood examinations during the chills and at the height of the temperature always showed a white count below 8,000. The spleen was not palpable. In the absence of bacteriological and other findings, and because of the physical signs of bronchitis, a diagnosis of a probable catarrhal affection (grippe?) was made. The irregular temperature was considered as a possible and unique prodromal stage of some developing pulmonary infection. The patient left the hospital. It was learned that he afterwards entered another hospital where a laparotomy was done because pus was suspected in the abdomen. None was found. Later a lung abscess developed, for which at last reports operation was being considered.

*Inflammatory joint manifestations following pneumonia.*—There were two patients in whom this complication developed. Histories of these follow:

CASE V.—L. G. had a typical pneumonic invasion—chill, fever, and pain in the right side of the chest. There was consolidation of the right lower lobe. The temperature ranged between  $101^{\circ}$  and  $106^{\circ}$  F., lasted for one week, and was followed by critical defervescence. One week later there was a smaller area of pneumonic involvement at the left base; it was accompanied by fever which lasted four days. Soon after, the patient complained of pain in the right hip; the next day the knee on the same side, and then the hip and knee of the opposite side, became painful. These articular manifestations were accompanied by moderate fever lasting eight days. The right hip was slightly swollen, the other joints were painful but not swollen. There were no further complications. Convalescence was otherwise uneventful.

CASE VI.—A. T., aged twenty-seven years, had been ill for twelve days before admission. The symptoms were chilly sensations and fever and a productive cough beginning on the sixth day of his illness. Upon admission there were signs of pneumonic consolidation at the left base. The sputum showed agglutination for pneumococcus Type I (Cole classification). The patient was given two doses of antipneumococcus serum intravenously on two successive days. The entire course of the disease was atypical. At the end of ten days the temperature fell by lysis. An urticarial serum rash then appeared on the arms and legs and spread over the entire body. This lasted about forty-eight hours. Subsequently, a serous effusion developed in the left chest accompanied by a moderate rise of temperature. Thirty-two ounces of pale colored serum were withdrawn. Two days later a papular erythema appeared first over both knees and ankles, then gradually spread to the abdomen, and finally covered the entire body. Accompanying this eruption were a chill, a sharp rise in temperature to  $104^{\circ}$  F., and severe arthritic pains. The joints first affected were those over which the eruption first appeared; indeed, the distribution of the eruption and the joint manifestations closely resembled so called "peliosis rheumatica." The joints were painful to the touch but were not swollen. After five days the temperature, the arthritic manifestations and the rash disappeared. Thereafter convalescence proceeded normally.

In both cases, blood cultures taken at the inception of the disease and in one case, also at the height of the arthritic symptoms, were sterile. Cases of arthritic involvement in pneumococcemias with positive blood cultures are not infrequent and may be regarded as ordinary "septic joints." In the cases here described, the joint symptoms consisted chiefly of arthritic pains with no or slight inflammatory manifestations. In the absence of positive blood cultures and of local inflammatory symptoms, and because of their course, such joint symptoms may probably be ascribed to the effect of pneumonic toxins.

*Abdominal pains simulating acute abdominal inflammations.*—These reflex abdominal symptoms are best illustrated by the following descriptive cases:

CASE VII.—On the day before admission the patient, L.



G., had a chill, fever, headache and an unproductive cough; he vomited and complained of severe pain in the right upper abdominal quadrant. The bowels had moved. The temperature was 106° F. There were definite signs of pneumonia at the right base anteriorly. The leucocyte count was 20,000, the polymorphonuclears were eighty-nine per cent, the lymphocytes eleven per cent. The gallbladder region was rigid and quite tender to the touch. The colleague in the surgical service considered the case one for operative intervention; but in view of the evidence of pneumonia in an area resting upon the diaphragm, we regarded the pains and abdominal rigidity as reflex, and not surgical, phenomena. With the further development of the pneumonia, the local abdominal symptoms gradually disappeared. A few days later, the patient complained of similar pains and rigidity in the left upper abdominal quad-

dominal pains. The abdomen over the appendix was rigid. Though the diagnosis of pneumococcus peritonitis was considered possible, the diarrhea was finally regarded as of toxic origin, and the abdominal pains as reflex phenomena. Two days after admission, edema of the lungs developed and the patient died. At necropsy the middle and lower lobes of the right lung were found completely consolidated, and the left upper lobe congested. The peritoneal cavity was normal; there was no evidence of any inflammation; the cavity contained no fluid. The heart, kidneys and gastrointestinal canal were normal.

These two cases are of interest because in the first, the abdominal pains indicated some acute inflammatory abdominal condition, a so called "acute abdomen"; in the second, a possible pneumococcus peri-

L. T.	Age.	Feb. 1914.	Area involved.	Highest leucocyte count.	Average arterial blood pressure.	Urine—albumin and casts.	Sputum.	Termination by crisis or lysis.	Remarks.	Recovery or death.
L. T.	25	9	Right lower lobe	11,500	125-79	Negative	Rusty	Crisis		Recovery
I. A.	17	7	Right upper lobe	17,800	120-78	Negative	Rusty	Crisis		Recovery
J. O.	43	9	Right upper lobe	16,000	130-85	Negative	Rusty	Crisis		Recovery
J. C.	23	10	Entire right lung	21,000	105-65	Negative	Rusty	Lysis	Pleural effusion	Recovery
E. K.	50	11	Left lower lobe	16,800	115-70	Glycosuria	Rusty	Crisis	Diabetes; 8.3% sugar; Allen treatment	Recovery
D. L.	27	16	Left lower lobe	19,400	118-65	Negative	Bloodtinged	Lysis	Hemolysis after temperature was normal	Recovery
J. C.	45	11	Right upper lobe	24,500	125-72	Many hyaline and granular casts	Rusty	Crisis		Recovery
C. H.	17	9	Entire left lung	7,800	115-70	Few casts	Rusty	Crisis		Recovery
W. K.	24	10	Left lower lobe	8,000	130-90	Some hyaline and granular casts	Rusty	Crisis	Laryngeal stenosis	Death, 5 weeks after crisis
J. W.	31	7	Right middle lobe	15,800	120-70	Few hyaline and granular casts	Rusty	Crisis	Herpes on lips and in larynx	Recovery
J. W.	55	21	Left lower lobe	18,400	135-95	Negative	Mucopurulent	Lysis		Recovery
M. W.	44	42	Left lower lobe	7,000	120-75	Albumin+many r. b. c. and w. b. c.	Mucopurulent	Lysis	Cystitis	Recovery
J. J.	57	24	Irregular areas	12,200	120-95	Negative	Mucopurulent	Lysis	Acromegalic in type	Death
F. P.	28	58	Right base upper lobe	9,200	126-80	Negative	Rusty	Lysis	Lung abscess, empyema	Recovery
J. M.	21	7	Right lower lobe	18,000	125-75	Albumin+many hyaline and granular casts	Rusty	Crisis		Recovery
A. K.	27	9	Right lower lobe	19,400	125-80	Few granular casts	Rusty	Crisis		Recovery
J. Q.	45	10	Both lower lobes	24,400	150-100	Albumin, few granular casts some w. b. c.	Rusty	Lysis		Death
S. S.	37	15	Right upper lobe	14,500	140-80	Few granular casts	Mucopurulent	Lysis	Dry pericarditis	Recovery
J. A.	44	29	Abscess right upper and middle lobes	22,500	155-105	Negative	Fetid	....	Operation	Death
J. S.	24	28	Middle lobe abscess	13,500	135-90	Negative	Fetid	Lysis	No operation	Recovery
A. T.	27	32	Left lower lobe	8,200	110-55	Albumin, hyaline, and granular casts	Mucopurulent	Lysis	Pleural effusion, arthritis; erythema	Recovery
M. C.	52	9	Left lower lobe	18,000	220-140	Albumin, few granular casts	Mucopurulent	....	Chronic cardiosclerosis	Death
S. W.	54	11	Right lower lobe	24,000	125-80	Negative	Rusty	Crisis		Recovery
S. C.	30	17	Consolidation irregular areas	8,400	120-80	Albumin, mod. granular casts	Mucopurulent	....		Death
N. O.	22	6	Left base	8,500	120-80	Albumin, few granular casts	Rusty	....		Death
L. G.	24	15	Both bases	20,000	125-85	Albumin, few granular casts	Rusty	Lysis	Pleuritic effusion	Recovery
P. H.	25	?	Lung abscess	7,500	120-85	Few w. b. c. and r. b. c., albumin trace	Mucopurulent	?		?

rant simultaneously with the development of a small pneumonic area in the left lower lobe. The symptoms similarly disappeared during the course of this second pneumonic invasion.

CASE VIII.—A. B., fifty-five years of age, became acutely ill a few days before admission. He was cyanosed and dyspneic; the temperature was 104° F. There was consolidation of the middle and lower lobes of the right lung and questionable signs of pneumonia at the left upper lobe. Two days before admission there had been many diarrheal stools. The patient complained of severe right sided ab-

dominal pain. In both the correct diagnosis and cause of the pain was established by the definite sign of pneumonia. Referred abdominal pain is frequent in pneumonia, especially in children; indeed many patients have been mistakenly operated upon for appendicitis. In most of these instances the diagnosis of pneumonia was uncertain or unsuspected. However, when a definite diagnosis of an acute pulmonary infection can be established, it re-

quires unmistakable surgical indications before proceeding to operation.

*Laryngeal stenosis complicating pneumonia.*—This case is of sufficient interest to warrant its report:

CASE IX.—W. K., twenty-four years of age, had a chill, fever, cough, sticking pain in the left side, and bloody expectoration four days before admission. His previous history was unimportant. There was pneumonic consolidation involving the left lower lobe and a small area at the right base. For six days the temperature ranged between 102° and 105° F., and then fell by crisis. The blood culture and von Petriquet were negative. The blood count upon admission was 5,000; the polymorphonuclears were eighty-two per cent.; the lymphocytes eighteen per cent. Though the temperature remained normal for two weeks the patient still looked ill. The pneumonic area at the left base did not undergo complete resolution. At this time the patient developed hoarseness, slight stridor, and pain on swallowing. On laryngoscopic examination there was found edema of both arytenoepiglottic folds. Several smears and cultures for diphtheria bacilli taken on different days were negative. The sputum was examined several times, no tubercle bacilli were found. The intralaryngeal edema increased, the patient showed marked stridor from resultant laryngeal stenosis. Two weeks after the onset of the symptoms, the patient died of edema of the lungs. Necropsy could not be obtained. The cause of the laryngeal complication could not be definitely determined. It seemed, however, to be due to ascending infection of the bronchial tree involving the superficial and deeper structures of the larynx, and ending in the severe stenotic symptoms described.

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### ANALYSIS OF A SERIES OF TYPHOID FEVER CASES.\*

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It is not intended in this paper to present any new facts on the subject of typhoid fever, but in analyzing the case histories of about a score of patients who entered the service of Dr. Seymour Basch at Lebanon Hospital between July 1 and December 1, 1916, we wish to emphasize the salient clinical points of the disease as they actually occurred rather than to offer an academic description and discussion of the disease.

*Etiology.*—There were twelve females and six males in our series; ten were between fifteen and twenty years of age, four between twenty and thirty, and four between thirty and forty. The patients all entered the hospital between July 1st and November 1st. There were no histories of previous attacks. Two became sick within two weeks after bathing in the Harlem River, although this may have had no significance. One patient was a contact case, a mother being infected by her child for whom she was caring; another came from New Jersey, and the etiological factor was undetermined. The balance of the patients undoubtedly acquired the disease in the Bronx in a district north of 149th street. It was ascertained at the time that Fordham Hos-

pital had a large number of cases, while Lincoln Hospital was practically free, which seemed to point to a localization of the epidemic to the territory north of 149th street and bounded by the northerly city line. Lebanon Hospital serves the district north of 149th street to 171st street; Fordham Hospital covers the district from that point to the city line. Lincoln Hospital, however, which was free of cases, covers the district south of 149th street.

It may be interesting to note that the Department of Health of this city investigated this epidemic, and we would like to quote from the report of Dr. George L. Nicholas, chief of the Division of Epidemiology of the Department of Health, City of New York:

In the month of August, 1916, the incidence of typhoid fever in the Bronx, as in the rest of the city, was low for that time of year. On August 24th, however, three cases of the disease were reported, on the 25th, nine cases, and on the 26th, sixteen cases. The 27th fell on Sunday and no reports were received. On Monday, the 28th, seven cases were reported. By this time inspectors had obtained information concerning the use of a certain loose milk by one of the families involved. The 29th brought reports of five new cases, and the 30th, of ten; with the last named reports came information concerning two more users of the loose milk in question. A rapid survey of the situation disclosed that this milk came from a certain small New York village where it was pasteurized. The typhoid record of this place was bad, when considered in connection with the size of the population. The following day, an additional user of this milk was reported, making at this time four known users of this milk. It was noted also that the cases were largely confined to a territory in which this particular milk was on sale. With the bad typhoid record of the shipping point, it was felt that there was sufficient evidence to consider the milk at fault, and it was excluded from the city. This was on the 31st of the month. On this same day, two more users of this milk were reported. Thereafter, additional users of this milk were rapidly discovered on routine investigation of cases as they were reported, giving a total of some twenty or more.

The prompt cessation of the outbreak indicated the correctness of the conclusion as to the source of infection, and showed how thoroughly justified had been the exclusion of the milk in question.

*Diagnosis.*—All but two of the patients entered the hospital with a history of an illness which had lasted between one and two weeks; one of the two had been sick for four weeks, having been in bed during that time, and the remaining patient was a "walking case" with a history of five weeks' illness before entrance. In every instance the study of the symptoms, together with the findings on physical examination upon entrance, made typhoid fever the most probable diagnosis.

The bases on which we were able to arrive at a tentative diagnosis were the symptoms as recorded in the history and physical examination on admission. The following symptoms were noted in our series: 1. Correspondence between the temperature during the first twenty-four hours of observation and the expected temperature height at the estimated period of the disease on the basis of history. 2. Headache was present in ten cases; in most instances it was frontal in type, but in some it was general in distribution, never being so severe as to suggest the possibility of meningitis. On the whole, headache was less intense and of shorter duration than usual. Few of the patients complained of their headaches and

\*Read before the Medical Society of the Borough of the Bronx.

presence of them was brought out only by questioning. 3. Malaise, or general pain, was complained of by all of the patients. 4. The pulse was soft and full. We felt several dicrotic pulses. It varied between 90 and 100 in one half of the patients and between 100 and 110 in the other half. In all these cases it was plain that we were dealing with a slow pulse in proportion to the temperature, and we regard this as a helpful early diagnostic aid. Blood pressure was normal. 5. Abdominal pain or tenderness, which might be a helpful symptom, was present in only five of the cases. Its presence would at least suggest the existence of some abdominal lesion. 6. Epistaxis appeared in but three histories. In each case this symptom occurred before the patient entered the hospital, probably before the development of fever. We had one case of severe epistaxis during the third week. 7. Constipation was present in five patients. 8. The bowels acted normally in twelve instances. 9. Diarrhea was present but once. We saw no typical pea soup stools and paid little attention to this sign. It will be noted that the proportion of normal and constipated cases was greater by far than that of diarrhea. 10. In five cases the illness was ushered in by an attack of vomiting. This is a high percentage occurrence of an unexpected symptom. It was probably due to lack of care of the mouth and improper feeding and medication. 11. Eight patients complained of anorexia. This is of no special importance. We report a smaller percentage of patients affected than is usually the case. 12. Four histories showed the existence of a cough, although in a larger number, as the physical examination proved, bronchitis was present. Three of these patients complained of pain over the sternum associated with the cough. 13. Our observation of initial chill is at variance with the reports of others. We had a history of chill in nine instances, severe in five cases. The rest seemed to be rather a general sensation of chilliness. This definite chill seemed to argue against the diagnosis of typhoid because of general opinion and reports to the contrary.

Physical examination elicited the following signs: 1. In general appearance patients seem acutely ill in a specific way; the face is stolid, and the dullness of the eyes and the apathy are in striking contrast to the appearance in, say, pneumonia or septic conditions, so that one might walk through the ward and pick out with fair accuracy the sufferers with typhoid. 2. The tongue was regularly moist at the early stage, coated at the centre with red edges showing marks of the teeth. 3. Bronchitis was present in six cases; an ordinary acute bronchitis which subsided without further complications. 4. The spleen was enlarged in fifteen out of the eighteen patients on first examination. It was the typical so called typhoid spleen, moderately enlarged and soft in fourteen of the patients, contrasting with the larger and firmer spleen of malaria. In the fifteenth patient it was large and hard, and, as he presented other doubtful signs and symptoms, this was in keeping with other irregularities in the course of his case. In every instance the spleen was definitely palpable; we did not depend upon evidence on percussion alone. 5. The typhoid roseola appeared in six patients out

of the eighteen. It appeared between the seventh and the tenth day in five instances and was largely confined to the chest, abdomen, and back; in one case the rash made its appearance on the fourteenth day, was very profuse and diffuse, and, occurring in crops, lasted until the twentieth day. 6. Tympanites occurred as a prominent symptom in only one case, which is detailed further on.

The laboratory diagnosis included examinations of the blood, urine, feces, and duodenal contents. Eight patients exhibited a leucopenia varying between 4,500 and 7,000; ten showed a normal leucocyte count. Nine patients showed a relative lymphocytosis, and nine showed a normal relationship between mononuclears and polymorphonuclears. The Widal test was positive in sixteen cases and negative in two. This refers to a rigid test demanding that with a one to 50 dilution there is absolute clumping and nonmotility of the typhoid bacilli in the culture. The Department of Health accepts clumping with a one to twenty dilution as positive. The Widal test for paratyphoid was done in three cases. It was negative in two, and positive for type A, one to twenty, in the third, which also showed a positive Widal. Blood culture was done in four cases and not done in fourteen because in the latter the Widal was promptly positive. The culture was repeated in two cases and in all six the result was negative.

In the examination of the urine the diazo reaction was tested for in fifteen cases; it was positive in eight. The presence of motile bacteria was looked for in five cases; it was discovered in none. Culture was done in all cases before discharge in order to discover typhoid carriers, and was persisted in until two specimens of urine were negative.

Stool culture was done in all cases, as stated under urine, toward the termination of the disease to eliminate the danger of typhoid carriers. In four cases this measure was employed as an early diagnostic aid, but in only one was a positive result obtained earlier than a positive Widal; in this case the diagnosis of typhoid rested entirely upon the positive stool culture. Culture for paratyphoid was positive in three cases.

Cultures of the duodenal contents were done in five instances in order to obtain an early diagnosis if possible before a positive Widal was obtained. This succeeded in one case, the positive culture for typhoid bacilli from the duodenal contents preceding the positive Widal by four days.

*Composite picture of the disease.*—The regular form, including symptoms, etc., which manifested themselves in fifty per cent. or more of these cases, was characterized by a chill, soft pulse, not dicrotic, and varying between eighty and 100; temperature following accepted type; frontal headache of moderate severity, anorexia, normal bowel movements, malaise, prostration, apathy, coated tongue, enlarged spleen, leucopenia with a relative lymphocytosis, positive Widal.

The irregular form, including symptoms, etc., which occurred in less than fifty per cent. of the cases, involved the following manifestations: epistaxis; pulse soft, dicrotic, and varying between 100 and 120; temperature curve characterized by deep morning remissions, the difference between morn-



ing and evening temperature frequently amounting to four or five degrees simulating a septic temperature, this occurring practically throughout the disease; constipation or diarrhea; no enlarged spleen; rose spots present; white cell count between 8,000 and 10,000 and differential count normal; Widal present; early positive stool culture, and positive culture of the duodenal contents.

**Complications.**—There was one case of otitis media characterized by pain in both ears; rise of leucocyte count and upon examination both drums showing redness and bulging; paracentesis of the drums; discharge and recovery. There were two cases of cholecystitis. One occurred in the sixth week during a relapse; the other occurred in the fourth week. There was nothing unusual in the symptomatology or physical findings in either case and both recovered under medical treatment.

In the one case of intestinal hemorrhage there were two hemorrhages, first occurring on the tenth day, which is rather early; the other on the sixteenth day. Each was indicated by a marked drop in the temperature and followed by the discovery of blood in the stool. This patient had a rather mild attack and merely exhibited prostration and anemia subsequent to the hemorrhage. She made a prompt recovery.

There was one case of intestinal perforation.

**CASE I.**—This was a severe type of infection. There was chill, vomiting at outset, irregular high temperature with marked septic fluctuations, typhoid state, prostration and marked degree of tympanites throughout. Leucocyte count was 4,600 with a differential of 62 and 38 early in the disease. Perforation was kept continually in mind and, because of the alternating apathy and delirium, it seemed unsafe to depend upon the usual indications, i. e., sudden severe pain, collapse or tenderness or rigidity in the right iliac region. Therefore it was necessary to keep close track of the blood count as an indicator. On the nineteenth day of hospital stay, but twenty-sixth day of illness, it was 13,000 with a differential of 86 polymorphonuclears and 12 lymphocytes, and on the twentieth day the patient vomited. Still there was no rigidity or tenderness. While perforation seemed reasonably probable, owing to the moribund condition of the patient surgical interference was not attempted, and the patient expired a few hours later. Autopsy revealed a perforation in the ileum three inches from the ileocecal valve.

Appendicitis occurred in one case.

**CASE II.**—This patient was sick with normal course two weeks outside and four weeks in the hospital; temperature had fallen to normal and had been so for two days when it suddenly shot up to 105.6° F. after a chill lasting five minutes. There was no prostration; pulse 100; leucocyte count 10,000, polymorphonuclears 54 and lymphocytes 46; temperature returned to normal within sixteen hours and no malarial organisms were found, the urine and physical examination being negative. The temperature remained normal for two days when there was another sudden rise to 106° F., with a pulse of 104; tenderness in the right iliac region and a gradually increasing rigidity in the lower right quadrant appearing. Two blood counts a few hours apart showed 38,000, polymorphonuclears 82 per cent. and lymphocytes 18, and 26,000, polymorphonuclears 78 per cent. and lymphocytes 22. The surgeon saw the patient and diagnosed either appendicitis or perforation. An operation was performed fourteen hours later. The appendix showed lesions of acute inflammation; typhoid ulcers were visible in the ileum and there was no perforation.

Three patients suffered relapses.

**CASE III.**—After four weeks the temperature became normal for one day and then the patient had a relapse

lasting two weeks with symptoms of about the same severity as the original attack; the temperature then remained normal for twelve days when it again rose and the patient had a second relapse lasting seventeen days. There were no special features.

**CASE IV.**—The patient was sick for twenty-one days when the temperature became normal and remained so for seven days, after which it rose and the relapse lasted nine days. The course of the relapse was identical with the original attack.

**CASE V.**—The patient was sick for twelve days after which the temperature fell to normal and so remained for three days; it then rose again and the relapse lasted for eighteen days. The relapse was more severe than the original attack.

There were three patients in whom the disease followed a special course.

**CASE VI.**—Severe toxemia. Onset with chill, high temperature, delirium and prostration. There was pain in the right kidney region with the finding of pus cells in the urine. A diagnosis of pyelitis was made outside the hospital. The examinations in the hospital failed to substantiate the urinary findings while positive evidences of typhoid fever developed within a few days. With the continuation of the prostration and active delirium, the temperature rose on the sixth day of stay at the hospital to 106.4° F., and then dropped to 103° F. within twelve hours, after which it rose to 107.4° F. and the patient died.

**CASE VII.**—Ambulatory type. The patient had been caring for two children with typhoid and complained to the attending physician that she had headache and malaise. He made a diagnosis of typhoid and ordered her into the hospital. Upon entrance she showed positive Widal, spleen, etc., and was evidently in the fourth week of the disease. The disease ran a mild course.

**CASE VIII.**—Abortive type. The patient was sick outside of the hospital for two weeks and entered the hospital with a diagnosis of typhoid which was confirmed on entry. She was sick for three days in the hospital with a temperature of 99° to 102° F., which fell to normal and an uneventful recovery was made.

**Mortality.**—The mortality for this series was eleven per cent. Two patients died, both toxic and one complicated by an intestinal perforation.

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## TECHNICAL SKILL VERSUS FORCE IN THE MANAGEMENT OF MORPHINISM.

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The purpose of our State and national lawmakers was, I believe, first to prevent the further spread of morphine and other narcotic addictions, and secondly to restore the addicts to health, usefulness, and good citizenship. It is, I believe, the ideal of the medical profession to prescribe morphine in such a way as to reduce the danger of spreading morphine addiction to the minimum.

The aim of those of us who limit our medical practice to the care of the various drug and alcoholic addictions is to put these people past the craving for narcotics and alcohol, to restore them to complete mental and bodily health, at the same time having in mind the patient's comfort and safety while we are attempting to secure these desirable results.

It is the purpose of this article to convince the reader that the safety of the addict as well as his best interests demand technical skill on the part of

those who attempt to care for him. It is also the purpose of this article to show that those who do have the needed skill together with the time demanded by this work do not need to rely upon any form of force in the management of these cases. To my mind the best possible evidence of the possession of technical skill is the ability to manage these cases without resort to restraints, surveillance, or other form of force.

The most essential thing to know is the psychology of morphinism, i. e., the mental and moral symptoms of this addiction. We should know the addict's peculiar point of view. We should know his characteristic doubts and fears. We should be aware of all those things that he is most sensitive about. We should understand him well enough to get his past history not by questions, but by encouraging him to talk. And finally we ought to know him well enough to know about what he would be likely to do under any given circumstances.

Lacking this knowledge, during your first five minutes' conversation with him, you may unwittingly give him deep offense. This would be a very grave blunder indeed. For in these cases it is essential that you gain and keep your patient's good will. Or again you may make some remark that will arouse his pathological fears, and the moment your back is turned he will pack up his grip and make for home. The addict is too proud and sensitive to tell you what his fears are; it is up to you to know what these fears are in advance.

Morphine produces a peculiar type of fear and cowardice. I know of nothing more important connected with the management of these cases than a thorough knowledge of the nature of this fear. I rely upon this knowledge completely to keep my patients from doping on the side. I have very little trouble of this kind, but when I do have a patient who dopes on the side I lay it to my failure to do the best that could have been done in the way of tact and management to allay this fear.

Again during your first five minutes' conversation with the addict you may betray your ignorance of his peculiar point of view. Nothing so quickly gains the patient's confidence as to let him know that you have a complete and sympathetic knowledge of his viewpoint, or, in other words, that you know him better than he knows himself.

I presume that most of the force that is used in the management of these cases and also the laws that have been passed have their foundation in the idea that as morphine is the cause of the disease, separating the patient from his morphine will surely bring about a complete cure. The first part of the assumption is correct. The second part is a long way from being correct. Of course if you keep morphine away from an addict he cannot be a morphine addict.

My idea of a cure is to restore the addict to complete mental and bodily health. Mere removal of the drug may accomplish this and then, again it may not. Let us look into the causes of its failure to always restore the patient to health. In some cases violent removal of the drug is followed by permanent mental impairment. A few become

downright insane. We might better have left the addict entirely alone than to turn his addiction into insanity. He may be left in such a state of mental depression that suicide results. The ones who were responsible for the violent removal of the drug may say, "We are not to blame because the fool committed suicide." On the contrary, this is a case of direct cause and effect, and those of us who assume the care of these unfortunate people must remember that a very grave responsibility rests upon our shoulders. I take it that the friends of the addict would prefer that he live an addict wretched as such an existence is rather than that he die from suicide. Again the addict's nerves may be in such a shattered condition after the violent removal of the drug that in groping about for relief he may accidentally poison himself with some other drug. In his dire distress he may take whiskey and get into a more deplorable shape than when using the drug.

Technical skill further calls for a working knowledge of all the various ways of removing the drug, as well as of one's favorite method. To manage gradual reduction one must know how much of the drug can be removed each day without discomfort to the patient. This varies greatly in different cases. A good chess player should be able to visualize the position of the pieces four or five moves ahead. A skillful manipulator of gradual reduction should be able to foresee excessive nervousness or other trouble four or five days in advance, in order to be able to change to a slower rate of reduction in ample time to prevent it. And in addition to the mere matter of reduction one should be familiar with every therapeutical measure that will add to the patient's wellbeing or comfort. One should be fully conversant with the dangers and peculiar difficulties of convalescence.

The question of whether or not force is needed in the management of morphinism is the most important proposition in connection with the subject that confronts us today. To my mind the conception that force is needed either means a mistaken conception of the whole matter, or else a disposition to shirk giving the time to these cases that they demand and should have. The devotion of one's whole time to the work is even more important than skill. I am with my patients almost constantly, not to spy upon them, but to attend to their needs and to keep them encouraged. If the physician is within reach of his patients at all times, and if they have confidence in his ability to give them relief, very much less morphine will be needed to keep them comfortable. The reader very well knows that pain will neutralize heavy doses. He also knows that an exalted nervous state like hysteria will do the same.

I doubt if very many who are not engaged in this work realize how much morphine the pathological fear that develops in nearly every long standing case, once it becomes thoroughly aroused, will neutralize. At one time, through an unforeseen delay, I was late twenty minutes for the regular noon dose. I found all the patients nervous and excited. One patient who had been an addict for thirty years was in a state of near collapse. He

was deathly pale, a cold perspiration was running down his face, his tongue and lips were tremulous, and there could not be the slightest doubt but that he was suffering intensely. A case like this might seem laughable to many. However, to one who knows morphinism it would seem more tragic than comic.

I have said that giving one's time to this work is more important than skill. For no matter how much skill one has it will avail the patient nothing unless it is diligently applied. To refer again to the patient whom I have just mentioned. As soon as he had had his noon dose, just the amount coming to him and no more, and found that I was to be on duty for the remainder of the day, he was very soon laughing and joking as if nothing had happened.

What put the patient in such a bad way was the thought that perhaps some serious accident had happened to me, together with the further thought that he was a stranger in a strange city and might perhaps suffer torments before he could get any morphine. Remember that this patient had been an addict for thirty years. Had I been delayed very much longer perhaps he would have got hold of some morphine and at least have delayed his cure and perhaps have spoiled it altogether.

Skill takes into account the mental states produced by morphine; force does not. One who has no proper appreciation of this pathological fear may by improper management drive his patient insane or, what is equally bad, drive him to commit suicide.

Technical skill will come to one who spends his whole time with his patients and who is diligent in attending to his business. The best preventive of suffering is to keep this fear under control. The constant presence of a physician among these patients in whom they have confidence is a moral restraint and encouragement more potent than any kind of physical restraint could possibly be.

There is a tendency to lay all failures to the patient, to their irresponsibility, etc., when in reality the physician lacks the technical skill to manage the patient properly. If the physician was able to clear his own mind of prejudice and error he could solve the therapeutical problems presented by each case much easier.

Any method of removing the drug skillfully applied will bring good results. I prefer gradual reduction, though it is the hardest method for the physician to master. Once thoroughly mastered it is by far the most comfortable for the patient. When one can keep his patients with him until the end and keep them from doping on the side without the use of any form of restraints, he has a perfect right to say that he has a good working knowledge of the method.

I also say that any physician can learn the method if he is only willing to do some hard work. We have seen of late years many methods of treatment advocated that were stated to be an easy solution of this whole matter of morphinism. In my opinion there is no easy road to success that is worthy of the name in this specialty any more than there is in surgery.

The convalescence from morphinism is peculiar and altogether different from the convalescence from any other disease. Morphine being our most reliable anodyne we naturally would expect pain to furnish the most grave danger of relapse. This, however, is not at all the case. Fatigue is the greatest danger, not because it is dangerous in itself, but because it produces symptoms that are very much like the symptoms caused by deprivation of the drug. They are not identical but are near enough like those symptoms to frighten and discourage the convalescent, unless he has been carefully informed concerning them. It is an easy matter to relieve them by a hot bath, massage, and a few hours' rest. It is always well to remember that the convalescent is never as well as he looks. Whiskey is very dangerous, because it will actually bring back the craving for morphine, and, further, it deprives the convalescent of good judgment. The convalescent can do enough work during the first year off the drug to earn a living, but he should be in a position to take frequent rests. Most important of all, he should be so thoroughly informed of the dangers that are likely to beset him, and the remedy for any indiscretion, that he will have no occasion for fear.

The knotty problems to solve in connection with morphinism are the mental states produced by the drug rather than mere physical deterioration, though the latter is always a factor.

What I have said about keeping the pathological fear under control during the removal of the drug is equally important during convalescence. It is not possible to have the patient with us for a whole year after he is off the drug, and even if it were the conversation of the addicts and other convalescents would do him more harm than we could do him good. So our best reliance consists in careful instruction.

There are many things that may happen to a convalescent to discourage him. Forewarn him and he will be able to pass through these crises without harm or inconvenience. A Frenchman was brought to me by a physician for treatment. The poor fellow was down and out financially and in order to treat him I would have had to board and partly clothe him. He was in good physical and mental condition and should have proved an easy case. I did not feel equal to caring for him, so he was cared for in a public hospital where restraints were the chief reliance. They were successful in getting the drug away from him. But the young physicians who had the care of him had no special knowledge of this work and made no pretense of any. He seemed to be doing well, but in a few days committed suicide by inhaling illuminating gas. The young men were not even aware that there was danger of suicide in such cases. Had this patient been properly instructed it is likely that he would have continued to improve until complete convalescence occurred.

Another patient came to me who had been arrested in different parts of the country three times and treated under restraint each time with no very great consideration shown for his feelings or sufferings. This patient had been so badly frightened



by his previous experience that he proved a very difficult case to manage. A physician who resided in the same town where my preceptor in this work lived wished to cure his wife of morphinism. He was one of those physicians who believe that the addict's need of morphine is wholly imaginary. He placed her in a hospital and gave directions that under no circumstances was she to be given any morphine. She died on the third day.

Technical skill renders all such heroic experiments in connection with these cases unnecessary. Any ordinary physician can acquire this knowledge if he chooses.

4203 GROVELAND AVENUE.

## TWO CASES OF LATE CONGENITAL LUES.

BY HARRY APPEL, M. D.,

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My reason for reporting the following two cases is that one of these cases presented quite an obscure condition when it first came under observation, and, while the other did show quite recognizable evidence of lues, still it raised doubts as to the proper diagnosis by the prompt disappearance of the objective signs without any internal treatment. It still further complicated the diagnosis by giving a negative Wassermann both in the patient's and in the mother's blood.

The history in each case was of no material help, as is the case with a good many cases of hereditary syphilis. As far as the negative Wassermann would bear on Case I, we need never change the diagnosis when confronted with a negative report even on more than a single examination, providing there is clinical evidence pointing to a syphilitic lesion. In corroboration of this statement we may quote from the literature on this old and ever new subject. Ravaut (1) has seen cases with eye and cutaneous lesions, without a doubt syphilitic clinically, but with a negative Wassermann. Towell (2) states in part as follows: The Wassermann test has failed to deprive clinical methods of their own importance. Heiman (3) writes that a negative Wassermann can never be accepted without reserve. Fruhwald (4) has proved experimentally that the blood of an animal may contain the syphilitic virus and even transmit it to another animal and its serum reaction be negative. Keyes (5) says, "All agree that a negative Wassermann does not disprove the existence of active syphilis."

It is also of interest to note the type of bone lesion Case II presented. Usually the bone lesion is of a chronic nature with very little pain, affecting the bones of the leg, the phalanges, and occasionally the bones of the forearm. In our case the periostitis affected the humerus more or less acutely with considerable pain and tenderness, even giving the patient a rise of temperature.

CASE I.—Female, age five years. Family history negative. Mother denies having had any miscarriages and has one other child, also a little girl, three years old and

in good health. Birth history: normal delivery, weight not known. Feeding history: as an infant was on the breast for ten months. Present feeding is the usual table diet. Appetite is good and bowels regular. Sleeps well. Has not had any of the contagious diseases of childhood. The patient was brought to the Postgraduate Clinic last year (1915), complaining of itching around the anus. Physical examination showed a well fed child of about the age given. Head and eyes negative. Mouth, clean; tonsils hypertrophied. No adenoids palpable. No external glands enlarged. Ears and nose, negative. Patient breathes freely with mouth closed. Heart negative, both in sitting and in recumbent posture. Lungs negative. Abdomen not distended. Liver and spleen not palpable and no other masses felt by palpation. Genitals negative. Skin over entire body negative, except at the anal margin where one could see as well as feel five or six small, pea sized, flat, papules that looked rather innocent, but made one suspicious. There was no evidence of any ulcer or pin worms. No sabered tibia or Hutchinson's teeth. However, a diagnosis of lues was made and a Wassermann was ordered with a return of a negative report. The patient returned in two weeks with no more evidence of any lesion. No other Wassermann was taken and the patient was not seen again until one year later when the mother brought her second child, Case II for pain in the right arm.

CASE II.—Complaint, child had not moved her right arm for past three days. The family history as well as the patient's birth history was negative. Diet was fairly correct. Had had measles when an infant. Physical examination was negative except for a good deal of tenderness of the right arm just about the elbow on the inner surface. There was no evidence of any swelling or redness of that arm, nor was there any sign of any trauma or any rheumatic history. There was no other limb affected. Temperature 100.5° F. per rectum. Pulse and respiration normal. X ray was ordered, which was taken and showed an osteoperiostitis of affected right humerus above the internal condyle on its inner surface with the periosteum elevated for about two inches from the bone. Five days later the patient began to complain of pain in the left thigh and in the occipital region; the pain in the arm was somewhat improved. Recalling the case of the older sister and the x ray evidence, a diagnosis of lues was thought of and the child was admitted to the baby wards of the Postgraduate Hospital for observation and study.

The report from the pathological laboratory was as follows: Urine, negative; blood count showed nothing unusual; von Pirquet, negative; Wassermann, ++++. One week later the child manifested flat papules around the margin of the anus and vulva. The mother was asked to bring Case I for examination, and she also now showed a typical macular eruption over her thighs and buttocks. The Wassermann of the mother was negative. We could not get a Wassermann of the father. The luetin test was not done in either case. Both patients are rapidly improving on specific treatment. The interesting feature about the first case is the prompt disappearance of the syphilitic papules at the anal margin without any specific treatment. While in our minds we felt that it was a case of true syphilis, yet we had no absolute scientific data to substantiate such belief at the time of her first visit. We had no opportunity to study this case since the patient failed to return for observation.

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327 PENNSYLVANIA AVENUE, BROOKLYN.

## DISEASES OF THE GALLBLADDER AND BILIARY TRACTS.

By M. E. BLAUD, M. D., F. A. C. S.,  
Cleveland.

Reidel has shown that every tenth adult coming to autopsy has gallstones; accordingly there must be at least two million gallstone carriers in the United States, of whom five per cent., or one hundred thousand, have symptoms, and one per cent., or twenty thousand, come to operation. This statement, if correct, shows us the fallacy of the teachings of our great American surgeons, according to whom the presence of gallstones always means operation. Most of us do not realize what a blessing it is to gallbladder surgery that in only a limited number of cases are we able to demonstrate gallstones either clinically or with the x ray, for otherwise a still greater number of these eighty thousand gallstone carriers would have their poor innocent stones removed. These are broad assertions, but let us see if they are borne out by the facts in the case, and whether there is or is not such a thing as an innocent gallstone. Naunyn has demonstrated that biliary stasis is one of the chief requisites for the formation of gallstones. He also attempted to demonstrate that secondarily it is necessary for infection of the bile to take place, which in turn produces the stone forming catarrhal infection of the gallbladder, through which, as he supposed, the material for the formation of biliary concretions was obtained. Accordingly, irrespective of what material the gallstones were composed of. Naunyn believed them to be formed by one and the same process, namely, biliary stasis and secondary infection. But in recent years Aschoff, working upon the Naunyn theory, has shown that although biliary stasis is always necessary for the formation of gallstones, infection is not always a necessary requisite and that the cholesterolin stone, contrary to the formerly accepted opinion, is formed through a precipitation of cholesterolin from sterile bile to which there is some impediment to its outflow from the gallbladder. He has also shown that stasis combined with infection is the cause of all other biliary concretions, such as the cholesterolin lime stone, the pigment lime stone, and a combination of the two.

It may seem incomprehensible that stasis of bile should occur without inflammation or infection of the gallbladder. But there are many causes which may produce biliary stasis in an apparently healthy gallbladder, some of which are atrophy of the muscle wall in the aged, preventing the organ from completely emptying itself on account of the weak muscular contractions, adhesions around the gallbladder from inflammatory diseases of the neighboring organs causing a biliary obstruction, tight lacing of the corset in women compressing the gallbladder against the thoracic wall and resulting in obstructive deformities, and many other reasons, which space will not permit me to mention. It is in this manner that the pure cholesterolin stone is formed, which in the great majority of cases does not produce symptoms, unless an infection of the gallbladder or biliary tracts takes place. That the cholesterolin stone is more frequently found at au-

topsy than at operation is selfevident. It was with this innocent cholesterolin stone in mind that I made the statement that it is a blessing that we are unable to diagnose the majority of cases of gallstones either clinically or with the x ray. I do not wish to convey the opinion that the cholesterolin stone is an absolutely harmless and innocent inhabitant of the gallbladder at all times, but rather than in a few instances, it does possess a certain potential danger to the individual carrying it around. That it does favor infection in a limited number of cases by obstruction of the orifice of the cystic duct, no one can reasonably deny, but the point which I wish to emphasize is that in the vast majority of cases they produce no symptoms whatever, and that shadows in the region of the gallbladder on a radiogram are not an indication for operative interference, unless there are some symptoms directly referable to the gallbladder itself. Even the finding of a cholesterolin stone in the stool is not always an indication for operation, as very often after passing such a single cholesterolin stone, the patient may be free from symptoms for the balance of his natural life.

What are the indications for operative interference in gallbladder disease? They are first the vital and second the relative indication. Under vital indication we place such patients, who on account of severe infection of the gallbladder, the biliary tracts, and liver, are in imminent danger of losing their lives, and under relative indication those who on account of constant pain and irritation, are unable to pursue their usual vocations and are more or less incapacitated the greater part of the time. It is this second class of patients who most frequently seek the surgeon's aid, since the patients belonging to the first class have all passed through the stage of relative indication before there is really any actual danger to their lives, and unless the patient himself refuses operation, he should have been operated upon long before he reaches the vital stage. I do not wish to convey the impression that before advising operation, these patients should be allowed to suffer for years with biliary colic and the other symptoms common to gallbladder disease, but I do believe that very often a patient will have only one attack of colic, pass the stone, which has been obstructing the cystic duct, and thereby again provide for the free flow of bile from the gallbladder, and in this way cure his infection. This individual may never again have any biliary symptoms, or as is frequently the case, he may be free from his symptoms for a great number of years. But, on the other hand, if the colic occurs frequently, operation should be advised without further delay, thereby preventing the process from becoming chronic. A surgeon following the above indications as a guide for operative interference upon the gallbladder must necessarily be more radical in his operative procedures than one to whom the mere presence of stones is an indication for operation. Quite naturally the removal of concretions from a normal gallbladder will suffice to cure an otherwise healthy patient. But we must not forget that even from this slight interference there still is a considerable death rate; which even in the hands of the most skillful operators is in the neighborhood of two per cent. Out of two million

gallstone carriers in this country there are one million nine hundred and eighty thousand who do not require an operation.

Such operations as cholecystotomy have no place in gallbladder surgery except in cases where there are distinct contraindications to the more radical operations, on account of pulmonary disease, kidney insufficiency, diabetes, etc. In every case where operation is indicated the gallbladder or cystic duct should and must be removed. This is the only sure way of eradicating the disease and providing against recurrences. It is needless to say that it can never be hoped that a gallbladder and cystic duct which have been crippled by infections and the resulting scar formation can be restored to normal function and that sooner or later biliary stasis and infection must again occur and bring with it a situation fraught with danger, both to the comfort and life of the patient. It is not even safe to stop at this point and think that we have cured our patient, as stones may still be lurking in the common and hepatic ducts. Palpation of these ducts will not suffice, as even the most experienced examiners are apt to be mistaken and fail to detect concretions. The fact that the patient has had no symptoms to indicate the presence of stones in either of these ducts is no criterion, since in more than fifteen per cent. of cases concretions in the hepatic and common duct produce no symptoms. A sound should always be passed through the common duct into the duodenum and also through the hepatic duct to make sure that stones are not present in either of these ducts. And in a certain number of cases it is still better to open these ducts with a scalpel and observe with the eye whether or not stones are present. If infection of the liver exists the hepatic duct must be drained. Operations carried out along these lines are sure to cure the patient, and the mortality rate in the hands of competent surgeons should not be over three per cent. in comparison to the two per cent. mortality rate with useless operations.

A few words regarding the symptoms, etiology, and diagnosis of this condition may not be amiss, especially when we consider the number of patients who are doomed to needless suffering as a result of a faulty diagnosis. Icterus, which for years has been considered the chief symptom of diseases of the biliary tracts and gallbladder, is present in less than ten per cent. of all cases, and in fact is a symptom of such little importance that it would be better if it were entirely stricken out of textbooks dealing with this subject. Time and time again patients coming into my office with definite symptoms referable to the gallbladder tell me, after they have been informed that they are suffering from a purulent cholecystitis, "Why, doctor, I have never been jaundiced," and just as sure as fate, the accompanying family physician adds to the pleasantness of the situation by assuring me that he has observed this case for a long time, but never had noticed any icterus. Which of course is not a very persuasive argument to convince the poor suffering patient that an operation is indicated. Jaundice is only present when there is obstruction of the common duct itself, due to either tumors or inflammatory masses compressing it from without or to calculi or inflammation ob-

structing its lumen from within. Obstruction of the common duct occurs in less than ten per cent. of all cases of cholelithiasis, and in fifteen per cent. of these cases jaundice is conspicuous by its absence. The history, the tenderness over the gallbladder region, and the indefinite stomach symptoms without any relation to the quantity, quality, or character of the food partaken of are the chief symptoms of this disease. Of these three the history is perhaps the most important. Upon careful questioning, it is most always possible to elicit symptoms of indigestion, such as the feeling of fullness and weight after meals, of paroxysms of pain without any particular relation to either the time or the character of the ingested food, and periods from two to three months of complete absence of symptoms. The chemical analysis of the stomach will often show a marked hyperacidity and if the stomach contents are withdrawn six to seven hours after a meal a marked retention or rather a delayed emptying time of the stomach will be found, due to adhesions from the gallbladder involving the pylorus. Much information may also be gained from passing the duodenal tube directly into the duodenum, in that way making a direct examination of the duodenal contents. Whether or not the tube is in the duodenum can be verified with a radiograph. If all these points are carefully weighed it is generally possible to make a diagnosis of cholecystitis, but rarely are we able to determine the presence of stones, and being a believer in the safety first theory, I generally make the diagnosis of cholecystitis with possible stones.

To recapitulate, allow me to call attention once more to the three essentials which I have endeavored to emphasize:

1. Gallstones remain latent in ninety-five per cent. of all the cases and require operations in but one per cent.
2. Cholecystectomy with complete extirpation of the cystic duct, and a thorough exploration of the hepatic and common duct, with drainage of these if necessary, is the only procedure which will surely produce a cure.
3. Jaundice is a very rare symptom in diseases of the gallbladder or biliary tracts.

301 ANISFIELD BUILDING.

**Plaster Splinting for Knee Lesions.**—George Davis (*Lancet*, February 24, 1917) describes in detail a simple and effective method of splinting all forms of lesions of the knee joint. It consists essentially in the application of two broad cuffs of plaster bandage, one above, the other below the knee. After these have set three hoops of malleable iron are applied over the joint, equidistant from one another, and joining the two cuffs. They are held in place by means of a second application of plaster bandage and their projecting portions over the joint are coated smooth with plaster. When the whole is dry the entire dressing is coated with a waterproof varnish. Rings may be attached to permit the support of the leg from a Balkan frame. The dressing may have to be renewed in from four to seven weeks owing to emaciation of the leg and loosening of the bandage.



# Our Readers' Monthly Prize Discussions

## Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CLXXXII.—*How do you prevent infantile diarrhea?* (Closed.)

CLXXXIII.—*How do you treat excessive menstruation in the unmarried?* (Answers due not later than June 15.)

CLXXXIV.—*How to correct bad spelling and forgetting in children?*

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

*The prize of \$25 for the best answer to Question CLXXXI has been awarded to Dr. Caroline F. J. Rickards, of New York, whose paper appears below.*

### PRIZE QUESTION CLXXXI.

#### TREATMENT OF THUMB SUCKING AND NAIL BITING.

BY CAROLINE F. J. RICKARDS, M. D.,  
New York.

##### PART I. THUMB SUCKING.

Even the child's little strays and perversities lead us out into the wider ways. One of these, the thumb sucking habit, suggests that here is something which may carry medical thought outside itself. Its intensity and persistency demand a consideration broad and deep enough to discover if possible a cause, that is, its meaning and value for the child, and on this basis its remedy. It leads, moreover, to that broader conception of disease to which medical thought is tending, and in which thumb sucking may justly be classed as a disease. For this makes of the term disease merely a convenient designation for expressing failure, whether limited and partial or more complete, to apply the energy at one's disposal to the useful constructive processes of growth and development. Failure is the misapplication of energy in useless and destructive ways, and this in a comprehensive sense constitutes disease. This also demands remedy.

Enough has perhaps been said through popular emphasis and medical discussion to prove that thumb sucking belongs in the category of the useless, the destructive, and the wasteful. Its unesthetic character, the distortion of the normal symmetry of hand and mouth, the possible evil consequences to the development of mouth and fauces, and the uncleanness of the habit, are obviously serious factors in the problem. On the other hand, the child's evidently blissful enjoyment of the practice and his determined, or perhaps better, compulsive refusal to relinquish it, suggest that there may be in thumb sucking a greater significance to the child than is apparent, and that the consequences may be deeper and more lasting than in the obvious results.

Our leading textbook authorities throw no light upon the subject. A few external remedies with which to combat the practice are suggested: mittens, bitter aloes, rewards, punishments, or even ridicule. The simple material measures have proved futile and most psychological measures offer nothing in the way of an intelligent understanding or

treatment of the habit. The way into the heart of the difficulty and the choice and successful application of therapeutical remedies needs the deeper interpretative handling of the question and an inquiry into facts that lie in the more profound realm of the sources of action. Descriptive classifications and discussions of medical problems have left so little room for children's such apparently unimportant difficulties that they have received scant attention. At most they are subjects for bewilderment and adult helplessness. The absence of any somatic cause of explanation leads one to retreat behind the child's native stubbornness or the strength of a habit formed in the empty hours of earliest infancy. The energy within the human being has been manifesting itself continuously in small ways and in great, in the infant as in the forceful, selfassertive adult. The escape of these forces is devious and roundabout because of the ignorance and defensive fear we entertain toward such forces. For this reason they become far too frequently pathological and destructive.

Let us see whether the child has a claim to such abundant energetic forces and whether thumb sucking finds its incentive there. Every member of the race has a share in the energy which created and maintains the world. This energy has many manifestations, heat, light, electricity, gravity, those which we know as physical forces, but no less does it manifest itself in that power which informs personality and leads to individual activity or the racial sum of it. Here it is both physical and psychical in its forms. For an essential characteristic of universal energy is its ability to be transformed and transmuted, that is shifted from one sphere of activity to another and utilized in these several spheres by one form or another of energy carrier (1). This brings into close relationship, and essentially a dynamic relationship, the physical and psychical spheres of individual and racial life. It helps us to understand also and revalue the close interaction of mind and body, for all activity becomes then an expression of one and the same force, only exercised now in one sphere, now in another. Thus, for example, the psychical value of an impulse, known to the individual in the terms of a memory symbol, becomes transformed into a physical energy in the sensorimeter or vital sphere, stimulating an

active process through the reflex by which the pleasure behind the symbol is secured. Or it may act in an entirely unconscious way through stimulation of the inner secretions which in turn activate the body, redistributing its energy to accord with the attainment of the desired end (2).

Thumb sucking therefore may perhaps be found to be just such an example of energy distribution and energy manifestation. It enhances the importance of so apparently simple an act if it is found of such complexity of interpretation, but we have already seen that it is of sufficient moment to occupy a large place in the attention of those who have the child's welfare under consideration. It would be difficult to discover or imagine a distinctly marked complex disturbance of energy working upon the vegetative level, that of the inner secretions, which could account for or take part in the formation of such a symptomatic activity. The practice would fall rather into the realm of consciously controlled sensorimotor activity. Yet even here it is most evidently no simple unemotional reflex, but is governed by a symbolic value which gives it a distinct pleasurable tone. We have been accustomed to think and to act as if this were a matter of the limited field of consciousness alone, or at most of an extension of an original consciously begun habit which has become unconscious only in the limited sense of having dropped into the reflex mechanism of other well grooved performances, like piano playing, which represent recent acquisitions barely crowded out of the field of consciousness. On such a supposition application of unpleasant substances to the thumb area, bandaging, or moral suasion with the older child are tried, but the result is a return to the habit with undiminished compulsion and the baffling of physician and parent alike.

It is the word compulsion, forcing itself upon our thought, that opens a way out of this mystery, for such medicine and parenthood has found it. Freud, as we know, has swept us into a new field of psychological discovery and therapy. His own way into it led through practical clinical experience which revealed to him hitherto unsuspected workings of the energy of life and enlarged and established his conception of this dynamic power. His investigations with patients whose disturbances revealed themselves as reaching through their lifelong development and traceable back into the time of infantile thought and feeling, led him to formulate (3) some of those infantile modes of reaction as well as the force of energy in its particular infantile manifestations which determined these reactions. Two startling facts discovered by Freud are confirmed with every application of the psychoanalytical method of research and therapy. They form likewise a substantial background just here against which the mystery begins to take on a scientific clearness which is amenable to therapeutical consideration. One is the broader, more general fact of the very real existence of a large amount of affect at work deep within the psychical life of the child. This may be expressed in another way by stating it is the existence already in the infantile period of the symbolic value as the absorber and carrier of energy; energy which is not only being stored up at a rapid rate in these earliest

years when the very impressionable child is being rushed through a condensed contact with a new and tremendously impressive environment. He must moreover condense into a brief period the reactions, the wonderment, pleasure, pain, and all the magical interpretations which have preceded it in slow racial development for which the race took countless centuries of time (4).

The more specific fact is the immense pleasure toning which out of this great effective life surounds and builds itself upon the simple functions and activities to which adult thought has believed the child gave but little significant heed. Even here the ground has frequently blistered the feet of the adult guardians of childhood, for there have been many freakish manifestations in almost every child life of some greater interest in certain things than fitted the chosen formulas of behavior and sweet childish innocence. An effective therapy, even of thumb sucking, must, however, be based upon a clear recognition of these things in terms of a definite value in the use and application of the energy with which each small individual is endowed for his journey through life. Each form of activity through which the child must pass in learning to live its life and each memory symbol which phantasy establishes there as the container of the pleasure or pain experienced in the exercise becomes an energy carrier. Energy that is going to take hold of life in a successful manner must progressively pass from one stage or plane of development to another. Each grade of development, however, has still the remnant of function to perform in the final adult goal of life. Therefore each is of indestructible value and must be preserved in the memory of pleasurable reactions on each plane, while at the same time the greater amount of pleasure must be carried along into the progressive stages. These individual stages of development begin with the child's lowest, earliest forms of gratification and all tend in the economy of nature toward the final canalized goal of adult reproductive life, with something, we might say, to spare for the nutritive instinct which supports the greater impulse. Psychical economy, moreover, has demanded that there shall be a vast amount of this energy, surrounded and transfused by pleasure, to be utilized in the sublimated form of creative activity, that which arises from the biological impulse, surrounds it, and far outreaches it.

This then is the value concept of the partial impulses of childish activity. It discovers the rightful pleasure emphasis upon the earliest childish functions, sucking, defecation, urination, and so on through the contact pathways upon which it makes its acquaintance with reality. Each one of these, however, stands on the delicate borderline between the right use of it as a transition stage to something more far reaching, more useful, more progressive. or because of its strong pleasure tone becomes a point of fixation and overemphasis toward which the ego pleasure seeking impulse compels. All this falls so early below consciousness that it is not consciously recognized, is only in smallest measure, if at all, remembered, and is therefore foreign to adult comprehension. We learn, however, to extend the term memory beyond the confines of consciousness.

forced to do so because these pleasurable affects are discovered far below the surface.

Already in the infant at the thumb sucking age we have to deal therefore with a conscious life with voluntarily controlled functioning and activity, but besides this with an unconscious realm of what is already the past of the infant, his racial inheritance, and likewise his own apparently discarded experience. For with the condensation of experience and reaction to which the child in its intrauterine and early postnatal years is exposed, the unconscious is rapidly stocked with the many things that fall under cultural ban because they do not help the child in his struggle for adaptation to this big world.

And yet the child, like the adult, finds it very hard to part with his experienced pleasure and to crowd himself progressively along the path of experience. He is after all but a mite of an individual in the face of his environment and of those who claim so much wisdom and knowledge of the right way of life. Then the pleasure experience of the recent past, lying in that region where pleasure is at home in phantasy remembrance and where it is reinforced by such phantasy, the region of the unconscious, comes to the aid of the child. The child, like the despot on his throne, has, by virtue of his inherent, forward compelling energy, the innate tendency to assert his power and might. This is largely uncorrected by the intellectual control to come later, nor has he yet at his disposal cultural methods. Most ready lie the earlier ones to which existent phantasy finds ready access. There is therefore at an early age a strong reinforcement of the first impulse to thumb sucking, which may have been largely an external one. This earliest impulse may be simply explained if we accept Freud's psychology of it. Observation confirms the child's evident pleasure and satisfaction in the act of sucking, a satisfaction which manifests something more than nutritive satisfaction. The physical signs of satisfaction in the movements of the lips and tongue, continued after the nipple is withdrawn, the blissful expression of complete gratification, point to the fact that we have to do here with an indulgence pleasurable within and for itself. The substitution of the thumb in an activity which completely copies sucking and its accompanying pleasure signs convince us of the existence of a physical activity undertaken for the pure contact and motor pleasure it furnishes, a foreshadowing of later, more defined, and heightened masturbatory activity, which in turn normally experienced leads to the adult sexual goal.

Thumb sucking appears thus as a normal activity on the part of the developing infant, his first expansion of this pleasure activity beyond its first goal, the nipple, and therefore one of the earliest forms of endeavor on the part of his energy to exercise itself upon a greater world. This must begin in his own body, the first part of the concrete world with which he has more than the most limited contact in the earliest months. But this normal activity becomes overaccentuated. And thus in turn this easy attainment of pleasure becomes a persistent habit long outlasting its developmental functioning and interfering with that conformity to the world of self-control which is expected of him.

Its compulsive power, which defies all means of correction, we cannot believe lies in the conscious acceptance of his habit. Neither the apparent willful enjoyment with which certain children seem to defy all corrective measures nor the ineffectuality of the effort which others honestly make, according to their limited power, to overcome the habit, lies in the sphere of the conscious. Their power here of selfcontrol is limited, not entirely because of limitation of intellectual and social development, but because this higher control is already beset behind by an emotional force which is racially far older than such control, and in the small individual has already been abundantly active. Pleasure getting has had a far longer and a far greater domination than cultural obedience and selfcontrol. Therefore there is such an inner compulsion of which Pfister has spoken in his discussion of the punishment of children (5). The unconscious, the more powerful, interposes its veto in the face of shame, repentance, the best of good intentions. The inner attachment to the pleasure principle in the unconscious is powerful enough in the most normally controlled adult. How much more will it usurp control of the child's activities and maintain that compulsion in the face of all remedial measures which fail to take this great force into account! For, as Pfister shows, the application of such measures divorced from recognition of the vital forces of the unconscious, tend rather to the fortifying and strengthening of the unconscious impulse, which must, so to speak, defend its right more strongly under such adverse treatment.

Just here, however, we come upon some of the guiding principles of an efficient therapy. We must not forget, in separating out the unconscious as the abode of the pleasure impulses from the conscious intellectual, cultural sphere of control, that after all they are but divisions of one individual life. There would be no individual human life were one or the other set apart. The aim of training of our children, the goal of a normally developing life, is such a harmony between emotion and cultural control that the conscious has the pleasure forces of the former quite at its disposal and that the unconscious emotional life in turn recognizes that this control is based on such a recognition and evaluation of its varied impulses as will enable them to find satisfactory expression. Both must stand at the service of the power impulse. We may call this the life force, creative instinct, "will to power," whatever we please. It is any one of these in that it is the individual effort after expression, after the freedom and ability to accomplish the task which the inherent creative impulse sets him. Only in the ignorance and inexperience and lack of development of the small child this is likely to manifest itself most plainly in an unreasoning sense of power, or striving after power. This utilizes these pathways which it best knows, unconsciously more than consciously.

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(To be continued.)



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal

and The Medical News

*A Weekly Review of Medicine*

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Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,

Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single copies, fifteen cents.

Remittances should be made by New York Exchange, post office or express money order, payable to the A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JUNE 2, 1917.

### A PROHIBITIVE TAX ON KNOWLEDGE.

The increase in the second class postage rate as provided in the war revenue bill in the House of Representatives amounts to a prohibitive tax on the distribution of technical knowledge. Not only does this measure as prepared in the House increase the rate of postage on second class matter one hundred per cent. in the home zone of the publisher, but also provides for a graduated increase for each succeeding zone, thus placing the dissemination of knowledge in exactly the same category, except as to rates, as the distribution of drygoods and groceries. The members of Congress say that the low rate provided for second class postage amounts to a subsidy for the publisher. They point to the fact that the *Saturday Evening Post* has an enormous circulation and is a source of great profit to its publisher. In fact, the attitude of the Congress in drafting this measure seems to have been that the mere possession of wealth was a crime which should be punished by fines, if not by imprisonment, and the fines are provided in the House war revenue bill.

The basic objections to the zone rate of postage on second class matter are that it is a return to an obsolete and long since discarded method of collect-

ing revenue, it upsets a subscription system involving every publication circulated in the United States, and it imposes a tax upon the citizens who live in the remoter districts, for it is the subscriber and not the publisher who ultimately pays the tax. Furthermore it will tend to wipe out of existence hundreds of really valuable class publications through which is distributed technical and trade information of the greatest value.

The zone rate of postage would impose an almost unbearable burden upon the distribution of medical periodicals. All the more important and valuable medical journals have a wide area of distribution. The physician in Alaska, in the Philippine Islands, or in Honolulu has even greater need of medical periodicals than has the physician who lives in Baltimore, in Chicago, or in New York. In these large centres physicians can keep informed regarding medical progress by word of mouth through attending the various local meetings of the profession. In the remoter sections no such avenue of information is open to the isolated practitioner, and if he is called upon to pay the zone rate of postage for his medical journal it will be but an added and undeserved handicap placed upon him by his residence in those remote sections.

The bill as introduced in the House is a crazy patchwork of illogical discrimination. This is a war of the whole United States and no one set of people should be called upon to bear its burdens. Increased income is needed. Let all share in the increased burden by imposing a tax of one per cent. upon all manufacturers, including publishers. Such a tax would be easy to collect, would cause no class feeling, and would yield a much larger revenue than that which could be obtained under the bill proposed by the House. If any special tax is to be imposed in addition to this one per cent., let it be a tax upon excess war profits—not excess profits, as now provided, but upon those profits made during the war which are in excess of the profits made by the same manufacturer during two or three years preceding the war. This would be logical in that those who profited by the war would be called upon to share that profit with the Government. The publishers, with few exceptions, have lost in advertising patronage by the war, and have been obliged to pay over one hundred per cent. more for their paper on account of the war. It certainly seems most illogical and unjust to lay any further burden upon their shoulders.

We hope that each of our readers will join us in

this protest against the selection of the publishing business as a shining mark for this attack which takes the guise of a war revenue measure and will write to his congressman and his senators objecting to this tax on knowledge.

#### EPIDEMIC CEREBROSPINAL MENINGITIS AND WAR.

The point where an endemic condition may be said to pass into the status of an epidemic is a fine statistical distinction. The United States Public Health Service, as has already been pointed out in a recent issue of the *JOURNAL*, has presented figures which justify its conclusion that the incidence of cerebrospinal meningitis in this country since the beginning of the year has reached epidemic proportions. The knowledge of the prevalence of this highly dangerous infection is of the utmost importance in the present national crisis. A promising young man is taking his place in the family of nations, shoulder to shoulder with his elders in a terrible struggle against a common enemy. Heretofore he has been very busy growing up; he has been accused of being somewhat overinterested in his own career; he has not "understood" nor been "understood"—a common and constant complaint of adolescence. He has, notwithstanding, given a splendid account of himself, and in this fearful crusade his youth and strength, his great resources and resourcefulness will be a tremendous physical and moral factor. Public health officials are constantly and anxiously investigating this young person's tongue, pulse rate, blood pressure, and reflexes, and have issued the above warning.

The prevalence of cerebrospinal meningitis, which is greatest in Philadelphia, Cleveland, St. Louis, Hartford, and New York, indicates the distinct possibility of the invasion of our training camps by the disease. The close association of large groups of persons make camps, as is well known, a fertile field for such a calamity. Other circumstances, the regularity and discipline of the life, the hardening effect of the outdoor exposure, together with the excellent medical supervision militate against it. The medical military authorities with the physical care of large groups in their hands should be forewarned concerning the prevalence of cerebrospinal meningitis, and the general practitioner should keep in closest touch with all cases of the disease and with the civil authorities. The censorship regulations of one of our allies forbid the publication of information concerning the occurrence of epidemics in military camps. Our Committee on Public Information does not contemplate any such restriction, as it is believed that the danger from scare rumors is great-

er than that from the publication of a printed story, even though false, as a false story can at least be authoritatively denied, whereas it is a very difficult matter to trace and kill a rumor. Science and civilization should not tolerate the sacrifice of a single life to disease when the final establishment of democracy and liberty is to be won in the terrible struggle on our hands.

#### THE WAR AND THE SPREAD OF INFECTIOUS DISEASE.

The youthful poet, Tennyson, nearly a century ago, dreamed of a "parliament of man, the federation of the world." The vision seen by him and other prophets was that of a peaceful congress of the world's peoples, assembled in conclave for the settlement of disputes and exchange of new ideas in government, art, and science. At such a gathering the diseases peculiar to a certain corner of the earth would be discussed by the representatives of that section and ways and means devised by which they could be exterminated and thus prevented from spreading to other portions of the globe. Instead of exchanging ideas for such meritorious objects as the defeat of disease, the peoples now gathered from the four corners of the earth in the present war are actually disseminating strange maladies brought with them. Truly, the "shot heard round the world" fades into silence beside the bullet from that Serbian student's revolver on June 28, 1914.

The mobilizing of colonists of the warring nations and the vast extent of the amphitheatre of war gives rise to many anomalous circumstances. Thus Fiji Islanders appeared in battle array on the fields of France; Irish and Scotch fought in Turkey, and Arabs, Algerians and Sudanese stood shoulder to shoulder on the firing line in Flanders. Thus men have been suddenly transported to an environment and climate new to them and entirely opposite to their native one, they have been obliged to associate with men of other nationalities and habits, bearing with them the seeds of strange diseases. The conditions under which modern warfare is waged had their part in the production of disease. Soldiers dug themselves into ground saturated with manure. The artificial and severe conditions of trench life gave rise to trench foot, trench back, trench fever, nephritis, etc. Lice became a plague to the armies, and from the lice came typhus. The French army was not protected against typhoid, and at first thousands fell. The Germans in Galicia were attacked by cholera, and everywhere tetanus, gangrene, and the gas bacillus became a trinity of terror.

However, looking at it broadly, this war has been a remarkably healthy one. Before this, each war

has had its attendant diseases. Thus in the Franco-German War of 1870 there were 74,205 cases of typhoid in the German army, and of these 8,904 men died. Then when the German troops returned they took with them an epidemic of smallpox from which there were more than 170,000 deaths. There has been nothing in the present war comparable with this. Indeed the average soldier, owing to the open air life, the compulsory hygiene, and the discipline, is in better health than he was before the war began. The blows struck at alcohol by the warring nations, especially Russia and England, have of course resulted in great benefit. Then the decline in the birth rate and the tremendous mortality in modern fighting have turned the nations to a closer study of prenatal care and infant welfare with a consequent decrease of infant mortality. The vast number of cripples produced by the present day engines of destruction has given rise to ingenious methods for making these unfortunates useful to society and to themselves.

It has been shown over and over again that those nations which were most efficient in public hygiene produced the healthiest troops for battle and kept them freest from disease. The United States may profit by this lesson. To be sure, civil and military hygiene have reached a high degree of efficiency here, but perfection has not yet been attained. The existence of the nation depends on its army and navy, they depend on the health of their units, the fighting men, and this again depends on the public health system of the nation. Let us then fight disease with every possible weapon, benefiting by the experience of the European nations, and sparing no pains to make our troops the healthiest in the world.

### THE FOLKS THAT STAY AT HOME.

We may safely leave to the future medical historians and pathologists the investigation into the numerous diseases, both medical and surgical, that the ravages of war will inflict upon the population of the belligerent countries in Europe for generations to come. We, as physicians, are interested not only in the methods adopted for the alleviation of the sufferings and tortures of those at the front, but also in the condition of the folks that stay at home, and who are affected indirectly, as it were, by the vicissitudes of warfare; on them also the gigantic struggle will leave indelible physical and mental imprints to be perpetuated for who knows how long a time. Thus the havoc wrought upon the entire population is incalculable, and, as we may have more than an altruistic interest in the matter, a cursory survey may be somewhat relevant to our present conditions.

We naturally expect the nervous system, as possibly the most vulnerable, to bear the heaviest brunt, to show the results of wear and tear due to the changed conditions of life induced by the exigencies of war. To this must be added, as we find it at present in a greater or less degree in every country at war in Europe, the general lack of food that is only partly remedied by various substitutes, with its consequent malnutrition and reduced resistance to disease, and this at a time when the extra amount of work thrown upon the "stay at home" would necessitate a far greater intake of nutrition than at ordinary times: a gradual decline of moral tone, due to general laxity of conduct, that is highly contagious, as the mob psychologist will readily explain, and, what is most important of all, the incessant mental strain and worry—all these combine to bring about a condition of the system, in which certain organs suffer an irreparable damage, frequently of as great an importance as any injury caused by the direct participation on the battlefield. Thus Dr. S. D. Maiden (*Ophthalmic Record*, April, 1917), to present but one instance, has noticed a very curious phenomenon, namely, that there has been noted a much larger number of cases of glaucoma in the hospital wards. He assumes that the increase of alcoholism among the working population of London during the war is a predisposing factor; in fact it has been from two to three times as prevalent as in times of peace. The most remarkable feature of this state of affairs is that the physicians "are able to anticipate a sudden increase in the number of cases of glaucoma whenever there is a military disaster, such as a Zeppelin raid, or a naval battle; many patients will date their dimness of vision, or pain in the eyes, to some Zeppelin raid or to the news of the death of their son or near relative."

We can not bring ourselves to agree with the author's postulate, that "excessive drink is primarily the cause of the increase in the number of the intra-ocular tension cases," although it undoubtedly plays an important rôle, and tends in patients thus predisposed to accentuate that predisposition; unfortunately the causation of glaucoma, a dangerous eye disease leading in many cases inevitably to total blindness, is as yet *sub judice*, and presents a fruitful field for speculation. In fact, Maitland Ramsay is inclined to consider it not as a morbid entity but as a symptom complex analogous in its manifestations to an attack of angina pectoris.

We are inclined to think, however, that the constant psychogenic stimulus, in association with various chronic intoxications, emanating from local infections, such as carious teeth, sinus conditions, diseased tonsils, and suppurating ears, produce certain circulatory disturbances, which in their turn influ-



ence the vascular system of the eye, with the consequent production of the high tension in the globe, the most prominent symptom of glaucoma. Luckily the treatment of many of these cases, if recognized early, affords relief, often of a permanent nature.

### THE ELEVATION OF THE MILK STANDARD.

The prospect of warm weather brings to the fore the prime importance of further elevation in the milk standard and the reduction of the disease factor. While the uniformity of the solid content of milk is very necessary in calculations for milk modifications and nutriment, the chief interest is centred in the matter of transmission of disease. The fact that milk is an excellent culture medium for pathogenic organisms, together with the fact that it constitutes the principal and often the sole food of the delicately balanced infant organism necessitates continued efforts towards means to render the milk supply as nearly bacteria free as possible. The variety of pathogenic bacteria that may be introduced into milk and be developed therein covers nearly the entire field—the tubercle bacillus, *Bacillus typhosus*, the Klebs-Loeffler bacillus, the organisms causing scarlet fever, septic sore throat, and other pyogenic infections. Milk is a much more prolific source of typhoidal infection than water. While the distribution of milk may carry infection broadcast, the limits of such infection can usually be determined provided, as is so often done, the milk from good dairies is not indiscriminately mixed with that from indifferent ones. Only by elevating the quality of all the milk consumed can this be obviated. To accomplish this the consumer must demand the most wholesome milk.

Nearly all communities have already established compulsory minimum requirements in the distribution of milk with respect to equipment, handling, health of cows, tuberculin test, maintenance of temperature minimums, etc. One grade milk should be discouraged, as it does not stimulate the production of higher grade milk. The higher prices brought by the higher grade milk stimulate better dairying. Perhaps in time grading of milk will no longer be necessary, milk of the highest grade only being produced.

Milk certification is the best known means of guaranteeing a better and safer milk supply. Beside requiring the best in dairy operation the index of acceptance is based on the bacterial count. The whole bacterial content is a fairly accurate register of the amount of the pathogenic bacteria. More-

over, the bacterial count is the best index of the amount of extraneous matter introduced into the milk and the temperature at which it has been maintained. For infants who must subsist entirely on milk the tax during the summer months is particularly severe unless milk of the highest quality only is consumed. Heat exhausted infants react very unfavorably to poor milk. Boiling bad milk does not solve the problem. Boiling does not kill spore forming organisms and does lower the food value of the milk. Pasteurization, however, destroys most of the pathogenic organisms contained in good milk without lowering its food value.

### BEWARE THE PRINTER.

A subscriber in this city asks that we call the attention of the medical profession to a man who has recently been victimizing the doctors by a novel and rather plausible scheme. He solicits orders for printing, quoting prices a little below the market price, and asks for a payment on account in advance, on the plea that he needs the money to buy stock for the job. The orders are never filled, and the advance payment is all net profit. He claims to be the son of a physician and gives various addresses at which he is not known. He is past middle age, is familiar with printing and stationery terminology, and his appearance is in keeping with his representations. The matter has been reported to the police, and it is suggested that should anyone answering this description endeavor to collect money in advance for such a purpose that the fourth branch of the detective bureau be notified, by telephoning to Morningside 1598. It is only through publicity and the cooperation of the physicians that the members of the medical profession can be protected from such sharpers.

### PHARMACISTS SHOULD BE EXEMPT FROM DRAFT.

At a recent meeting of the New York branch of the American Pharmaceutical Association, resolutions were adopted asking that one qualified pharmacist and one qualified assistant pharmacist be exempt from draft in the army for every fifty prescriptions put up in every drug store in the United States. Since the laws prohibit the dispensing of prescriptions except by qualified pharmacists and since the draft might in some cases take away the only qualified pharmacist in the store, it would seem reasonable to grant the request of the Pharmaceutical Association, particularly in view of the fact that the number of men who would be exempt under this rule would probably not be very large. Evidently, the withdrawal of the only qualified man from a drug store, which might occur in many instances, would work a great hardship upon the community which he supplied. Great Britain has found it advisable to grant exemptions to qualified pharmacists under certain condition, and we may well profit by her experience in this matter.

## News Items

**Columbia War Hospital Ready Next Week.**—It is expected that this new hospital, which is under construction at Gunhill Road and 211th street, New York, will be ready on June 4th. It will have 500 beds and is to be used for American and Canadian soldiers invalided from the front.

**Medical Units Arrive in England.**—Medical units from Philadelphia and St. Louis arrived in England on Monday, May 28th. The Philadelphia unit was under the command of Major M. A. Delaney and included 27 surgeons and 157 enlisted men. The one from St. Louis was under the command of Major James Fife and was composed of 28 doctors, 65 nurses, and 150 enlisted men.

**Hospital Ship Solace Declared Insanitary.**—Senator Calder, of New York, on May 29th, presented the Senate a round robin signed by more than thirty-six sailors on the United States Hospital Ship *Solace*, complaining of insanitary conditions on the ship and of hardships imposed upon the patients. The paper was referred to the Senate Committee on Naval Affairs for investigation. Admiral Braisted, surgeon general of the navy, has been ordered by the Secretary of the Navy to investigate the charges.

**A Course in X Ray Work for Army Men.**—A course of lectures on radiological technic for army men will be given in the new x ray department of Bellevue Hospital, under the direction of Dr. I. Seth Hirsch, director of the laboratories, assisted by Clayton Ulrey, of the Department of Physics of Columbia University. These lectures, which are free, are restricted to physicians, members of the Red Cross Society, and men who have enlisted. Applications must be submitted to Dr. George O'Hanlon, medical superintendent of Bellevue Hospital.

**German Casualties in the War.**—According to press dispatches, the total number of German casualties reported in the official German lists at the end of April was 4,245,804. The killed, deaths from wounds, less severely wounded, deaths from sickness and prisoners numbered more than 2,000,000, nearly 1,000,000 of whom were killed. The slightly wounded were given as 1,500,000. Casualties reported in April are given as 42,838, including 4,308 prisoners and missing. Field Marshal Haig reported the capture of 17,300 Germans in that month, and the French reported taking more than 20,000 more.

**Ex-King of Portugal Head of Orthopedic Section of British Red Cross.**—Manuel, former King of Portugal, has been appointed by the British Red Cross Society as head of its Section in Orthopedics. The former king has for several years been interested in work of this character. He is now engaged in a tour of inspection with Colonel Robert Jones, Inspector General of Orthopedics in the British Army, of all the institutions in Great Britain where wounded soldiers are receiving treatment of this character. One of the largest of these institutions is in Liverpool, and Manuel spent three days there, devoting one day to the surgical wards and operating rooms and acting as an assistant at an operation in a hospital.

**Training Camps for Medical Officers.**—It is announced in the *Army and Navy Journal* that on June 15th separate training camps for medical officers will be opened at Fort Benjamin Harrison, Ind., Fort Riley, Kans., and Fort Oglethorpe, Ga. About 5,000 men who have been recommended for commissions will be distributed among these three stations, where they will receive three months' instruction in both medical and military subjects. It is learned that efforts will be made to secure at least 20,000 medical officers for the forces already contemplated. Major Percy M. Ashburn, Medical Corps, United States Army, will be in charge at Fort Benjamin Harrison with Major James F. Hall, Medical Corps, United States Army, as assistant; Major William N. Bispham, Medical Corps, United States Army, at Fort Riley, with Major Charles R. Reynolds, Medical Corps, United States Army, as assistant, and Lieutenant Colonel Henry Page, Medical Corps, United States Army, at Fort Oglethorpe, with Major Roger Brooke, Medical Corps, United States Army, as assistant.

**Another Hospital Ship Torpedoed.**—The British Hospital Ship, *Dover Castle*, was torpedoed Saturday, May 26th, in the Mediterranean Sea. All the hospital patients and the staff were safely transferred to other ships, and the crew also were saved with the exception of six men who are missing.

**Williams College Sends Ambulance Abroad.**—Fourteen ambulances, with a complete complement of men and supplies, have sailed for France to become a unit in the American Ambulance Field Service. The ambulances and equipment were the gift of Mrs. Frederick F. Thompson, and the ambulance corps are all Williams men.

**College Men Will Form an Ambulance Corps.**—Announcement is made by the War Department, that the army ambulance corps will recruit fifteen hundred college men for service abroad. Among the institutions that have contributed one or more units to the corps are: Pennsylvania University, Yale, Harvard, Princeton, Dartmouth, Williams, Johns Hopkins, Pittsburgh, Virginia, Iowa State College, University of Iowa, Hamlin, Lafayette, Purdue, Arizona, Indiana, Northwestern, Amherst, Tennessee, South Carolina, Florida, Washington and Lee, George Washington, Oberlin, Pennsylvania State, Leland Stanford, Illinois, Michigan, Swarthmore, Brown, California, and University of the South. The students enrolled are now awaiting enlistment by officers to be detailed by the War Department.

**Fund for Families of War Surgeons.**—At a meeting of the Medical Society of the County of New York, held in the Academy of Medicine, Monday evening, May 28th, announcement was made that a fund had been started for the support and care of the wives and families of physicians in New York who may require financial aid as a result of the head of the family being called to war service. A joint committee of the Academy of Medicine and the County Medical Society has been formed to administer the fund and receive contributions, which will be known as the Committee on Amelioration of Hardship of the Families of Physicians Called Into National Service. The fund was started by Dr. Edwin B. Cragin with a gift of \$10,000, which was followed by a gift of \$10,000 from Dr. Walter B. James, \$5,000 from Dr. John F. Erdman, and \$1,000 from Dr. Seth M. Milliken.

**Three New Branches of the Army Medical Service.**—The creation of three new branches of the army medical service was announced by the War Department on May 25 in order to meet changed war conditions. They are all to be under direction of officers of the Medical Corps, U. S. A. The new branches include: Division of Sanitary Inspection under Lieutenant Colonel Frederick P. Reynolds, to deal with sanitary matters pertaining to armies in the field such as kitchens, mess shelters, ice boxes, etc.; Division of Hospitals and Hospital Construction, Colonel James D. Glennan, which will handle the construction of thirty-two hospitals at the National Army cantonments, and Division of Medical Military Instruction, Lieutenant Colonel Edward L. Munson, which will supervise the new medical training camps. A general sanitary inspector from Colonel Reynolds's division will be attached to the staff of each commanding general.

**Ambulances for France.**—The pupils of the Misses Masters's School at Dobbs Ferry, N. Y., have presented to the Misses Masters a fully equipped ambulance, which is to be presented to the American Ambulance in France. The girls raised \$2,100, which provides a surplus of \$500 for the maintenance of the ambulance. The presentation was made on the fortieth anniversary of the founding of the school.

The employees of the city Department of Water Supply, Gas and Electricity have subscribed over \$3,000 for a fully equipped ambulance which is to be presented to the government for use abroad. The ambulance has been ordered and will be ready in about three weeks.

The Salvation Army announces that it had raised \$10,500 toward buying and equipping twenty-three automobile ambulances for service with the American troops in France. The army will not only buy and equip the ambulances but will pay the expenses of maintaining them while they are in service.



**Society Meetings to Be Held in Philadelphia during the Coming Week.**—Wednesday, June 6th, College of Physicians; Thursday, June 7th, Obstetrical Society, South-east Branch of the County Medical Society; Friday, June 8th, Northern Medical Association.

**Anniversary Meeting of the Buffalo Academy of Medicine.**—On Wednesday evening, June 13th, the twenty-fifth anniversary of the founding of the Buffalo Academy of Medicine will be celebrated. A detailed announcement of the program will be published later.

**American Academy of Medicine.**—The forty-second annual meeting of this organization will be held in Rooms 101 and 103, Hotel Biltmore, New York, Monday and Tuesday, June 4th and 5th, under the presidency of Dr. J. E. Tuckerman, of Cleveland. The topic selected for discussion is Civilization and Its Effects on Morbidity and Mortality.

**Standardization of Disinfectants.**—Connecticut is the first State in the Union to enact a bill providing for the standardization of disinfectants. This measure, which was enacted recently, provides that all disinfectants marketed in the State shall bear on the label a statement of the bactericidal coefficient, as compared with carbolic acid, either according to the Rideal-Walker or the Hygienic Laboratory test.

**Connecticut State Medical Society.**—Dr. E. K. Root, of Hartford, was elected president at the 125th annual meeting, held in New Haven last week, succeeding Dr. Samuel M. Garlick, of Bridgeport. Other officers were elected as follows: Dr. Patrick J. Cassidy, of Norwich, first vice-president; Dr. E. C. Godfrey, of Bridgeport, second vice-president; Dr. John E. Lane, of New Haven, secretary; Dr. P. H. Ingalls, of Hartford, treasurer.

**Mississippi Medical Association.**—At the annual meeting of this association, held in Jackson, on May 10th, Dr. Willis Walley, of Jackson, was elected president, succeeding Dr. T. M. Dye, of Clarksdale. Other officers elected were as follows: Dr. A. W. Pigford, of Meridian, first vice-president; Dr. H. A. Gamble, of Greenville, second vice-president; Dr. O. N. Arrington, of Brookhaven, third vice-president; Dr. E. F. Howard, of Vicksburg, secretary; Dr. J. M. Buchanan, of Meridian, treasurer. More than fifty members of the association have offered their services to the government.

**American Medical Editors' Association.**—The annual meeting and banquet of this association will be held at the Hotel McAlpin, New York, Monday and Tuesday, June 4th and 5th. One of the speakers will be R. B. Ames, secretary of the committee on information league to enforce peace, who has been invited to discuss the subject of the doctor in war. Dr. Joseph Bloodgood, of Johns Hopkins University, will speak on the duty of the medical man in this great national crisis. Talcott Williams, dean of the School of Journalism, Columbia University, will speak on the Duty of the Hour. An interesting feature of the program will be a symposium on the Attitude of the Medical Press to the Compulsory Health Insurance Movement, which will be presented on Tuesday afternoon, at two o'clock. Dr. Joseph MacDonald, 92 William street, is secretary of the association, and Dr. E. G. Register, of Charlotte, N. C., is president.

**New Hampshire Medical Society.**—The 128th annual meeting of this society was brought to a close on the evening of May 16th with the anniversary banquet, held in the Eagle Hotel, Concord. About 125 physicians from various parts of the State were present. Dr. Frank E. Kittredge, of Nashua, was toastmaster, and among the speakers were the Hon. George H. Moses, former Minister to Greece; Professor Craven D. Laycock, dean of Dartmouth College, and Dr. Walter M. Brickner, of New York. The following officers were elected: President, Dr. Frederick S. Towle, Portsmouth; vice-president, Dr. Charles P. Bancroft, Concord; secretary, Dr. D. E. Sullivan, Concord; treasurer, Dr. M. Currier, Newport; trustees, Dr. John M. Gile, Hanover, Dr. Herbert L. Smith, Nashua, Dr. Charles R. Walker, Concord; chairman committee on public policy and legislation, Dr. Charles Duncan, Concord; chairman committee on scientific work, Dr. D. E. Sullivan, Concord; anniversary chairman, Dr. John J. Berry, Portsmouth. Next year's meeting will be held in Concord in May, and there will be a two days' session.

**Appointments at Long Island College Hospital.**—The Board of Trustees of the Long Island College Hospital announce the appointment of Dr. James C. Eggert, director of extension teaching, Columbia University, as president of the medical college. Dr. Otto V. Huffman has been appointed dean; Dr. Wade W. Oliver, formerly of the University of Cincinnati, has been called to the chair of bacteriology, and Dr. Carl H. Laws, formerly of the department of pediatrics in the University of Michigan, has been appointed professor of pediatrics.

**The Chain Letter Asking for Subscriptions for Anesthetics,** which was inaugurated by Miss Elizabeth Whitman, superintendent of nurses, New York Eye and Ear Infirmary, has reached as far west as Iowa, and a subscriber to the *NEW YORK MEDICAL JOURNAL* in that State has asked for information regarding Miss Whitman and the fund she is raising. Inquiry at the New York Eye and Ear Infirmary has brought the statement from the superintendent that she is thoroughly reliable, and that the funds are being disposed of in the proper channels, being turned over, at present, to the British Red Cross of America, of which Mr. Lepor Trench, 81 Fulton Street, New York, is treasurer.

**A Public School Clinic.**—The Department of Health of the City of New York maintains a clinic for contagious and other eye diseases among the children of the public schools at P. S. No. 65, on Eldridge Street. About forty neighboring schools send children to this clinic. In the same school the Department of Education maintains two special classes, in charge of competent teachers, where children who otherwise might be excluded from school are under suitable instruction until well enough to return to their own schools.

On Monday, June 4th, a public clinic will be held, at 1:30 p. m., where an opportunity will be given to see and inspect these children in the clinic as well as at their class work. Members of the medical profession and others interested are cordially invited.

**Illinois State Medical Society.**—The sixty-fifth annual meeting was held in Bloomington, May 8th, 9th, and 10th, under the presidency of Dr. William L. Noble, of Chicago. Springfield was selected as the meeting place for 1918, and officers were elected as follows: Dr. Elmer B. Cooley, of Danville, president; Dr. Edward W. Fiegenbaum, of Edwardsville, president-elect; Dr. Edwin P. Sloan, of Bloomington, first vice-president; Dr. S. B. Adair, of Chicago, second vice-president; Dr. A. J. Markley, of Belvidere, treasurer; Dr. Wilbur H. Gilmore, of Mount Vernon, re-elected secretary. The society passed resolutions recommending that all members between the ages of twenty-two and thirty-five years report immediately for examination for war service; that all between the ages of thirty-five and fifty-three years enroll in Officers' Reserve Corps; and that it be considered the patriotic duty of physicians who remain at home to take over the private practices of those in military service, paying a share of the fees to the families of the absent physicians, returning the practice at the end of the war.

**Personal.**—Dr. D. A. Sinclair, of New York, has been commissioned a major in the Medical Officers' Reserve Corps, United States Navy, and Dr. A. S. Morrow, also of New York, has received his commission as a captain.

Dr. John T. Sprague, assistant sanitary superintendent of the Department of Health of the City of New York, in charge of the Borough of Richmond, has received a commission as major in the Medical Officers Reserve Corps of the army. Two other health department physicians, Dr. Bruno S. Horowitz and Dr. Arthur S. Driscoll, have been commissioned first lieutenants.

Dr. Edward L. Hunt, 41 East Sixty-third street, New York, has been appointed chairman of the Committee on Practice Conservation of Members Called to the Colors, by the Medical Society of the County of New York.

Dr. Hideyo Noguchi, of the Rockefeller Institute for Medical Research, was taken ill with typhoid fever on Thursday, May 24th. His condition is said to be serious.

Dr. Francis W. Williams, of Boston, was elected president of the Association of American Physicians at the annual meeting held in Atlantic City, N. J., May 3d, 4th, and 5th.

Dr. J. F. Baldwin, of Columbus, has been elected president of the Ohio State Medical Society.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 995.)

Comparing atropine with other agents acting peripherally on the autonomic nervous system, in particular pilocarpine and physostigmine, we find that the expense attending use of the latter alkaloids has not increased since the beginning of the war as much as in the case of the mydriatic principles from the belladonna group. At present pilocarpine salts are only about fifteen per cent. more expensive than in the fall of 1914, while with physostigmine salts the advance has been somewhat greater. The corresponding crude drugs, physostigma or Calabar bean, and pilocarpus or jaborandi, have shown a marked increase amounting to nearly 100 per cent., during the same period. At present physostigmine (eserine) salts are about five times as costly, weight for weight, as those of pilocarpine. For myotic purposes and to lower intraocular tension pilocarpine, in addition to being less irritating to the eye than eserine, is thus less expensive than the latter. The difference is, however, lessened owing to the fact that a solution fifty to 100 per cent. stronger is required in the case of pilocarpine. In the other therapeutic uses of these drugs pilocarpine cannot be substituted for eserine, as the effects are different, the former acting preeminently on the secretions and the latter on peristaltic functions. Probably more account might advantageously be taken, however, of the substitution of the crude drugs, pilocarpus and physostigma, for the more expensive isolated alkaloids. In each instance the alkaloid costs about four times as much when thus used alone than when employed in the whole drug, and the action of the latter is qualitatively almost, if not quite, the same as that of the pure principle, though no doubt in general less rapid and quantitatively precise. The former view that pilocarpus contained, in addition to pilocarpine and other similarly acting alkaloids, an antagonistic principle acting like atropine has been shown, as Sollmann states, to be erroneous. Again, in the case of physostigma, the presence of an alkaloid, calabarine, exerting a strychnine like action, as believed by early investigators, has not been confirmed in more recent studies. Apparently there remain, therefore, no objections to the use of the crude drugs, when of reliable quality, except those relating to their slower and less certain action as compared to the alkaloids injected hypodermically. In many acute conditions these objections are undoubtedly prohibitive, but where a more persistent action is desired, as in some instances of sluggish gastrointestinal motility in the case of physostigma, and for the stimulation of one or more glandular structures, or of functions governed by the craniosacral portion of the autonomic nervous system in particular by the vagus

nervous system—in particular by the vagus nerve—in the case of pilocarpus, the crude drugs can often appropriately be given.

Of the organic circulatory stimulants and tonics, strychnine is among those having so far undergone the least price advance, this alkaloid costing but about fifty per cent. more than in the fall of 1914. In the case of nux vomica the advance has been even less. Those agents, even at the new prices, remain very inexpensive as compared to the other powerful alkaloidal drugs, a dose of strychnine, e. g., now costing but one sixteenth as much as one of atropine three times smaller.

Digitalis, in the form of the leaf, has doubled in value since the period referred to; strophanthus seed has become almost four times as expensive as before, while squill has risen by about fifty per cent. Dose for dose, squill remains the least expensive of these heart tonics, being less than one half as costly as digitalis, which, in turn, in equal doses, is almost four times less expensive than strophanthus. These differences are, to be sure, reduced when the drugs are used in a tincture or other galenical preparation, and furthermore, the indications for the three agents are somewhat different.

Of chief significance in connection herewith is the adoption of such a manner of administration as will promote absorption of as great a proportion as possible of the drug ingested. Recent researches having shown that vomiting following the use of these drugs is due rather to excitation of nerve centres after absorption than to direct irritation of the mucous membranes, so the remedies can justifiably be given between meals, when absorption will be most perfect. Worth Hale has, moreover, advocated their ingestion on an empty stomach with a view to obviating partial decomposition of the active principles by the acid of the gastric juice. What direct irritant action is actually exerted by these remedies can be in part avoided by the administration of each dose in a half glassful of water—a procedure which will also hasten absorption by washing the drug into the intestine, the researches of Ogawa (1912) having indicated that absorption of digitalis takes place only from the intestine. As for the preparation to be used, the tinctures are probably best, the tincture of digitalis, e. g., being, according to Sollmann, absorbed more rapidly than the infusion, and having the additional advantage of greater stability. Powdered digitalis leaf, while about ten times less expensive, dose for dose, than the tincture, is held to be more irritating than the latter; this difficulty could doubtless be overcome by its administration in capsules coated with stearic acid, which would prevent contact of the drug with the mucous membranes until it reached the alkaline intestinal juices. In the case of strophanthus, administered in the form of the tincture in the manner above described, surprisingly small amounts, e. g., five minims a day, or even less in some instances,

suffice to exert a marked therapeutical and even a toxic action. While the official doses of digitalis leaf and strophanthus seed, as well as of the tinctures of these two drugs, are the same—one grain and eight minims, respectively—the power of action of the two drugs, when so administered as to favor absorption, apparently, is by no means identical. Insufficient attention has been paid clinically, it seems, to certain experimental observations, e. g., that in the cat, strophanthus, when administered intravenously, is fatal in a dose thirty-three times smaller than digitalis. Again, in guineapigs of equal weight, tincture of strophanthus given subcutaneously will produce characteristic symptoms more marked and more certainly followed by death than will a dose of *fluidextract* of digitalis twice as large. While these experiments do not exactly reproduce the conditions attending oral administration of the drugs in man, they strongly suggest that when well absorbed, strophanthus may be even less expensive to use than digitalis, owing to the much smaller amount required.

(To be continued.)

**Intestinal Venous Stasis.**—Fenton B. Turck (*Boston Medical and Surgical Journal*, May 10, 1917) says that our aims in the treatment of this condition must be: 1, to reduce fatigue of the hollow muscle; 2, to prevent fatty acid intoxication; 3, to prevent intestinal retention; 4, to prevent absorption of intestinal flora; 5, to correct acidosis; 6, to reduce splanchnic venous stasis; 7, to increase immunity; 8, to maintain nourishment. The general measures to attain these objects are: Regular feeding periods to conform to the curve of muscle work and relaxation. Food rich in the salts of calcium, magnesium, potassium, and sodium should be provided to replace the lost bases incident to the acidosis. Vegetables should be steamed for several hours, rather than boiled, so that the salts are retained and available for easy digestion, passed through a wire sieve, and made into puree. The intake of fat should be reduced to minimum requirements; we should prohibit heated fat and guard against stale fat. Olive oil is useful in the recuperative stage. Allow no extractives in the food, no soups, no bouillon. Protein without extractives is completely digestible in the upper part of the digestive tract. Older children may be given extractfree meat. For a time the total protein intake may be reduced. Baths, both foot baths and sitz baths, containing salt with soda, beginning at 105° F. and gradually raised to 110° F., also are indicated. Medication depends upon whether we are dealing with an acidosis in the chronic or acute form. To prevent the passage of bacteria from the intestinal tract, demulcent Irish moss, liquid vaseline, and fine bran have been found effective.

The treatment of severe acute cases consists of gastric lavage daily, hourly, or continuously, as the severity of the symptoms indicate, with colonic lavage. Lavage with weak silver nitrate, followed by infusion of sodium bicarbonate solution, is beneficial; in extreme cases it may be necessary to resort to a transfusion of autoserum. Demulcents, vene-

section followed by infusion of sodium bicarbonate solution, and a continuous bath are also indicated.

In the moderately severe and chronic cases gastric and colonic lavage are still important, but the latter should be given with the gentle pneumatic gymnastics method. Alkaline demulcents have a place in these cases. These cases are the ones, according to the experience of the writer, in which an appropriate field is found for the employment of autogenous vaccines.

The following is the writer's method of preparing extractfree meat. Beef, mutton, or chicken is chopped up or left ground in the meat grinder, and the juice is pressed out; or it may be left in cold water over night and then squeezed out. The juice is thrown away and the meat placed in a steamer with a little cold water and steamed for two or three hours. The juice is discarded, and the pulp remaining represents the nutritive part of the meat with the unnecessary and poisonous part removed. It may be made palatable in a variety of ways: Milk or cream may be added with a little flour, heated, seasoned, and spread on toast. It may be made into small patties, dipped in egg, and broiled. A mixture of half bread crumbs and half meat may be flavored with bay leaf or curry, bound together with milk and egg, and baked in the oven as a veal loaf; it may be eaten hot or cold. The extractfree meat may be mixed with a little curry and milk added; it may then be placed in a porcelain dish, surrounded with a border of rice, covered with beaten white of egg, and quickly heated in the oven. The meat may be made into cutlets and heated with a little butter in the pan, but not fried in the ordinary way.

**Abdominal Kneading in Intestinal Stasis.**—Joseph S. Bolton (*British Medical Journal*, March 31, 1917) recommends abdominal kneading as a valuable method supplementary to the ones generally in use for the relief of intestinal stasis, for simple chronic or acute constipation, for toxic headache in the absence of constipation, and for certain forms of diarrhea, flatulent colic, and intestinal disorder following postoperative adhesions. The kneading should be practised by the patient himself while lying in a warm bed in a state of relaxation. The hands should be warm and the kneading should proceed as follows: With both hands flat upon the abdomen the cecum should be emptied by gentle but increasing pressure made in a backward and upward direction and continued for at least two minutes; the hands should then be made to follow the course of the ascending colon, continuing deep pressure; the right hand should then make pressure forward in the loin while the left, on the front of the abdomen, squeezes the contents through the hepatic flexure; the gallbladder should then be emptied by manipulation with the tips of the fingers under the costal margin; then the transverse colon should be kneaded toward the spleen and the splenic flexure emptied in a manner similar to that employed for the hepatic; finally the kneading should be finished over the sigmoid. The treatment should be taken night and morning in chronic cases, each session lasting fifteen to twenty minutes. A heavy ball of shot may replace the hands for a large part of the kneading.



### Emetine Bismuth Iodide in Amebic Dysentery.

—George C. Low (*Lancet*, March 31, 1917) presents case records of seven patients with various forms of amebic dysentery, including carriers and relapsing cases, to show the curative value of emetine bismuth iodide given orally. Its proper administration offers good prospects of permanent cure in all types of the disease; thus a comparative study shows that ninety per cent. of cures can be obtained from this salt as against thirty per cent. with the hypodermic injection of emetine hydrochloride. The plan of treatment is to keep the patient in bed; give a light diet of milk, white meat, fish, arrowroot, sago, tapioca, and cornmeal; a small meal of cereal and milk is given at 10 p. m. and followed at once by a dose of the emetine bismuth iodide in pill or capsule; five to ten minutes later hot water should be sipped and this repeated if nausea occurs; the head should be kept low at first until the patient's tolerance for the drug is established. Saliva should not be swallowed when it collects in the mouth. If nausea develops a mustard leaf may be applied to the epigastrium or 0.6 to 1.2 mls of tincture of opium may be given half an hour before the emetine. The dose of the emetine salt should be 0.18 gram nightly for twelve nights. Nausea is not frequent and is of little annoyance in the majority of cases; some diarrhea may develop but is beneficial rather than harmful. The emetine is best given in powder in an ordinary gelatin capsule or made into a pill with syrup and coated with salol.

**The Treatment of Osteomyelitis.**—Channing C. Simmons (*Boston Medical and Surgical Journal*, May 10, 1917) finds that further experience confirms him in the conclusions arrived at two years ago. In children with pain in a limb and evidence of toxemia, always consider osteomyelitis, and operate early even if the symptoms are rather vague. If the diagnosis is incorrect, practically no harm has been done, while if correct a great deal of suffering may be avoided. In acute cases open to the medulla and pack the wound. The treatment and prognosis varies somewhat in these early cases, but in general the earlier the operation the better the prognosis. In cases where bone destruction has taken place, seen less than three months after the onset of the disease, perform subperiosteal resection when possible; the prognosis is good. In chronic cases of bone abscess of less than one year's duration, open and pack; the prognosis is good. In chronic cases with bone destruction of less than one year's duration, remove sequestrum and pack; the prognosis is good. In old chronic cases, either with bone destruction or of the bone abscess type, remove necrotic areas and drain. Try to obliterate the cavity with flaps of living tissue. If this cannot be done either use bone wax, pack, or sterilize the cavity, allow it to fill with blood clot, and close without drainage. The prognosis if the cavity can be obliterated is fair; otherwise poor. The treatment when such bones as those of the pelvis are involved is unsatisfactory, and the prognosis problematical. When, in old chronic cases, the whole shaft of a long bone is badly diseased, the possibility of resection of the entire shaft, with bone transplantation, should be considered before amputation is resorted to.

Acute osteomyelitis varies in severity from a mild local infection of a single bone to an overwhelming septicemia with infection of many bones, but the milder forms are the more common. Patients seen within a few weeks from the date of onset should be cured by operation as a rule. One operation is usually insufficient, two or more are often necessary. Osteomyelitis of the ileum or femur is difficult to treat, and multiple osteomyelitis is exceptionally difficult to cure, but each bone should be treated as if it alone were affected. The cases should be followed up very carefully, especially during the first year, and x rays taken at frequent intervals.

**A Method of Supporting the Bladder in Certain Cases of Cystocele.**—Herbert L. Smith (*Boston Medical and Surgical Journal*, April 26, 1917, states that he attaches the uterus to the postero-inferior surface of the bladder, suturing the cervix firmly to the posterior wall of the urethra just above and behind the meatus. By this maneuver the bladder pouch is tucked up into the pelvis, and the bladder as a whole rests upon the anterior wall of the uterus as upon a shelf, just as it does upon the posterior wall of the uterus in the interposition operation. He has performed this operation eight times. Two cases are recent, the other patients have been seen or heard from after periods from five to eight months. None show any tendency to recurrence of the bladder pouch. The majority of the patients were over sixty years of age. This operation would seem to him to be indicated in very aged or infirm women, where a prolonged vaginal technic or abdominal section would not be safe; in cases where the uterine body is already high up in the pelvis as the result of previous operations, but without relief to the cystocele; in cases where the body of the uterus has to be removed and in which the bladder has become so stretched that merely supporting the stump from above will not remove the cystocele pouch.

**The Principles of the Treatment of Syphilis.**—S. Pollitzer (*Journal of Cutaneous Diseases*, September, 1916) proposes the following plan of treatment: Treatment should be instituted at the earliest possible moment after the diagnosis is established. In the case of a patient with lues before the appearance of the roseola, give daily intravenous injections of salvarsan, using large doses, and regulating them according to the body weight, followed by eight weekly injections of salicylate of mercury. Treatment is then suspended to await developments.

When the treatment is begun after the appearance of a rash, give the course of salvarsan and mercury as outlined above and repeat after a pause of two months, and again after a similar interval. After the three courses within the first year, if the Wassermann reaction has remained negative further treatment may await the appearance of a positive Wassermann reaction. In cases which come under treatment one year or more after infection, treatment should be continued until the Wassermann becomes negative, and thereafter two courses of treatment should be given, even though the Wassermann remain negative. After a year of negative Wassermann reactions without treatment, a provocative test should be made.



**Thymol in Hookworm Disease.**—B. E. Washburn (*Journal A. M. A.*, April 21, 1917) made comparative tests of mixtures of thymol with lactose, with lactose and sodium bicarbonate, and with sodium bicarbonate, with simple thymol in both coarse and fine powder. He found that finely powdered thymol with an equal amount of finely powdered lactose gave a higher proportion of cures than thymol alone, than thymol and lactose in other proportions, and than thymol and lactose in equal quantities but not very finely powdered. The addition of sodium bicarbonate or its subsequent administration largely prevented or removed the tendency to gastric disturbance arising from the treatment. Finally, a mixture of equal parts of finely powdered thymol and sodium bicarbonate gave both the best curative results and the least gastric irritation.

**Morphine Atropine Analgesia in Labor.**—Miguel H. Vallenás (*La Chromica Medica*, of Lima, Peru, January, 1917) reports fifty cases treated by the injection of morphine hydrochloride four centigrams; and atropine sulphate one milligram with good results. Complete analgesia was obtained in fifty-eight per cent., incomplete analgesia in sixteen per cent. and no result in two per cent. Analgesia in the period of expulsion during perineal distention was rare, while the occasional lessening of uterine energy yielded readily to pituitrin. Twenty-eight per cent. of the children were born in apnea and ten per cent. in a state of asphyxia, all being resuscitated without difficulty. This method seems to be without injurious effect upon the puerperium or the future life of the child, but it would seem better to give fractional doses rather than one large single dose to avoid accidents to either mother or child.

**Medical Gynecology.**—Ross G. Loop (*New York State Medical Journal*, April, 1917) writes from his own extensive experience in this field and recommends medical treatment as giving better results than surgery in several conditions. For cases of infantile uterus hygienic and tonic measures should be instituted; the uterus slowly dilated with graduated dilators; iodine or ninety-five per cent. phenol applied to the endometrium; and later the insertion of a stem pessary and the careful administration of fifteen to thirty milligram doses of thyroid extract or corpus luteum, continued over a considerable period of time. Amenorrhea responds to much the same plan of treatment. In dysmenorrhea also, when not due to cystic ovaries, tubal disease, varicosities, etc., the treatment should include the use of graduated dilators, intrauterine applications of phenol or iodine, stem pessary, and the administration of thyroid. Phenol applications every four days, tamponade, and the use of hot saline douches will often cure endometritis and its associated symptoms. A large proportion of cases of retroversion can be cured by manual replacement, replacement with the help of the knee chest position, or by means of a uterine sound. This should be followed by tamponade with ichthylol, iodine, or glycerin, or combinations of them and the adjustment of a properly fitting pessary. Finally, subinvolution can usually be cured by combining hot douches, local intrauterine treatment with phenol or iodine, and tamponade.

**Intravenous Injection of Eusol in General Sepsis.**—J. S. Fraser, Andrew Campbell, and E. D. Dickson (*British Medical Journal*, March 17, 1917) treated two cases of acute general sepsis resulting from middle ear disease with intravenous injections of eusol in doses of sixty mils. In the first case the patient was *in extremis* before the injection was given, but it was followed by marked immediate improvement. A second dose was given after an interval of four days and the patient made a rapid and complete recovery. In the second case the administration of eusol was followed by little change in the patient's condition and it was not until after a metastatic bone abscess had been opened and drained that recovery set in.

**Radium Therapy in Cancer.**—James Ewing (*Journal A. M. A.*, April 28, 1917) discusses this subject at great length, pointing out the fields of special usefulness, those of seemingly limited application, and those in which the use of radium may do harm. He also discusses the probable limitations of this agent and the dangers associated with its use. The conclusions reached are that it has proved of great value in a limited variety of cancers; that its field of usefulness will probably be materially extended with increasing knowledge of how and when to employ it; that its use demands an accurate knowledge of the pathology and anatomy of the various forms of cancer; and that it should never be employed by the tyro, but only by one thoroughly experienced in its use and in cancer therapy.

**The Hygiene of Pregnancy.**—W. C. Heussy (*Northwest Medical*, March, 1917) emphasizes the great importance to both mother and child of proper care during the gestational period. Special attention should be directed to the kidneys and urinalysis should be made every three weeks to the fifth month and thereafter weekly or oftener. In addition to the routine tests the amount of urea and the degree or indicanuria should be determined. When there is indicanuria the diet should be made purin free. Throughout pregnancy a great abundance of water should be drunk, at least six glasses daily. The diet should be fairly abundant and composed of readily digestible foods with a moderate amount of nitrogen and a large proportion of vegetables and fruit. The diet should be guided by the urinary findings when there is any abnormality. The mouth and teeth should be kept in a good condition and an alkaline mouth wash is very valuable to reduce the acidity of the saliva. The bowels should be kept open by diet if possible, using cereals, coarse bread, vegetables, and fruits. If drugs are needed calomel, magnesium or the official compound rhubarb pill is the best. Exercise in the open air should be regular but not too strenuous and free from jars and jolts. An abundance of sleep is necessary and a rest should be taken in the middle of the day. Cutaneous elimination should be kept active by a daily bath. Mental strain, worries, and frights should be avoided. The nipples should be softened by daily bathing with soap and warm water and the application of liquid petrolatum or sterile vaseline. Abnormalities of position of the fetus should be discovered six weeks before term and prophylactic measures instituted.

**Excision of the Retropharyngeal Gland.**—Norman Patterson (*Lancet*, March 31, 1917) has excised this gland three times for the cure of retropharyngeal abscess with excellent results. Through an incision along the posterior border of the sternomastoid muscle the gland may be reached and removed without damage to the overlying pharyngeal mucosa. The indications for its excision seem to be: 1, to prevent the development of abscess where this seems probable; 2, for the cure of abscess, either primarily or after incision and drainage have been followed by relapse. Through the same incision it is possible to curette the abscess cavity or at times to dissect it out completely.

**The Metabolism and Treatment of Rheumatoid Arthritis.**—Ralph Pemberton (*American Journal of the Medical Sciences*, May, 1917) cites experiments in which it has been possible to relieve patients of practically all symptoms of diffuse arthritis by a large curtailment of carbohydrate, with an increased ingestion of fats in sufficient amounts to make up or exceed this caloric deficit. When the protein intake has been kept approximately constant some such patients have actually gained weight while convalescing. Apparently carbohydrate plays an injurious part in this disease. Fat cannot be used with impunity in treating these patients, but it seems to be relatively harmless as compared to carbohydrate, and it can be used to advantage in many cases. The difference in the effects of large amounts of carbohydrate when ingested by normal individuals and by subjects of rheumatoid arthritis is not reflected in the carbon dioxide tension of the alveolar air under the limited conditions of the experiments.

**Medicated Galvanic Current in Treatment.**—M. O. Terry (*Medical Summary*, April, 1917) describes excellent results in tuberculous glands, goitre, uterine fibroids, and prostatic hypertrophy with the galvanic current, employing electrodes moistened with water containing half an ounce of ammonium chloride and fifteen minims of tincture of iodine to the quart. In treatment of glands of the neck the positive pole is placed at the back of the neck and the negative pole over the enlargements, the amount of current used varying from twenty to fifty milliamperes, and the duration being from ten to fifteen minutes. Treatments should be given every five days until improvement becomes marked and thereafter every one or two weeks until recovery ensues. In the case of fibroids the positive sponge is placed over the abdomen and a copper negative electrode is passed up into the uterus as far as it will go, but when there is active uterine hemorrhage the positive pole is introduced into the uterus until the condition subsides. In such cases the current tolerated is from 200 to 500 milliamperes and the duration of each session is from twenty to twenty-five minutes. In prostatic enlargement two methods may be employed, in the first of which the positive pole is placed over the sacrum and the negative over the perineum, and in the second and better method a covered positive electrode is placed in the rectum with the negative electrode in the prostatic urethra. In the last case a very weak current of about ten milliamperes is used for five minutes.

**Intravenous Injections of Antimony in Malaria.**—George C. Low and H. B. Newham (*British Medical Journal*, March 3, 1917) report the careful study of a case of estivoautumnal malaria treated by Rogers's method of intravenous injections of tartar emetic. Although six injections were given, the last three being of the maximal dose, the drug had no effect upon the numbers of parasites found in the blood. Change to the oral administration of quinine and arsenic was followed by immediate improvement.

**Factors in Vaccinia.**—John N. Force and Ida M. Stevens (*Journal A. M. A.*, April 28, 1917) have made comparative investigations of different methods of vaccination and of vaccines prepared in different ways. They find that there is no choice between vaccines totally freed from contaminating organisms and those treated solely for the destruction of tetanus spores; that infection of the vaccination is due to faulty vaccination technic; that the best technic includes the insertion of vaccine simultaneously into three minute scarifications followed by immediate covering with a layer of dry, sterile gauze. The several suggested methods of diminishing secondary infection and reducing the size of the pustule were found to be valueless.

**Differential Blood Counts in Parasitic Skin Diseases and Their Possible Significance.**—Albert Strickler (*Journal of Cutaneous Diseases*, October, 1916) states that he studied the differential blood pictures of ringworm of the scalp, favus involving the scalp, and pediculosis of the body. In all fifty cases of ringworm of the scalp were studied, and out of this number eighty per cent. showed an increase of lymphocytes averaging 37.4 per cent., while twenty per cent. showed no increase. The blood picture did not vary much in those cases of ringworm of the scalp, which were headed by vaccines, from those that were treated by local measures only. Four cases of favus were studied and their blood showed an increase of lymphocytes. In pediculosis of the body there was no alteration of the blood picture.

**Gunshot Wounds of the Abdomen.**—C. H. Barber (*Indian Medical Gazette*, March, 1917) gives an account of eighty-eight cases seen at the siege of Kut and concludes: The mortality in penetrating wounds of the abdomen below the transpyloric plane is very high, about ninety-seven per cent. Slight symptoms or small wounds do not justify the conclusion that internal lesion may be slight or harmless; on the contrary it should be assumed that a penetrating wound means serious and probably fatal damage. Laparotomy should be the routine treatment for these cases, provided the condition of the patient is good enough for a major operation. Hemorrhage is the most serious complication. Operation should be done at once if serious bleeding is taking place; the pulse is the best guide to this and needs to be watched most carefully. It is not worth while, as a rule, to operate if over twelve hours have elapsed since the infliction of the wound. Wounds above the transpyloric plane may sometimes be treated expectantly, especially when apparently they involve the liver only.



# Miscellany from Home and Foreign Journals

**The Larynx as an Indicator of Pulmonary Tuberculosis.**—Laurens, Joltrain, and Petitjean (*Presse médicale*, April 2, 1917) state that, excluding instances of actual tuberculous laryngitis, they sought to ascertain, in examining 300 men with bronchitis suspected to be tuberculous, to what extent certain altered appearances of the laryngeal mucosa could be considered indications of incipient lung tuberculosis. Hyperemia of the arytenoid mucous membrane was found regularly to coincide with all the signs of pulmonary tuberculosis, the latter often in the first stage. Exceptionally, in two instances, the clinical examination for tuberculosis in the presence of arytenoid hyperemia proved negative, but the x ray examination and ophthalmic test indicated a probability of tuberculosis in both these cases. Interarytenoid villous formations, soft, dusky in color, resembling the filiform papillæ of the tongue, and free of underlying infiltration, were also observed to be diagnostically significant, all patients exhibiting them being found tuberculous either by the stethoscopic or the complementary signs of the disease. These vegetations generally cause no change in the voice, as they do not interfere with the movements of the arytenoids. They are to be distinguished from the villous formations of common chronic laryngitis by their grayish color and the fact that they often occur discretely, independently of any other lesion of the mucous membrane. Wherever tuberculosis is suspected the larynx should be examined. In examining it as a routine, moreover, the authors found several unsuspected conditions, viz., three cases of recurrent paralysis due to tracheobronchial lymphatic enlargement; one case of paralysis of the vocal cords due to disease of the external laryngeal nerve, one case of hysterical paralysis of the constrictor muscles which was previously suspected to be tuberculous.

**Reciprocal Relations of Diabetes Mellitus and Cancer.**—A. Robin (*Bulletin de l'Académie de médecine*, April 10, 1917) states that he noted twelve instances of cancer among 144 fatal cases of diabetes. The cancer generally appeared in long standing diabetes, and Robin believes the latter in a measure predisposes to the former. Among the twelve cancer cases the tumor proved fatal in five months or less in five instances, and in six or seven months in four instances. Some relation seemed to exist, moreover, between the rapidity of lethal progression and the intensity of the glycosuria. As for a predisposing influence of cancer on diabetes, the author's observations revealed glycosuria in only 2.5 per cent. of nondiabetic cancer cases, and this glycosuria was slight and transitory. Seemingly no instance of diabetes developing in a cancer patient has been reported; the sugar found in some cases of cancer of the pancreas represents a glycosuria rather than a true diabetes. The influence of cancer on the course of a preceding diabetes is variable. In a few cases the glycosuria shows a slight, temporary increase in the beginning of the cancer period, but in the majority of instances the sugar at this time

diminishes or even disappears, as though the tumor utilized the sugar for its nutrition and development. Proper treatment of the diabetes in cases in which cancer is superadded seems in a measure to retard the rapid progress of the growth. Operating for cancer in a diabetic is a dangerous procedure. Of seventeen such cases reported by Kappler, four of the nine deaths following operation were due to diabetic coma. Operation should therefore be refused when the urine contains acetone bodies and the subject has been enfeebled by the two concurrent diseases. Surgical intervention is, on the other hand, distinctly indicated in the early stages of the cancer, even in marked diabetes, experience having shown that in some cases, especially in cancer of the breast, such intervention prolongs the patient's life. Before operating one should, by appropriate treatment, reduce the glycosuria in so far as is possible.

**Rôle of the Thyroparathyroid Apparatus in Uremia.**—Rémond and Minvielle (*Bulletin de l'Académie de médecine*, April 10, 1917) state that, supplementing previous researches on the relations of the ductless glands to uremia, they studied the influence of the thyroid and parathyroids on the manifestations following experimental nephrectomy. Removal of the thyroid and both kidneys was followed by death in less than half the time required when the kidneys alone were removed. The urea content of the blood in the former group of animals was much less than in the latter group, while the chloride content was instead slightly greater. When, however, the parathyroids were removed along with the thyroid and kidneys, the period of survival was almost as long as when the kidneys were alone removed, and the urea and chlorides remained much the same as in the simple nephrectomized animals. Bearing on the difference in the results of thyroparathyroidectomy from those of thyroparathyroidectomy was the observation that in the former group the adrenals showed only a slight reaction, whereas in the cases of added parathyroidectomy the adrenals showed signs of an intense hyperactivity. Apparently the parathyroids, after removal of the thyroid and kidneys exert a prejudicial, inhibitory action on the adrenals, which is excluded when the parathyroids are themselves also removed. Where both thyroid and parathyroids are still *in situ*, this inhibitory action of the parathyroids on the adrenals does not occur. Nephrectomy performed at an interval of forty-eight to seventy-two hours after thyroidectomy resulted in longer survival than simultaneous thyroparathyroidectomy. The uremia seems better tolerated in the former than in the latter group, the urea content of the blood rising to a higher level before death supervenes. The author quotes Sajous to the effect that a special nerve passes from the pituitary to the adrenals, and points out the possibility that the longer survival after the two stage operation may be due to a readjustment in the function of the remaining ductless glands, through the pituitary, in the interval between the thyroidectomy and nephrectomy.



**Fissured Tongue as a Sign of Syphilis.**—Gaucher (*Bulletin de l'Académie de médecine*, April 3, 1917) recognizes, in addition to the already described plicated or "scrotal" tongue of congenital syphilis, a less conspicuous condition in which the tongue shows merely a number of shallow fissures, the result of a mild grade of poisoning by syphilitic toxins. While often manifested in congenital syphilis, this condition is at least as frequently seen in acquired syphilis. In the congenital cases it is at times accompanied by other lingual changes of like origin, such as leucoplakia or geographical tongue, as well as by various other dystrophic manifestations in particular an abnormal spacing of the median superior incisors. The characteristic tongue fissures are best seen when the papillæ are smoothed down to the lingual surface by passage of the finger over the latter. The median fissure usually present is merely the normal medial furrow in an exaggerated form; but there are also irregularly distributed lateral fissures, some running into the median fissure and others independent of it, some straight and others curved. As a whole they run longitudinally, but many run transversally or obliquely. The fissures at the margins of the tongue are generally the deepest. There is no subjective disturbance, save exceptionally a slight tingling of the tongue upon ingestion of spiced foods or acid fluids. The condition is a certain indication of acquired or inherited syphilis.

**Detection of Protozoal Cysts in the Feces by Wet Stained Preparations.**—Robert Donaldson (*Lancet*, April 14, 1917) calls attention to the great importance of discovering carriers of amebic dysentery cysts and to the general difficulty of discovering such cysts in the stools by the usual methods. By experimentation he has found that it is possible to employ wet stained preparations with most satisfactory results. For the purpose of staining a mixture of equal parts of a five per cent. solution of potassium iodide saturated with iodine and one of the following gives the best results: 1, a saturated aqueous solution of rubin S; 2, a saturated aqueous solution of eosin; or, 3, Stephens's scarlet writing fluid. The stool should be rubbed up into a fairly homogeneous suspension and freed from gross particles. A loopful of such a suspension is then mixed on a clean slide with a few loopfuls of one of the staining mixtures and a cover slip is allowed to fall on the mixture. No pressure should be made on the cover slip or the cysts of ameba coli may be ruptured and stained deep red. In such a preparation, when made properly, there will be a more or less homogeneous red background from which the cysts of both coli and dysentery amebæ will stand out in bold relief as brilliant yellow or greenish yellow spheres. The differentiation of the two is not possible by means of the stain, but the staining removes the troublesome halation so often noticed in the usual wet preparations so that the cysts can readily be measured by a micrometer eyepiece for differentiation where this is desired. By means of this method of contrast staining the veriest tyro can not miss these cysts and the examination for them is greatly hastened, so that it takes but a few minutes to prepare and examine each slide.

**Wandering Shrapnel Ball.**—H. L. Gregory (*British Medical Journal*, April 14, 1917) records the case of a man who was wounded in the thorax with a shrapnel ball. The x ray showed the ball in the chest near the middle line at the level of the anterior end of the sixth rib. In this location it moved with respiration and occasionally oscillated quite violently. A violent attack of coughing followed aspiration of an accompanying hemothorax, and the x ray picture taken subsequently showed the ball to have left the chest and to be in the abdomen an inch below and to the right of the umbilicus. Operation a few days later for the relief of symptoms suggestive of appendicitis revealed the ball lodged in the right common iliac vein which was thrombosed below the point of lodgment. The ball was removed, but the patient died of peritonitis, and at necropsy the track of the ball could be traced through the chest and diaphragm into the liver, where it ended in the hepatic vein. It seemed that the first view of the ball had probably shown it in the right auricle whence it was dislodged into the inferior vena cava to make its way finally into the iliac vein.

**The Argyll Robertson Pupil.**—John Dunn (*Archives of Ophthalmology*, May, 1917) presents an original, and perhaps new, theory to explain the occurrence of the Argyll Robertson pupil. After discussing the accepted theory of the course of the primary light reflex he questions whether the course is really so intricate, and presents evidence in favor of the view that it is through the "retina, nerve cells to the pigment layer, and along this to the ciliary region where impressions are made upon the sensory nerve terminals therein, which impressions are conveyed to the ciliary ganglion, where they arouse efferent impulses along its motor fibres to the sphincter pupillæ. . . . It is the abolition of this primary reflex of the ciliary ganglion which gives us the Argyll Robertson pupil." He objects to the statement that the consensual reflex is abolished, and maintains that it simply is not called into play, because the two pupils, not being responsive to light, do not change their size, and the reflex is absent because there is no call for its manifestation. Incidentally, in the discussion of the consensual reflex, he suggests that it is possible that the cones of the retina represent the terminal mechanism for the reception of impulses to the geniculate and quadrigeminal nuclei, the rods that of the impulses to the subthalamic sympathetic ganglia. The contraction of the Argyll Robertson pupil he refers to the motor impulses from the third nerve nuclei acting without the modification of the sympathetic fibres when the sensorimotor and sensorisymphathetic connections in the ciliary ganglion are broken. Several factors contribute to make one pupil larger than the other and give anisocoria. The secondary dilatation of the pupils shows, he thinks, advanced changes in the ciliary ganglia with beginning destruction of the transganglionic third nerve fibres. Finally, he believes that the complete type of Argyll Robertson pupil cannot be produced by a lesion anywhere save in the ciliary ganglion, and even there cannot be produced save by the selective action of a toxin or germ, which up to the present has been shown to be the result only of syphilitic infection.

# Proceedings of Local and National Societies

## THE NEW YORK ACADEMY OF MEDICINE.

### SECTION IN PEDIATRICS.

*Stated Meeting, Held May 10, 1917.*

Dr. ROGER H. DENNETT in the Chair.

**Aural Complications of the Acute Exanthemata.**—Dr. H. L. LYNCH reviewed the result of observations in these cases which were not as common now as they formerly were, especially in diphtheria, the percentage of aural infections in this disease varying from two to four per cent. The development of mastoid in an adult with diphtheria was very rare, though the speaker observed one case in which there was bilateral extension of the diphtheria membrane through the Eustachian tube into the middle ear. In scarlet fever the percentage of aural infection was seldom below ten per cent. and might even be as high as thirty per cent. There was a marked variation according to the severity of the epidemic. The great majority of aural complications in scarlet fever occurred early during the first to third week of the disease, but might develop as late as the tenth week. The local nasopharyngeal lesion was wholly responsible for all of the otitic complications. The tonsils and adenoids were a constant source of infection and reinfection during convalescence, which probably accounted for aural complications late in the disease. The early aural infections usually occurred in the postnasal and glandular type of scarlet fever in contrast to the small number of infections which occurred in the corresponding type of diphtheria. The early complications were often masked by the dull mental condition of the patient, and if the drum membranes were not examined from day to day, mastoid complications might be well advanced before they were recognized. When the membrane was at all reddened it was well to make a free incision before spontaneous rupture took place.

In measles the percentage of aural infections also varied with the severity of the infection and was usually from ten to twelve per cent., and might be as high as twenty per cent. The greatest proportion of infections occurred in the catarrhal and post-catarrhal stages and seldom later than the end of the second week. The child and the adult were equally susceptible and the case of the adult was more frequently complicated with mastoiditis. It was not infrequent in both scarlet fever and measles to find extensive destruction of the mastoid process and the temperature not elevated above 99° F. The temperature curve, while usually an important sign, was frequently subject to wide variation. Sagging of the posterosuperior wall of the canal was a fairly constant sign of middle ear infection. The character and duration of the discharge and the appearance of the drum membrane as to sloughing and persistent sagging of the canal wall were the most reliable signs indicative of mastoid involvement.

Preventive measures were removal of the tonsils and adenoids. Antistreptococcus serum had done good, when used locally, and was worthy of further

trial. But the best treatment of these conditions was purely by surgical methods. Early and free incision of the drum membrane was indicated when there was the slightest sign of congestion. When the middle ear and mastoid symptoms occurred late, the hearing was always saved in spite of other complications, but early operation in mastoid disease was absolutely contraindicated in the face of many complications. Conservative measures in complicated cases resulted in a low mortality. In all cases of exanthemata the aural condition should be carefully followed from day to day, or else aural complications might be far advanced before the condition was recognized.

Dr. HENRY KOPLIK asked if Doctor Lynch had, in determining which of the sinuses was involved, made use of the sign revealed by examination of the ocular fundi of choked disc or hyperemia on the side affected. In otitis in a young child from six months to two and a half years of age, whether complicated or primary, involving the mastoid, a point of dispute between the practitioner and the otologist was whether it should be drained from in front or behind. One sign was swelling and sagging of the posterior wall. In many cases this sign was pronounced mastoiditis, but the children got well by repeated free incisions of the posterior wall where the tympanic membrane was sagging. If this were done, no mastoid operations would follow. In scarlet fever the same condition existed. In many cases drainage could be established without putting the patient through the severe procedure of posterior drainage.

Dr. HENRY HEIMAN, referring to incision for "red ears," said he had seen as many cases freely and early incised followed by mastoids as had followed those in which he had followed conservative measures. Except when the child was getting rapidly worse he believed in ultraconservatism.

In closing the discussion, Doctor LYNCH, in reply to Dr. Koplik's question regarding the ocular fundi, said that they were examined in a case with positive blood culture but no papillitis was noted in either disc. As all of the accessory sinuses of the nose were involved as well as the mastoids, a waiting game was played and the patient recovered. Of course some of the patients referred to by Doctor Koplik recovered after free incision of the drum membrane and a mastoid operation was not necessary. There was little difference as to the size of the incision if proper drainage was established, but the tendency to close, leaving only a pinpoint opening, caused damming back of drainage and finally necessitated a mastoid operation in most of them. Many got well as a result of the primary myringotomy, but not in the cases which required many incisions to establish drainage. The patient should be given every opportunity to get well, but mastoidectomy must be performed in the cases that did not respond favorably to other measures. As to the early incisions in the slightly reddened ear drums to which Doctor Heiman referred, it had been the experience of the speaker that the slightest redness of



the drum membrane in the exanthemata called for immediate and free incision to obviate spontaneous rupture. This was a lifesaving procedure.

**Systematic Boarding Out Versus Institutions for Infants and Young Children.**—This paper, by Dr. HENRY DWIGHT CHAPIN, is published in full in this issue of the JOURNAL.

**Care of the City's Dependent Children.**—The Hon. J. A. Kingsbury, commissioner of Public Charities of the City of New York, delivered this address. He said that he realized the value of the system of caring for infants which Doctor Chapin advocated, and he also realized to his great regret how little had been accomplished during the past three years toward changing the system from the mass plan to the individual plan. But a new practice had been inaugurated by the Department of Charities this year which was going to result in a more marked diminution in the infant death rate of Greater New York than had been seen for years. When one reflected that in the 16,000 children under two years of age who died in the year 1916, 1,000 were in one institution alone where they were massed together, and if one believed in the individual system approved by Doctor Chapin, one could see the possibility for life saving by a change of policy. The speaker did not desire to shift the responsibility for this appalling state of affairs from the Department of Charities, but he felt perfectly justified in telling his hearers that they had not done their duty because they had failed to take up with the Department of Charities' scientific methods of prevention. In addition, it was fair to say that the State Board of Charities was really the more culpable.

The facts were as follows: Two months had already elapsed since the first of March. The first fifteen days in March were experimental, though it looked at that time as though the department was going to be involved in a controversy that would divert the issue; but a working plan had been established which would probably avert this. Ordinarily, about eighty-seven babies a month were committed or brought for surrender by mothers. The law required, as did the rules of the State Board of Charities, 1, that the Commissioner of Charities should not only see that these children received decent human care and were given a chance for health, life, and development, but in addition that he should investigate the circumstances of the commitment; 2, that he should find out whether the child was properly a public charge of the city of New York or whether its parents were able to support it. Then various other questions were looked into. In the controversy last winter which grew out of the inspection of child caring institutions, the first of these requirements was being dealt with. Those children had been committed properly and they were properly public charges; the second requirement had always been complied with. Beyond that nothing was actually known of how the institutions were handling the first one; what the department attempted to do was to turn the light on that. Some, in fact most, of the institutions were delighted at this. A few of them resisted it as being beyond the jurisdiction of the department to inquire if each child had enough to eat, had warm clothes, went to

school or was not overworked, and was physically and mentally well cared for. They resented this so deeply that they refused to permit inspection and investigation.\* However, the department persisted and the speaker was glad to be able to report that recent inspections, with negligible exceptions here and there, had revealed that the children were not underfed, were not overworked, and they no longer marched in a lockstep to backless benches to sit there in silence. More than that, since last October, the children under eight years of age that had been brought to the Department of Charities had been sent into foster homes and not institutions.

This was four times what the department had set out to accomplish. Moreover, there was a reduction in the number of children brought to the city for care. The total number of children in institutions today was less than ever; a few years ago the number was 24,000; now it was 20,000. If the present policy was continued, in four or five years institutional population would be reduced to a practical minimum of 10,000. This was up to the citizens. The plan was to put the normal children, physically, mentally and morally normal, in normal homes. Then the other children would be restudied and classified as a result of mental, physical, and social tests. For instance, the children of known tuberculous parents would be given the von Pirquet test and on positive findings would be put in preventoria. As a matter of fact, about fifty per cent. of all dependent children had lost their parents through the ravages of tuberculosis. The crippled would be grouped and treated intensively; the blind would be grouped, as would the deaf and so on. The orphan asylum was going and what would be left would be specialized institutions and the money necessary to maintain this plan would be supplied as needed and in the amounts required, not at the flat rate of so much per child as now.

It was a curious anomaly that there were about 10,000 normal children in institutions who ought to be in normal homes; the converse side of the picture presented many children in normal homes who ought to be in institutions, permanently segregated there. What was needed was a change, and when these healthy, institutional children were safe in normal homes, there would be money enough to provide institutions where the defectives could be cared for. By utilizing existing plants, a capital expense of \$25,000,000 would be saved for the future care of the insane. Many children were surrendered because the mother could not earn enough to care for them, and the department proposed to make this possible by paying the mother instead of an institution.

**Care of Sick Children in the Home.**—Miss LILLIAN D. WALD began her address with a plea to the physicians that they utilize to a greater extent the service of the Henry Street Settlement's visiting nurses. In 1916 they took care of 29,105 patients, thirty-three per cent. of the calls only coming from physicians. Thirty per cent. came from a large insurance company who engaged these nurses to care for their policy holders, while only 1.2 per cent. were from relief agencies, the reason for this small number being that in their district the nurses were



appealed to directly. Eighty per cent. of the calls were from patients needing the nurse and of these fifty per cent. were children. The Henry Street Settlement cared for 10,627 children through illnesses last year, exclusive of almost 3,000 cases not included in the analysis, as they were still under the care of the nurse and doctor at the end of the year. The combined figures of three hospitals showed less than 4,000 children cared for during the year. Doctor Chapin and Mr. Kingsbury, in speaking of the infant death rate, had recommended teaching the mothers how to care for their children. For three years a milk station was conducted by the Settlement for children whose parents were instructed in the modification of this milk in their homes, and in three consecutive years the mortality was 0.5 per cent. It was not difficult to teach the mothers, but it had to be done with tact and full appreciation of racial customs and conditions.

Physicians were sending in calls in increasingly large numbers, though in the beginning it was difficult for them to understand that it was of much value to the patient to be visited by a nurse once or twice a day instead of remaining all day. But now the work had extended so that one might say that the Henry Street Visiting Hospital reached from the Battery to Yonkers. Very sick children were referred to the Settlement for care from many sources; last summer drivers would get down from their trucks to tell of a case of poliomyelitis. During the epidemic there were no nursing agencies in Richmond and Queens and a follow up series of these cases was established. It was hoped these places would soon support a general visiting nurses' service. The cases were handled in the following manner: Each nurse covered a certain district, analogous to the wards of a hospital. She started out in the morning with a list of those she was to re-visit and those for whom calls had come in late the previous day or before nine o'clock that morning. For each case she carried out the treatment that had been prescribed. The children cared for at home in this way got intensive personal care, and her supervision and inspection warranted the belief that in her absence the parents took better care of the sick child than if she had not been there. There was a reversal of the one thing common in hospitals; if the child was very ill a special night nurse was put on the case, for that twelve hours' care at night was worth a great deal toward ultimate recovery.

It would be an interesting and possibly valuable work if a morbidity study could be made through the hospital records and a similar study of sickness in the homes. The Henry Street Settlement made an analysis of the cases that had been under its care, and it was a pity that these figures were not made more use of. The pneumonia experience alone showed many interesting and telling facts, especially regarding home care for the children. Last year there were 3,988 cases of pneumonia and bronchopneumonia, seventy per cent. of the total number being children under five years of age. The largest number of these were Italian or of Italian parentage, the mortality among the Italian babies suffering from pneumonia being 15.3 per cent., while among the Russian and Polish babies (Hebrew) the mor-

talities were only 3.5 per cent. The Settlement especially desired that the physicians in hospitals that did not follow up cases discharged before cured and requiring further nursing care, would report them to this Service. It was not necessary to send in calls only for the poor, for there were many people who could afford to and would prefer to pay something for nursing care who could not pay for full time service.

**Prevention of Overcrowding in Institutions for Children.**—Dr. THOMAS S. SOUTHWORTH read a report of the Committee, the other members of which were Dr. William L. Stowell and Dr. Philip Van Ingen, appointed by the Section in response to a request of the Executive Secretary of the Public Health Committee of the New York Academy of Medicine, to render an opinion as to what constituted a proper basis for a law to prevent the overcrowding prejudicial to the health of children, and as to the advisability of changing the present law. Examination of the present law showed that it was designed for older children; it had, however for many years been applicable to infant wards in institutions. While specifying 600 cubic feet per child as a minimum, the law gave local boards of health the power to reduce the allowance for each occupant of the ward, and it had been reduced by many institutions to about 500 cubic feet, the presence of attendants helping further to vitiate the air. The Committee believed that the present sections of the State law should be repealed or superseded and new sections enacted, making separate provisions for institutions in whose dormitories older children above the run about age spent their sleeping hours. Also separate provision should be made for all wards containing artificially fed infants under fifteen months of age, all such wards being considered as hospital wards, whether the infants therein be nominally admitted or rated as well or sick infants. The law should provide for the installation in all wards for devices for window ventilation practicable at all seasons and with the windows closed, and should provide for frequent inspections. Six hundred cubic feet as a general basis for babies, sick or well, nursed or bottle fed, was too small. Two feet of separation between beds was too small to minimize cross infections. One thousand to fifteen hundred cubic feet were needed where the standard was based on cubic space alone. One hundred square feet of floor space should be adopted. Ventilation was important and complementary. All such standards should be definitely outlined by the Department of Health and should take into consideration height of rooms, floor space allowed, sunlight (exposure), facilities for and methods of securing ventilation, physical status of babies received, number of babies in a given ward, length of time spent in wards, proportion of nurses to babies cared for, number of adults in wards at various times, and the infant mortality of the institution in question.

Dr. M. FISHBERG explained that he had seen a great deal of Miss Wald's work. It was astonishing to observe some of the comparisons: one hundred cases of pneumonia on the lower East Side or in Little Italy in 111th Street would result in a mortality of one third that of the same number treated in

the most modern and best regulated hospitals. This was a fact that had been observed not only in New York City, but all over the world. Consequently, it was not a problem of ventilation, air and floor space, etc., alone. One outcome of the present war would be a reduction in immigration here because of the industrial needs of the European countries. The birth rate in the United States among the native population had declined greatly; up to now the immigrants had maintained the birth rate. Consequently, this country would be in the same plight as France. Commenting on Doctor Chapin's valuable pioneer work, he said that this country would have to take care of its infants and children. The statistics of institutional mortality would be much higher if they were correctly compiled. Institutional care had been treated, but it had failed. In the tenement houses as many as fifty per cent. of the children never suffered from rickets, or marasmus; but eight out of sixteen infants taken at random in the best institutions in this city did. The physical development of the children living in the tenement houses under the conditions of poverty was much better than that of those in the wealthiest orphan asylums, who, it had been proven, were about four years behind the normal in physical development, and their intellectual status was appalling. Doctor Chapin was doing a remarkable work in recognizing these facts and finding a remedy for the conditions.

Referring again to Miss Wald's work, the speaker thought the figures showing cure, improvement, or death ought to be published, if only for the benefit of physicians. For example, in pneumonia the mortality figures were lower in the Settlement House than in hospitals. Granted that most of the bad cases went to the hospitals, undoubtedly many bad cases came under Miss Wald's care. But the best thing to be done for children, even sick children, was individualization, and this could not be done in institutions, including hospitals.

Dr. A. F. Hess thought that it was not fair to compare figures of institutional and boarding out care except at the same level; for example, a composite list including the worst institutions against the figures of Doctor Chapin's admirable Speedwell Society. This was analogous to using the statistics of a poor hospital as the basis for a resolve to do away with all hospitals. Comparisons should be made of the best results, not the worst. It was true that the mortality of the children in the care of the Speedwell Society last year was less than sixteen per cent., which was excellent; but it should be remembered that it was much higher in previous years and also that last year not more than fifty children were cared for, so this could hardly be compared with the thousands of children who would have to be cared for in a great city like New York. Mr. Kingsbury said that out of 16,000 children who died in 1916, 1,000 were from one institution alone; was it not true that some of these were boarded out children? There was something to be said in favor of institutions; in the epidemic following poliomyelitis last summer there were very few cases in institutions. The Schick test practically eradicated diphtheria from institutions. Vermin were not confined to institutions. It had been found to be such a serious

matter in children coming from private homes to the Preventorium at Farmingdale that a woman was engaged for no other purpose than to look after the heads of the children. Another accusation unfairly made against institutions was the prevalence of vaginitis. It could be answered by the statement that the reason why there were many more boys in some institutions than girls was because the girls coming from private homes were refused admission because they were suffering from vaginitis. One statement of Mr. Kingsbury was paradoxical: It was proposed to board out the well children, but to care for the sick in the institutions. Institutions were not fit for the strong, but were good enough for the weak! Of the three propositions, institutional care, boarding out, or keeping the child with the mother, the last was undoubtedly the best where it could be assured that the child received good care.

In closing the discussion, Doctor CHAPIN said that his figures were averages and therefore perfectly fair; he had not selected the worst, but what the State Board of Charities gave, which were probably the best. The mortality of the Speedwell Society was low; last summer they had few cases because they were quarantined; the mortality had been higher in earlier years because all kinds of acute cases had been sent out, but there was not a single patient who would not have died in an institution. Referring to Doctor Hess's statement that one of the institutions with a high mortality rate boarded children out, the Speedwell Society did not board out in the same way, in which a flat rate of ten dollars a month was given to a poor woman with which she could not even buy proper milk for the child and in addition keeping no supervision over the child. The Speedwell Society could, for instance, take marasmus cases and board them out with only sixteen per cent. mortality, an excellent showing. The morbidity was the thing. Out of 1,000 children only three contracted measles, a disease which spreads like wildfire in institutions. If the institutions would publish their figures side by side with those of the Speedwell Society, average against average, the relative values of the different methods of care would be more clearly understood.

## Book Reviews

*[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]*

*Edible and Poisonous Mushrooms.* A Descriptive Handbook to Accompany the Author's Colored Chart of Edible and Poisonous Mushrooms. By William Alphonso Murrill, A. M., Ph.D., Assistant Director of the New York Botanical Garden; Associate Editor of North American Flora; Editor of Mycologia. New York: William Alphonso Murrill, A. M., Ph.D., 1916. Pp. iii-76.

Doctor Murrill has written a valuable handbook to accompany his colored chart of the edible and poisonous mushroom. In these days of the high cost of living and of conservation of foodstuffs, it is eminently desirable that no source of food supply should be overlooked.

Americans have failed to appreciate the wealth of edible fungi produced by Nature. The Europeans and the



Chinese have been much more appreciative of the wild fungi and our Italian immigrants are about the only Americans who make much use of the mushrooms which can be found in every section of the United States. Doctor Murrill has presented in a clear, concise and easily understandable form illustrations and descriptions of the more common varieties of mushroom. With his work as a guide even the person who has had no training in botany can by the exercise of care and a little patience easily learn to recognize the edible fungi and thus add materially to the bill of fare without cost.

*Verhandlung der Japanischen Pathologischen Gesellschaft.*  
Sechste Tagung. Tokyo, April, 1916. Y. Kon.

This work is an interesting record which gives a valuable insight into the activities of the Japanese in the scientific world. Comprehensive, versatile and Japanese in its conception, the publication gives an abstract of the papers presented at the society's meeting that touch widely in the field of pathology. Of particular interest among the eighty-eight papers presented is the discussion of Weil's disease, and the relation of the spirochete as the causative agent. The distribution of the organism in the body was studied by Kaneko, who finds that the kidney is among the last organs to be free from the spirochete, that the spirochete is found in the uriniferous tubules late in the course of the disease and may be demonstrated in the urine as late as the sixty-third day. Ido and Wani discuss the Japanese seven day fever—*Namukayami*—and differentiate it from Weil's disease upon immunological and serological grounds and by absence of spirochetes in the former. Studies of the spirochete of rat bite fever demonstrated two forms of the organism, which the authors believe to be the same species. The disease was readily produced in guineapigs, and it was found that salvarsan had a distinct curative action. Fujinawi and Kato offer further studies of a myxosarcoma of the fowl that is transmissible by cell free filtrate and dry powdered tumor. These authors also offer a unique method of studying the relation of the transplanted tumor cells to the hosts' tissue cells, which consists of staining the tumor fragment in lithium or alum carmine for twenty-four to forty-eight hours before transplanting.

What is probably the most remarkable presentation is that of Yamagawa and Ichikawa. These authors produced cutaneous horns, folliculocystitheliomata, and definite carcinomata by painting rabbits' ears with tar every three or four days over periods up to 250 days. One of these tumors showed lymph node metastases.

*Pituitary Standardization.* The Relative Value of Infundibular Extracts Made from the Different Species Mammals and a Comparison of Their Preparations. By GEORGE B. ROTH. *Pharmacological Studies with Cocaine and Novocaine.* A Comparative Investigation of These Substances in Intact Animals and on Isolated Organs. By GEORGE B. ROTH. [Treasury Department. United States Public Health Service. Hygienic Laboratory—Bulletin No. 109. December, 1916.] Washington Government Printing Office, 1917.

The present popularity of glandular therapy has naturally given considerable impetus to the preparation of commercial extracts. The fact that these vary so often in their physiological action has tended to discredit the whole therapeutic system in the minds of some, while others believe that the solution lies in the discovery of a chemical principle which will represent the action of the gland in question. The present bulletin, for example, deals with studies made of various infundibular extracts purchased in the open market contrasted with extracts prepared in the laboratory from the glands themselves. Both concludes that extracts of the latter class differ according to the animal from which they are made, being more active from cats, dogs, and hogs than from cattle, sheep, horses, or rabbits. He also found that commercial extracts differ widely in their physiological activity and that the depressing effect on the intestine which has been described is due to the preservative chlorbutanol. The second half of the bulletin deals with studies made by this same investigator with cocaine and novocaine he found that while novocaine resembles cocaine in its action, it is several times less toxic. It has a depressant effect on the blood pressure, however,

and must therefore be used with great care where there is circulatory disease; it should moreover be given subcutaneously to avoid entrance into the circulation. Roth calls attention to idiosyncracies for both these drugs. Many tracings are appended showing graphically the action of the drug in question.

## After Office Hours

The *Wide World* for June has a little tale of "voodooism," which only skirts the edge of this diabolical but fascinating cult. Much of this worship persists in the black belt of the South even today.

\* \* \*

Cleveland Moffett continues to preach eugenics. In the *June McClure's* he tells "More About Husbands and Better Children." His contention is the old one that the healthy, well to do mothers should not push birth control to the limit of birth refusal.

\* \* \*

"The Mock Doctor," a comic opera in two parts, based upon Molière's "Le Médecin Malgré Lui," with music by Gounod, was presented recently at the Lyceum Theatre, New York. The plot revolves around a rustic who was made to assume the rôle of doctor in spite of himself, and forms one of the classic series of satires on the physician written by Molière.

\* \* \*

The *Medical Pickwick* for May contains many good things—among them the "A B C of Surgery," in the Spinal Column. From it we quote:

K is for Kink,  
Which delights Mr. Lane;  
It's one of those things  
Which gives you a pain.

\* \* \*

*Leslie's* for May 17th has a page of pictures showing many of the steps in the physical examination of a recruit. We wonder how many of its readers know what a vast task the complete physical examination of a million men will be. Our statistician figures that it will take 1,000 doctors working ten hours a day two months to do it.

\* \* \*

The *Survey*, for May 12, as usual is full of timely articles. Among them we are glad to note an article dealing with prevention of venereal diseases. One of the beneficial by products of the war into which America is entering we hope will be the direction of public attention to this subject. At least this has been the case in nearly all the transatlantic nations.

\* \* \*

In the *Woman's World* for June we find a "popular medicine" department. One woman asks about hypnotism and says, "I have a friend who has suffered with mental trouble for a long time and we would like to help her if we could." After replying to the hypnotism part of the question, the doctor says, "In many cases we find that nervous troubles are due to . . . a hooded clitoris." He then recommends operation and promises more information on receipt of a stamped envelope. Surely no modern physician believes that mental trouble sufficiently obvious to be recognized as such by a layman is due to a hooded clitoris!

\* \* \*

The romance of ship building is being revived by the submarine threat. A writer in the *Century* for June has caught the spirit of it, from the square hewn keel that lies in wait, shod, hair jointed, painted red, waiting for the ship itself to rise above it, down through the stages of ribs, stern piece, keelsons, planking, masts, down to the time when the keel blocks are ready to split out and the great ship plunge into the sea. Mr. Hallett has caught the poetry of it all, and as you read his lines you seem to see the ship rise before you, like the unsubstantial shadow of a dream, to go forth to meet the hazards of wind and weather, to live its little life of fifteen years.

\* \* \*

The *Masses* for June contains a touching little anecdote of a baby who was dying and a baby specialist who would not come because the attending physician had not sum-



moned him. So the baby died. The writer concluded: "Our medical profession must maintain its dignity and etiquette." Railing against medical ethics is not a new diversion, and no doubt, like all human institutions, they have their weak points. But do their lay opponents ever stop to think that the medical profession has attained its present efficiency partly on account of its ethics? In the case quoted in the *Masses* is it not possible that the attending physician knew whether or not to call a consultant?

## Meetings of Local Medical Societies

**MONDAY, June 4th.**—German Medical Society of the City of New York; Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association.

**TUESDAY, June 5th.**—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Amsterdam City Medical Society; Lockport Academy of Medicine (annual); Syracuse Academy of Medicine; Ogdensburgh Medical Association; Oswego Academy of Medicine; Broome County Medical Society.

**WEDNESDAY, June 6th.**—Society of Alumni of Bellevue Hospital; Bronx Medical Association; Elmira Academy of Medicine; Schenectady Academy of Medicine; County of Rockland Medical Society; Long Island Society of Anesthetists.

**THURSDAY, June 7th.**—Brooklyn Surgical Society; Geneva Medical Society; Glens Falls Medical and Surgical Society; Physicians' Economic Society of New York.

**FRIDAY, June 8th.**—New York Academy of Medicine (Section in Otolaryngology); Society of Externs of the German Hospital in Brooklyn; Eastern Medical Society of the City of New York; Clinical Society of the German Hospital and Dispensary; Manhattan Dermatological Society.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending May 23, 1917.*

**AKIN, C. V.,** Assistant Surgeon. Directed to proceed to Pittsburgh, Pa., for the sanitary inspection of a public building with respect to rat infestation.

**ALLEN, R. L.,** Assistant Surgeon. Ordered to proceed to Reedy Island Quarantine Station for duty in the inspection of vessels.

**BOTE, G. S.,** Scientific Assistant. Ordered to proceed to Maysville, Ky., for studies of rural sanitation.

**EBERT, H. G.,** Surgeon. Granted seven days' leave of absence from May 18, 1917.

**HARALSON, M. F.,** Scientific Assistant. Ordered to proceed to Maysville, Ky., for studies of rural sanitation.

**HART, R. W.,** Assistant Surgeon. Relieved from duty at Detroit, Mich., and ordered to proceed to Marine Hospital, Stapleton, N. Y., for duty.

**JONES, W. M.,** Assistant Surgeon. Ordered to proceed to Delaware City, Del., and to the Reedy Island Quarantine Station for duty in the inspection of vessels.

**KERR, J. W.,** Assistant Surgeon General. Ordered to represent the Service in the House of Delegates of the American Medical Association at New York, N. Y., June 4-8, 1917.

**MULLAN, E. H.,** Surgeon. Granted two days' leave of absence on account of sickness, May 14-15, 1917.

**PERRY, N. V.,** Constructing Engineer. Ordered to proceed to New York, N. Y., for conference relative to the location of a psychiatric hospital building upon the Stapleton Marine Hospital reservation.

**RCOFF, J. S.,** Assistant Surgeon. Granted seven days' leave of absence from June 2, 1917.

**SCHERESCHWESKY, J. W.,** Surgeon. Ordered to represent the Service at the meeting of the Association of Indus-

trial Physicians and American Medical Association, New York, N. Y., June 4-8, 1917.

**SHARE, W. K.,** Assistant Epidemiologist. Ordered to proceed to Maysville, Ky., for studies of rural sanitation.

**STANTON, J. G.,** Acting Assistant Surgeon. Granted three days' leave of absence from May 22, 1917.

**VOEGTLIN, Carl,** Professor. Ordered to represent the Service at the meeting of the American Medical Association of Medical Milk Commissions at Brooklyn, N. Y., June 1-2, 1917. Also directed to represent the Service at the meetings of the Section in Therapeutics and Pharmacology of the American Medical Association, New York, N. Y., June 4-8, 1917.

## Births, Marriages, and Deaths

### Born.

**STEWART.**—In Washington, Conn., on Sunday, May 20th, to Dr. Harry Eaton Stewart and Mrs. Stewart, a daughter.

### Married.

**FREEMAN-LEVY.**—In Wilkes-Barre, Pa., on Monday, May 14th, Dr. Stanley Freeman and Miss Miriam Levy.

**ROSENSOHN-SOBEI.**—In New York, N. Y., on Wednesday, May 23d, Dr. Meyer Rosensohn and Miss Leonore Sobel.

**SNOW-DEAN.**—In Brookline, Mass., on Monday, May 21st, Dr. Frank W. Snow, of Newburyport, and Miss Rosamond Dean.

**STEVENS-PINKHAM.**—In Abington, Mass., on Thursday, May 24th, Dr. William R. Stevens, and Mrs. Sallie Davis Pinkham.

### Died.

**BODE.**—In Pittsburgh, Pa., on Wednesday, May 16th, Dr. William C. Bode, aged seventy years.

**DONNEL.**—In Tarentum, Pa., on Wednesday, May 16th, Dr. John Harvy Donnell, aged fifty-four years.

**FITZSIMMONS.**—In Philadelphia, Pa., on Saturday, May 19th, Dr. Thomas C. Fitzsimmons, aged fifty-nine years.

**FROST.**—In Boston, Mass., on Wednesday, May 23d, Dr. Henry Pickney Frost, aged forty-nine years.

**HEARNE.**—In San Diego, Cal., on Friday, May 11th, Dr. Joseph C. Hearne, aged sixty-six years.

**HEYSINGER.**—In Philadelphia, Pa., on Friday, May 18th, Dr. Isaac W. Heysinger, aged seventy-five years.

**HUNN.**—In Shelby City, Ky., on Saturday, May 19th, Dr. William Hunn.

**LARTIGUE.**—In Gainesville, Fla., on Friday, May 11th, Dr. Etienne Lartigue, aged forty-seven years.

**LEWIS.**—In Kingston, N. C., on Tuesday, May 15th, Dr. Richard H. Lewis, aged eighty-five years.

**LONG.**—Freehold, N. J., on Friday, May 11th, Dr. Isaac S. Long, aged seventy-eight years.

**LUDINGTON.**—In Omaha, Neb., on Tuesday, May 15th, Dr. Horace Ludington, aged eighty-five years.

**MCLEAN.**—In Amityville, Pa., on Tuesday, May 15th, Dr. Daniel B. McLean, aged sixty-nine years.

**POEHLMAN.**—In St. Louis, Mo., on Monday, May 14th, Dr. Frederick L. Pohlman.

**RAINWATER.**—In New Canton, Ill., on Sunday, May 13th, Dr. James H. Rainwater, aged fifty-nine years.

**RICHARDSON.**—In Gorham, N. H., on Friday, May 4th, Dr. Bert Leon Richardson, aged thirty-nine years.

**RUDDEROW.**—In Philadelphia, Pa., on Thursday, May 17th, Dr. Benjamin J. Rudderow, aged sixty-eight years.

**SCHIRMER.**—In New York, N. Y., on Sunday, May 6th, Dr. Otto Schirmer, aged fifty-three years.

**SEYMOUR.**—In Northampton, Mass., on Saturday, May 19th, Dr. Christopher Seymour, aged seventy-four years.

**SPRUANCE.**—In Wilmington, Del., on Tuesday, May 15th, Dr. J. Harvey Spruance, aged fifty-one years.

**STEEDMAN.**—In St. Louis, Mo., on Tuesday, May 15th, Dr. Isaiah G. Steedman, aged eighty-two years.

**STUART.**—In Des Moines, Ia., on Tuesday, May 15th, Dr. Richard L. Stuart, aged sixty-four years.

**STUTZKE.**—In Detroit, Mich., on Monday, May 14th, Dr. Frank Valentine Stutzke, aged thirty-nine years.

**THOMPSON.**—In Washington, Pa., on Thursday, May 17th, Dr. William R. Thompson, aged eighty-two years.

**WALKER.**—In Salem, O., on Wednesday, May 16th, Dr. John Walker, aged sixty-four years.

# New York Medical Journal

INCORPORATING THE

## Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 23.

NEW YORK, SATURDAY, JUNE 9, 1917.

WHOLE No. 2010.

## Original Communications

### WAR'S INFLUENCE ON MEDICINE.\*

*Presidential Address.*

BY CHARLES H. MAYO, M. D.,

Rochester, Minn.

AMERICANISM.

The medical profession should feel proud of the position it has attained in the affairs of the world. It has been second to none in its progress, and medicine has now become nearly an exact science. The exalted position of medical men throughout the world's war has become accepted and has given them an opportunity to apply wholesale, as it were, the newer methods of prevention and treatment of disease by adopting at once fixed medical standards. The enormous value of this practical application obviates the necessity of a slower advance by discussions with the ignorant and by overcoming obstructionists. Hundreds of our medical men, appreciating the needs of the people as well as the requirements of soldiers, have long since accepted medical service to aid humanity in all of the countries of Europe.

The medical profession was first to mobilize, and has been signally honored by the Government in having been given the first flag to be carried abroad, thus signifying our country's active entrance into the war. No worthier representative of the profession could have been chosen as standard bearer than Dr. George W. Crile, who has done so much to develop the base hospital idea. These accomplishments give us a right to discuss Americanism. As a people we cannot accept the Prussian point of view that war is of divine origin, and that those killed in waging it pass immediately to Valhalla. We are more than ever firmly convinced that war is what Sherman called it, and made of it—Hell. In beginning and conducting war, autocracies, government officers, and soldiers each have responsibilities. In all the world's history war has occurred at fairly regular intervals, and the great steps of man's progress have been closely associated with it through advances made by autocratic order and accepted through discipline. The very fact that a people can respond to so great a catastrophe as war shows that they are capable of the progress which will result regardless of the human sacrifice. Russia has started on her freedom along these same lines, to be ultimately united only through either the present

war or an internal revolution. Autocracy and imperialism are hanging in the balance, and the scale will turn with education and opportunity for the people. Our own nation has never been in any war of conquest, having fought only for the "rights of life, liberty and the pursuit of happiness for all," and paying for all territory taken. War gave us freedom, our institutions, and the consolidation of our States, it gave to the world the freedom of the seas, and it gave to Cuba the same liberty that is in time to come to the Philippines and other of our possessions. Our war of freedom was instrumental in effecting such changes in the governing methods of our mother country—England—that she has since so endeared herself to her other colonies that they have freely bled themselves white in their loyal support of her. Our original displacement of the Indians must be regarded as being somewhat similar, though much more humane, than Germany's attempt ruthlessly to stamp out what it considers weaker, nonaggressive, or decadent people who, from its point of view, are wasting the world's supplies. Germany plans that her defeated opponents are to be restored to usefulness by Kultur, a proposition the value of which is open to discussion.

In our own country our constitutional form of government is founded on personal liberty. It is stronger for its just recognition of property rights, and ultimately the will of the people prevails. Since the framing of the constitution, thirty-two millions of emigrants have come to our country. Those who came early aided in its development from the wilderness, and at once became loyal citizens. Those who came late, to obtain opportunity and material benefit and to avoid the restrictions, oppressions, and conscriptions of their own countries, are not truly our citizens, becoming so only in the second generation. The state, acting as our monarch, controls the rates and the taxes. It provides for the care of the helpless, deficient, and insane. It protects the health and lives of its people, is constantly working to benefit all by such acts as the compensation law, and is now discussing a modification of the compulsory health insurance of Germany and England.

The great industries have in the past unnecessarily destroyed thousands of human lives and turned on the public many more thousands of cripples dependent on public charity. It has been cheaper for these industries to let Europe pay the cost of bringing individuals to maturity and to replace the injured and lost with new human material than to go

\*President's address before the American Medical Association, at the sixty-eighth annual session, New York, June, 1917.

to the trouble and expense of providing suitable means for protecting the lives and limbs of employees. Today we are face to face with the truth that we must arise and rebuild our own people. The economic law of supply and demand has gradually been brought into force, and the waste of human life must cease. We hear on every hand of projects and efforts for the conservation of human life, a movement which is the outcome not of any philanthropy or sentiment but of necessity. Men can no longer be replaced with the old time ease, and their individual value to the community has increased accordingly.

Economic necessity, not sentiment, has given almost sovereign power to health departments, both State and municipal. The physical condition of schoolchildren is being looked after under the supervision of physicians and trained nurses, and even food is being furnished that the young may develop well and grow strong to do the world's work. To prevent sickness among those who are well and bring the young to maturity with health and education is the most important business of the state.

The evolution of many large institutions has come about through the development of the byproduct. The byproducts of human deficiencies, mental, moral, and physical, are a clog and a burden to the state. In our great hospitals for the insane we find that much effort is being made by highly organized and expensive methods to reclaim the mentally affected. These institutions have become not the madhouses of the past, but hospitals for the mentally sick. The expense is great, the percentage of cures small, but well worth the effort. University and state hospitals are needed for the care of the poor, for curing blindness, and for restoring cripples and defectives from birth and injury to health and usefulness. Now that the war is producing injuries by the thousands, a new impetus is given this work, that by training in special employment and artificial aids such persons may be as happy as possible and selfsupporting, and not mentally disabled and a drag on the community. It is through organized effort in the medical profession that so many of these great things in the world's work have been accomplished. Within half a century, many years have actually been added to the average life of man. This has been largely accomplished by preventive medicine as well as by advances in the cure of disease.

The American Medical Association's advisory committee under Dr. Alexander Lambert is investigating the question of compulsory health insurance for the information of the profession. Such laws being meant for the general good of the people, physicians should not obstruct, but should discuss and help in devising methods whereby the needy will receive aid, the middle classes not be pauperized, and this without detriment to the medical profession. Anything which reduces the income of the physician will limit his training, equipment, and efficiency, and in the end will react to the disadvantage of the people.

One of the greatest functions of a state is the development and control of its educational system. Compulsory school attendance and child labor laws

have been necessities. It will soon be generally recognized that the citizen is best made when a child. Compulsory school attendance through the seventh grade and a general knowledge of the English language are necessary to this citizenship. Other languages than English are special studies. Private schools should be encouraged, but all should be subject to state inspection and control. Private schools conducted by hyphenated Americans should be subject to government inspection to remove them from the protective influence of local and state politics. The lack of unity of our nation is largely due to lax educational laws which allow emigrants to develop community and educational interests in the language of their fatherland and not to live up to our Constitution. As a people our prestige in the world has been injured most unfortunately by the petty jealousies and the local interests which have been made general through intrigue and political effort. Especially have we decried to the world the acts of government officials whom we ourselves have placed in power. More good would come to our country through tongue control than birth control. Our best people must come to the fore, and if necessary, by selfsacrifice, do their part in the political management of the local, state, and general affairs of our country if democracy is to survive. A wise monarch in Europe has remarked that it is surprising how often Americans seem pleased at being mistaken as coming from some other country. Our immigrants from all countries desire opportunity for expansion, thought, and individualism. With opportunities, their brain cells create great inventions and ideas. It is most natural that such people should develop in this country of opportunity, and it is just as possible that much of the new thought in the world's progress after the next two generations may come from the Siberian people.

In a review of the world's progress in the last hundred years, the wonderful part our country has played in it is at once manifest. Man's power to control the elements was developed in America. Franklin was the first to draw electricity from the clouds. Morse developed the telegraph, Field laid the first cable, and Tesla, through his American education and opportunity, developed electric control. We still thrill at the first steam railroad, and we still thrill at the story of Fulton's first steamboat, the *Claremont*, on the Hudson River. The Howe sewing machine took sorrow from "The Song of the Shirt." Alexander Bell developed the telephone, and Edison the phonograph; Holland invented the submarine, while Langley, followed by the Wrights, gave us the airship. The typewriter, the adding machine, and nearly all mechanisms, systems, and inventions for conserving time and increasing productiveness have been American in origin. Within scarcely fifty years, modern farm machinery—planters, seeders, mowers, reapers, binders, and threshers—has here increased man's ability a dozen fold, while in Europe the sickle, the cradle, and the flail are still being used.

I bring up these things here because the great medical profession of this country has not stood as a united body for that which is American in medicine. Many, while abroad, have apologized for



medical conditions at home, and for personal advancement have often written and discussed as remarkable European discoveries that are trivial. Many important discoveries in medicine in America have not been accepted here until they have been appropriated by Teutons and returned to us with the stamp "Made in Germany." Our country has done much for the advancement of the medical profession through the enactment of just laws requiring standards of education. Through the efforts of the committee on medical education, of which Dr. Arthur D. Bevan is chairman, our profession has largely aided in the standardization of medical colleges. Through the work of this board, many of the inefficient medical colleges have been forced to close, to the great ultimate good of medical science and of the people served by their graduates. The added requirements of preliminary education and increased years of medical study were so great, however, that with the elimination of forty per cent. of the colleges, and the years of study more than doubled, we have little more than one third as many students of medicine now as in 1900. Fewer doctors, better trained nurses to take some of their work, better educated people, and preventive medicine to reduce sickness maintain an even balance, however. Now will come a hysterical demand to lower the bars of educational medical requirements under pretext of the necessity of war. It must not be permitted. If ever we needed educated men it is now and hereafter.

To our credit it may be said that today our graduates in medicine by education and training are equal to those of any country, and better than those of most countries of the world. The cost of conducting medical schools is so great, as compared with the fees received, that they may be conducted only by richly endowed colleges or state universities. It costs the State of Minnesota \$4,200 to educate a physician, but its people are well paid for the expense incurred, as they receive the best medical care. Minnesota now stands fourth among the States in health service for the people, and was the first to inaugurate State board examinations to regulate the practice of medicine. However, the standard for the practice of medicine is now high in most States, and here I would pay tribute to the excellent work of the National Board of Medical Examiners developed through the efforts of the late Dr. William Rodman while president of this association. In some States, through local or State influence, many forms of the practice of medicine have been given separate boards of examiners, based wholly on lines of treatment. There should be no examination as to the method of treatment. Ultimately, when, as the result of existing laws, general standards of education are higher, public demand will require that all who practise the healing art shall be tested on educational lines, both general and special, the latter wholly on the knowledge of the facts of anatomy, histology, chemistry, sanitation, preventive medicine, and the diagnosis of disease, but not on treatment, before permission is given to care for the lives and health of the people.

During the past centuries medicine has advanced slowly, but quite as rapidly as other lines of endeavor. The wonderful advance of the world's

affairs during the last century, and especially in the latter half of it, has given us a new world in thought and productive activity. In medicine this has been especially true in the development of our knowledge of the bacterial cause of disease and its prevention and treatment. How proud the French are of the wonderful part Pasteur played in the discoveries and investigations that disclosed a new microscopic world of life! We now know that to bacteria is due the essential chemistry of existence, as they maintain life by changing inorganic material into solutions for plant food. All multicellular organisms, both plant and animal, are subject to disease and destruction through the action of the single cell organism. Our progress in the world's work will be to recognize and classify bacteria, to propagate and train them to become man's true slaves, and to control, render harmless, or destroy those destructive to life. The French, through Madame Curie, gave to us the knowledge of radium. England is proud of Lister, who elaborated the work of Pasteur into a benefit to surgery, showed that infections are caused by bacteria, and thus developed antiseptic surgery. There also was developed the Crooks tube, the penetrating rays of which were accidentally discovered by Röntgen, of Germany, from the fact that photographic plates in the room were affected by them.

We have all benefited by Germany's elaboration of scientific problems; especially by her proof to the world of the benefit of team work and organized national discipline over the efforts of the individual. It can be said of many scientific discoveries that they were thought of years ago by men who lived before their time, as it were; yet credit must go to those who overcome resistance, educate the people, and compel acceptance. From a medical standpoint we must be proud of our country and our great dead. The work of McDowell, of Kentucky, who performed the first ovariectomy in 1817, and the impetus to medicine given by Gross, Rush, Simms, Emmett, Senn, Davis, and J. B. Murphy, our former president, and a host of other distinguished dead who added so much to our knowledge of medicine, is known to the world. What a debt we owe to Long for his discovery of ether, which made surgery possible and childbirth easier!

We are proud of our agricultural department and its investigations as to the causes, control, and cure by serums of the diseases of animals and the destruction of parasitic hosts. The work of Erwin F. Smith on plant diseases is monumental, especially his discoveries as to the cause of certain plant tumors which show again that our bacteria and insect chemists are the prime offenders through the development of their varying acids, which may be stimulating or destructive to other cell life, causing tumors or decay. We should appreciate and aid the work of these departments.

#### EDUCATION.

Whereas a hundred years ago the educated man could acquire the bulk of all that was known, it is now commonly recognized that the world's knowledge is so extensive that the more general an education a man receives the more hampered he may be, unless he is also highly educated along some par-

ticular line. There are specialists in every line of human endeavor, the educator, the professional man, the business man, the farmer, and the laborer. Flexner is right in his effort to bring about a change in the prevailing system of education, founded as it was in the monk's period of the world's progress. It is proper to adjust education to man's requirements and necessities of today. Already some of the preparatory schools have started a propaganda against even the trying out of experimental changes in educational forms. The graduating age of twenty-nine in medicine is four years too late, as the most productive and ideal period of thought is thereby limited to too short a time. The graduate's best work must be accomplished in the next fifteen years, when his brain cells are most energetic and receptive. It is well to remember that death overtakes the average physician at the age of fifty-eight. The intellectual man and woman marry late or not at all, and the resulting birth rate does not exceed one third of their original number. In order that the physician may be graduated at the age of twenty-five, his vocation should be chosen in the seventh year of school life in order that special lines of study may be begun, and the eighth grade, the work of which is a review, should be eliminated. A revision of the time devoted to a study of the classics is necessary. The work of the last year of high school and preparatory school should not be reviewed in the first year of college, thus saving two years. By proper specializing in a six or seven year combined course of general education and medicine, the student should be entitled to two degrees, such as are now given in the University of Minnesota.

Medicine has been divided into many branches and, of necessity, diagnostic team work has developed, with the result that both the rich, who can pay, and the very poor, who cannot pay, secure the best possible service. To secure equally good service for the great bulk of the people, however, some change in diagnostic methods by the establishment of centralized plants, hospitals for diagnosis, or combinations of those engaged in specialties to care for the extraordinary cases is necessary.

#### WORK OF ARMY MEDICAL OFFICERS.

War has always had a great influence on medicine, first developing the priest physician, then the barber surgeon, and later the army medical officer. In war time Paré devised the ligature for arteries, although he was not the first to employ it. Napoleon, who was often at a loss to supply his army with food, made awards, which from an empiric and practical standpoint developed canning and the preservation of food before bacteria were known. The American medical profession will ever be under obligation to our army medical officers for their services to the world in the discoveries of numerous diseases, their causes and prevention. Our army medical officers stand preeminent in science. To Beaumont we are indebted for the first report on digestion, digestive fluids, and gastric movement from direct observation of a patient with gastric fistula. To Surgeon General William Hammond we are indebted for the development of the army

medical museum, the second in the world. Surgeon J. S. Billings fostered the second largest and the best medical library in the world. Surgeon General Sternberg discovered the pneumococcus and founded the army medical school and the government laboratories of bacteriology and hygiene. Under Sternberg's administration Major Walter Reed, with James Carroll, Jesse W. Lazear, and Aristide Agramonte, proved the mosquito to be the agent transmitting yellow fever. Lazear lost his life from the disease during the investigation. To these men belongs the credit for the control of yellow fever throughout the world, although the theory had been advocated by J. D. Nott in 1848 and Carlos Finlay in 1881. Through the knowledge obtained by this board and the sanitary and hygienic investigations of the army medical service, General Gorgas, a former president of this association and now surgeon general of the army, was able to free Havana of contagious disease. Yellow fever disappeared from Havana for the first time in 150 years. Under the supervision of General Gorgas the Panama Canal Zone also was freed from both yellow fever and malaria. The latter was proved to be a mosquito borne disease by Major Ross, of the British army. This sanitary work made possible the building of the canal, and the health conditions in Panama are now better than in our own country. To Robert Maitland O'Reilly, one time surgeon general of the army, we are indebted for the reserve medical corps developed for the expansion of the medical service during the time of war, and under which service several thousands of us are now preparing to do our bit. Under Surgeon General George H. Torney was instituted the first compulsory vaccination for the prevention of typhoid. This was made possible by the discoveries of Chantemesse and Widal in France and Sir Almroth Wright, of England, though to Major Frederick F. Russell, of America, is largely due the credit of its development. On the Mexican border Major Russell has vaccinated more than 20,000 United States soldiers at one time and put a stop to typhoid. To understand fully what this means, we must realize that the medical army service is as much a specialty in the care of soldiers as any specialty can become. Under most unfavorable conditions and surroundings to prevent and care for disease and infections, employ all of the serum and vaccines known, and be fully conversant with all sanitary and hygienic laws require, indeed, special training. During the Spanish-American War, 20,000 cases of typhoid occurred among our troops in training camps between May and September, 1898. Of the volunteer soldiers, ninety per cent. acquired typhoid within eight weeks of camp life. Investigations by Major Walter Reed, Major Victor Vaughan, a former president of this association, and Edward Shakespeare did much to demonstrate the methods by which diseases are transmitted by flies and human carriers, and also by utensils and camp pollution. In our volunteer army in Cuba, 450 soldiers were killed, and 9,853 died of disease. The benefit to our country after the present war in having some thousands of medical officers trained in sanitation, hygiene, and the prevention of disease will be incalculable. Through lax examinations of

recruits and the natural effects of prolonged living and overcrowding in trenches and underground structures, tuberculosis will become a menace to our soldiers, as it is today in France.

In the American occupation of Porto Rico in 1898, smallpox, which was always present, became epidemic, 3,000 cases occurring in two months. By order of Governor General Davis and under the direction of Major John Van R. Hoff, the island was absolutely rid of the disease by the vaccination of all the inhabitants, more than 800,000 people. In Porto Rico, Captain Ashford and his board have treated over 300,000 people for hookworm disease, reducing its mortality ninety per cent. A similar work with like results has been carried on in the Southern States through the generosity of Mr. Rockefeller through the work of his foundation, largely aided by the army medical and public health services. Mention should be made also of the work done by army medical men in the study of pellagra. Beriberi has been eliminated from the Philippines by the investigations of the preparation of rice made by Captain Edward Vedder. Surgeon General Torney advocated the Army Dental Corps and the Army Corps of Nurses. The present war is one of remarkable proportions, and the medical service has assumed an importance such as it never had before. The old army hospital gangrene is a thing of the past. A knowledge of the care of infections, prevention of tetanus, vaccination for smallpox and typhoid, the cause and prevention of typhus, the old camp fever, also cholera, the plague, and fevers of all sorts, including the new trench form, is a training requirement of the army medical officer, and results in the restoration to duty of a high percentage of the injured.

*The requirements of our profession have been raised from within, and not forced from without.* The American College of Surgeons deserves great credit for establishing its high standards for the science of surgery and the honesty of the surgeon. Through immediate necessity, hospitals are rapidly being classified and standardized that they may become more efficient for the people and for the training of nurses and future physicians. As a body, no profession has more power if wisely used. We have at once jumped past the period of discussion with fanatics and cults as to the cause and prevention of disease, a long period in medical history, for today disease can be checked by order. Our country should secure a medical cabinet officer in the near future. The great problems which now occupy men's minds make those of the preceding few years seem trivial and even hysterical. When again can our whole country be held fascinated by the voluminous and long continued story of such a moral leper and criminal as Harry Thaw?

We must aid in all that will conserve and elevate the general standard of the American citizen. Prohibition is a war measure the value of which is beyond discussion. That disease was frequently water borne is a practical observation that has existed for many centuries. To a large extent among the Orientals the danger of such transmission was overcome by the drinking of tea and coffee purified by boiling. In Europe the same results were obtained

in the manufacture of weak wines, brews, and liquors, the fermentation and yeast germs of which destroyed the virulent bacteria. Now that we know how and why water was dangerous, the necessity especially of alcoholic drinks has been removed in every community in this great country by an abundance of pure water. No one except the policeman sees more of the results of overindulgence in alcohol, demonstrated by poverty, sickness, immorality, and crime, than the physician. Medicine has reached a period when alcohol is rarely employed as a drug, being displaced by better remedies. Alcohol's only place now is in the arts and sciences. National prohibition would be welcomed by the medical profession.

American dentistry has made a place for itself in the world, and America stands at the head of all countries in the care of the teeth. We are all proud of the work of American dentists. We may pay our tribute also to the American nurse, who has distinctly elevated the nursing of the world and care of the sick. Her experience and training make her the best wife and mother and a leader in support of the best in education and discipline in her community.

It is most fortunate that our army medical service is in the hands of three of our ablest men, Surgeons General Gorgas, Braisted, and Blue, and we must laud the work of the general medical council under the able directorship of Dr. Franklin Martin. *The Journal of the American Medical Association*, under the direction of Doctor Simmons, has been an important factor in the education of the American physician.

Medical men, your country needs you now and always. You must remember that the state is permanent and does not exist for the good of the individual, but that the individual exists for the good of the state.

## RECONSTRUCTIVE THERAPEUTICS.

*Using to Best Advantage Selfregulative Energies,  
or Body Defenses, of the Patient in Order  
to Limit or Overcome the Disease  
and Its Effects.*

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The term "reconstructive therapeutics" is a suitable and fairly accurate one to describe reputable remedial agencies not given prominence under general therapeutics; or as an elaboration of certain agencies which seldom receive didactic attention commensurate with their real importance. The old term auxiliary therapeutics has some merits, but is confusing. Hence in order to convey the modern concept it is proposed to use the term "reconstructive" to designate the secondary group of remedies.

Therapeutics, as ordinarily interpreted and taught, is the science and art of the treatment of disease by means of drugs, medicaments, biological remedies, vaccines, and like pharmacodynamic agencies applied from within and capable of exerting a direct



bearing on what we may picture as disease processes as they affect the individual. The term "reconstructive therapeutics" may then serve to describe several correlated and practical phases of the greater department, and some relatively novel ones. It is convenient to limit its meaning to what heretofore have been called auxiliary remedies. In short it deals with agencies from without directed to fortifying the resources or capabilities of the individual who is affected by, or reacts to, the disease. I hold no brief for any one kind of remediation to the exclusion of others also capable of rendering service, but I would merely commend attention to a group of externally applied mechanophysiological agencies.

Reserve forces of the organism are ample if they are made available, conserved, and fortified by means of agencies exerted from without, and are on a par with agencies exerted from within. The evidence is growing throughout medical literature. While it is obvious that certain remedial agencies taken into the body, e. g., medicaments and drugs, are at times absolutely necessary and that nothing else will produce desired effects, it is equally obvious that external agencies under other circumstances furnish full equivalents. The question for the clinician is how can most desirable effects be secured in any given instance by approaching the problem from both angles. This includes the inquiry of how to get the best results from both means of approach. Medicaments at best can only be expected to produce limited effects the nature of which is becoming increasingly understood, recognized, and admitted. There remain other effects to be obtained in order to do full justice to any occasion for clinical responsibility. It is with a view of directing attention to the sum total of a clinical problem and in particular the quantivalence of agencies exerted from without in the joint field of investigation that the following evidence is offered. Also it is my purpose to urge openminded consideration of such testimony as can now, or may be hereafter, presented. The evidence referred to will be found by anyone who is watchful, in scattered observations, inferences, and expressions of conviction in the course of descriptions and arguments presented on a variety of topics.

Reconstructive remedies may be contrasted with major remedies thus: Reconstructive remedies include the selection and application from without of those remedies whose domain is to influence the index of vigor, the coefficient of energy, or the psychophysiological dynamics of the individual; whereas those employed in general therapeutics, chiefly from within, exert a more direct bearing on disease processes. Reconstructive — reintegrative — remedial agencies act by stimulating, depressing, or otherwise producing desired effects on body resources, defensive forces, and growth or survival values, through utilizing the principles of biophysics as well as of biochemistry, thus embracing a larger domain of psychophysiology and psychodynamics. In short it is practically a matter of bringing into cooperation and putting to use the resources of such correlated departments of scientific endeavor as:

*Anthropology.*—Anthropology is the science of man or mankind; the study of man's agreement with

and divergence from other animals; of his physical structure, racial peculiarities, and intellectual nature; of the various tribes and races of men with reference to their origin, varieties, intermixture, customs, etc.; of the general physical and mental makeup and evolution of the human race. Anthropology puts under contribution all sciences which have man for their objective. The people of the United States are a crude mixture of many races, some similar, some markedly dissimilar. The purer the race, the more uniform the conditions; there are fewer surprises and complexities, and a greater degree of racial stability.

*Euthenics.*—This is the science of raising the vital index or dynamic coefficient by reorganizing conditions of living and bringing the individual into better adjustment with, and reaction to, the environment. The term orthobiotics conveys the same idea with the addition of straightening out or setting up on their dynamic bases the life elements, growth forces, survival values, latent energetics, and other agencies making for the readjustment or reconstruction of the organism as a whole. In short, euthenics supplies favorable conditions for the organism as a whole, mind and body acting as a unity, to readjust itself spontaneously to environment.

*Personal hygiene.*—Conservative, constructive, and reconstructive personal hygiene has to do with the understanding, determination, and application of approved rules of life and conduct, and their subjection to constant revision, whereby latent energies, inherent capabilities for growth, development, and repair, may be conserved, and human dynamics so enhanced and amplified as to fit the individual to become the best his or her personal endowment renders possible. In pursuing methods for conservation much of both prevention and cure is also accomplished. So forceful may the practice of conservation become as to prove of the utmost importance to both patient and physician.

*Mental readjustment or reconstruction.*—The point of view here taken is of those conditions wherein mind and body together suffer from the effects of disordered feelings, ideas, and their misinterpretation. The so called mind is an essential attribute of the organism as a whole. The mental processes in and out of health are usually described from three points of view, viz.: feeling, willing, and doing; yet the whole may be graphically grouped under the will as a name for behavior, the action of the body and mind under the control of a personality. The mind is at all times influential upon the body for better or for worse, whenever, or especially wherever there occur departures from health, from physiological and psychophysiological poise; less perhaps in acute conditions; more pronouncedly in long standing protracted or chronic disorders or diseases; also their reactive and retroactive effects direct and indirect.

Experience leads to the inference that this department of therapeutics, that of mind control, direction, conservation, and at times reconstruction, enters as a factor of extreme importance in readjusting an ailing person to environment. This environment consists of two parts, that which the individual makes for himself from within, and that into which cir-

cumstances force him from without. Both of these influence behavior by producing two kinds of physical and psychophysical reaction, and the whole deserves harmonizing. These psychoreconstructive measures then are capable of making over a disorderly mind into an orderly, efficient, reliably self-directive mind. In the process are evoked the forces of common sense, well poised awareness of actual conditions in their normal associations and quantitative values, hope, cheerfulness, wholesome resolves to learn the rules of the game of life and to play fair with themselves. The object is to induce the patient to see where he has stood and where he now wishes or determines to stand; to realize how essential it is that any problems arising from departures from spontaneous health require to be studied with frank cooperation and guidance of the selfcontrolling forces and functions all along the interacting nervous levels, the vegetative, the sensorimotor, and the psychical.

Closely associated is the subject of the reflexes, reflex arcs, the unit or element of nervous function. By eliciting, for example, the reflexes governing the functions of vegetative life through judiciously applied mechanical stimuli, there is at hand an important realm of medical as well as diagnostic efficiency. Reflex arcs can be both improved by training and modified or disordered by good or bad habits and by disease. Some true reflexes can be modified advantageously by attention and conscious control; they may be brought to relative perfection; so also they may be vitiated by a number of somatic disorders and by pathological overstimulation.

*Climatology.*—Climatology embraces the whole congeries of health regulating agencies included under spa treatment, e. g., balneotherapy, thermotherapy, electrotherapy, heliotherapy, manotherapy, etc., some details of which will be presented later.

*Physicodynamics.*—The interpretation and conservation of the body and its resources deserve attention also from the standpoint of the science of biophysics, viewing the body as a sentient machine, a thing of mass, motion, statics, hydraulics, strains, position, ponderability, velocity, elasticity, tone, temperature, and the like; as a manifestation of the transmission and transformation of energy, and especially of kinesodynamics. There must also be considered, biochemical phenomena, of tissue respiration, metabolism, and other fundamental attributes of a living organism. In brief, the postulate is offered that inherent propulsive and autoregulative energies are sufficient, in and by themselves when rightly conserved and directed, to go far toward restoring perturbed or disordered function.

*Man as a psychophysical mechanism.*—Always behind the destructive agency or toxic entity there lies a damaged human organism, a suffering animal, whose recovery depends in the final issue upon how far it is possible to reawaken and redirect inherent forces which sustain and maintain life. Here is a field of opportunity for scientific research which in my judgment is not adequately explored; certainly not presented to the student as hopefully and systematically as the facts warrant.

Reparative, rejuvenative, or reconstructive agen-

cies may be divided into two groups: the natural or conservative, and the artificial or constructive. Among the natural remedies are: rest, exercise, dietetics, improved environment, personal hygiene, regulation of conduct, open air life, heliotherapy; also isolation, change of scene, time, tender solicitude, and the ever forceful wellspring of hope. Among the artificial or constructive remedies demanding expert application are: chemical substances, drugs and medicines, scientific mind control in its varied phases, explanation, systematic body control, physical training, extreme contrasts as of heat and cold, baths, electricity, radium, x rays, manipulation, and other mechanistic remedies. The wise clinician often avails himself of many, sometimes of all these groups of efficient agencies in the same instance.

Reconstructive therapy strictly speaking, embraces the use of each and every procedure or device whereby activation or retardation can be advantageously exerted from without on cell energetics, fundamental regulative agencies, tissue structures, nerve centres, and fluids of the body. Among these may be included the whole domain of minor surgical procedures, the removal or replacement of diseased or damaged parts, the use of adjustment, support, mobilization, immobilization, or correction. Wherever local departures occur from the norm in tissue tone, reinforcement of structures by external agencies is indicated. This includes control or supplementing or correcting of underaction or overaction; the supplying of artificial aids to damaged or relaxed structures; the use of heat, cold, dryness, or moisture and, in particular, the elicitation of vasomotor and other reflex responses; the use of agencies adapted for controlling afflux of blood to, or reflux of blood from, a locality by applying pressure or relief from pressure to paravertebral structures; the use of systematized rest or regulated use of parts, or of the whole body, or the mechanical awakening of the spinal reflexes of contraction or dilation, and many others.

*A clinical problem.*—Any clinical problem deserves to be approached from more than one angle. Human infirmities are of great complexity, but of greater urgency. That factor which is most urgent needs first recognition and first aid. A position of advantage being obtained by affording relief to obvious errors, we may then profitably proceed to search out and deal practically with every contributory avenue of causation and phenomena formation. It is not always to the patient's best welfare to select for particular treatment that one feature which, in the opinion of the clinician, seems especially interesting; nor the only one which his degree of learning or his taste or experience induces him to select as his point of attack or effort.

A sick human being is something other than a living body afflicted with a damaged organ or disease processes or their effects. The entire organism is thrown out of alignment. To relieve the malady it is seldom enough to define just what and where the major phenomena are, or how they are manifested, and to administer suitable medication and reassurance. The mind, always a prominent factor in human derangements, is contained in, and conditioned by, an essentially mechanophysical organ-



ism. The sick body is also an aggregation of biochemical structures and forces which have become perverted and require particularized regulation. It is likewise a human mechanism out of gear.

In making diagnoses from the mechanistic standpoint—that of biophysics—it is desirable to use a somewhat different method of approaching, securing, and interpreting findings, to employ not merely the familiar forms of inspection, palpation, auscultation and percussion, but to survey, feel, handle, and manipulate for other conditions than those commonly sought for. For example, a multitude of morphological abnormalities will be revealed by dexterous handling, adroit palpation, by delicate tactile awareness, such as degrees of resistance or relaxation, density, spasm, sensitiveness, altered local static relationships, and the like. This special proficiency, while simple enough when attention is directed that way, comes only by long familiarity, by numberless efforts to learn through expertness in handling, and in manual evaluation. The basis or solution lies as much in the domain of biophysics, as in biochemistry.

#### ETIOLOGICAL POINTS.

Among the causal factors to be reckoned with in reconstructive therapy are: 1. Anomalies of development, especially minor departures from the norm. These often induce or encourage faulty habits, disease processes, errors in conduct, accident and the like fortuitous happenings, and they may thus become emphasized or exaggerated and impair organic competence. 2. Anomalies of structure induced by neglect of right methods of living, especially those bearing on faulty biophysical mechanics, errors in action, movement, posture, encouraging disorders of mobility, elasticity, pliancy, tone, rhythm; also through direct and indirect effects of overeffort; exhaustion, of disuse or misuse by neglect of normal exercise or excitation. 3. Abnormalities of structure arising from disordered or diseased states, and of traumata, etc.; static effects of errors in metabolism, minor infectious processes, exerted upon gross structures and finer cell aggregations, also on regulative mechanisms, ductless glands, sense organs, nerves, brain, and the like; resistance effects, spasm, stasis, paresis, rigidities, densities, angulations; sensory effects; overexcitation on sensorimotor mechanisms, negative anesthesia or positive hyperesthesia, pain direct or indirect, from origins immediate or remote, or from reflex complicated effects, also from effects of trauma, injury, of bruising or conditions of exhaustion, deprivation of food, water, or air. 4. Reflexes, their phenomena and effects in solving clinical problems; reflexology, reflexodiagnosis; referred pains, their origins and manifestations; also aberrancies of reflex phenomena.

Hence, our therapeutical aims should be directed to: 1, raising the coefficient of energy, or dynamic index, in an individual who is below par by reason of developmental or inherent faults, and environmental or acquired faults such as slight and not clearly defined effects of disease or disorder whose chief influences are such as to emphasize developmental faults, latent weaknesses; in short, reparative

results are attained by constructive measures; and, 2, raising the coefficient of energy, or dynamic index, of an individual of presumably normal development who has suffered in one or more particulars from the effects of disorders or diseases capable of recognition or at least of appraisal; in short by applying reconstructive measures.

The point of view we here take of the human organism is a biomechanistic one, approaching the goal from the standpoint of the body as a biomechanism, a vitalized, highly differentiated working unit compounded of body and spirit, a biological grouping of biochemical and psychophysical or intellectual, emotional, but also reflex forces or manifestations of complex vitalized attributes. Man, the machine, readily falls into biomechanistic disarrangements in some particulars and respects more readily than does an insentient mechanism. His parts are semifluid with varying degrees of structural flexibility, tension, relaxation, tone, spasm, contractibility, pliability and statics, or coming to rest. All this makes for differences in function due to degrees of collateral support, sufficient or insufficient, afforded by those delicate living structures immediately concerned in maintenance of structural and functional integrity.

The human being is a biological unit; his several parts go to make up that congeries of interrelated structures which usually need, sooner or later, skilled regulation. Nature supplies the impetus, the trends or trophisms, which proceed along wisely appointed avenues and channels, through conscious and unconscious activities, habits, and customs which can be trusted to carry one just so far and yet not always all the way desired. These trends, forces, impulses, meet with many encouragements passing into liberties or licenses which demand restraint, modification, inhibition to do or not to do, to plus or minus energizing and to coming to rest. Likewise they are subject to limitations, interferences, disordering, and destructive agencies which impair integrity and reduce to inaction, inefficiency, disintegration, or death. They also meet with opposition, environmental obstructions, and inhibitions partly from without and partly from within; some are instinctive, some acquired as habits, others are pathological. As to all trends and countertrends there is need for knowledge of what is best to be done or not done and for judicious guidance in conduct, behavior, and action; to seek and to conserve, to make for maintenance and enhancement of force.

#### GENERAL RECONSTRUCTIVE THERAPEUTICAL AGENTS.

*Rest.*—Indications for rest, or akinesia, complete or partial, require a careful study of conditions; what kind of rest is indicated and to what degree.

*Activities.*—Passive and active movements or kinesthesia should accord with conditions demanding activities. The reasons for, and kinds and degrees of activities should be carefully determined and in what forms and directions improvements are desired. Passive and active kinesthesia should include particularized groupings, indications, or recommendations adjusted to age, habits, general strength, organic integrity, or defects.

*Posture as an aid to function.*—Some conditions



demand improvements in attitudes. Gaining or regaining normal attitudes is effective in order to secure economies of functioning, positions of advantage—biophysics—or of lessened disadvantage and of organic competence and positions contributing to the repair of disordered, damaged, or diseased states or their effects. Posture as a conservative agency in discharging functions of organic life in parturition, in defecation, in standing, sitting, lying and walking, in balance, poise, in economies of transforming and exerting force in occupations, in maintaining conditions for safety, as in moving about amid perilous objects, and in endless situations in the life of relationships. The general conditions to be attained or regained for full efficiency conditional upon postural competence are elasticity of structures such as muscles, pliability, of correlated structures, mobility of joints, adequate tone in static structures, and normal adjustments and interrelationships between correlated and mutually dependent structures. Proficiencies are dependent largely upon posture and the conditions of structures permitting normality of postures, of attitudes suitable for desired kinesthetic correlations, economies, and associations. Correction of faulty postures is of value on a basis of esthetics, grace, economies of motivation (psychomotor), hence of safety in walking amid perils, of proficiencies in the arts and industries, and in the discharge of functions of organic life, especially the vegetative.

*Devices to reinforce or support underdeveloped, overstrained, deformed, weakened, or paralyzed parts.*—These devices include orthopedic or surgical devices applied to so called medical conditions, i. e., states of internal derangements—supports for enteroptosis, and displacements of the intestines, heart, lungs. The thorax should be developed by bringing about increased size or roominess of the upper body until it be larger than the abdomen. Support or immobilization is often needed in pleurisy, tuberculous lungs, chronic backache, latent or acquired deformities, stoop shoulders, scoliosis, paralysis, etc. Belts, such as Longstreth's, Kilmer's, Mombert's, Rose's, Dawbarn's, etc., are useful in many exhaustion states, asthenias, relaxed pendulous bellies, disorders of the splanchnic circulation, sacroiliac disorders, sciaticas, etc. Specially devised, supervised, or modified hip supports or corsets raise and sustain relaxed tissues and abdominal and pelvic contents, supply corrective pressure on bloodvessels and tubular structures, and are of special value in regulating splanchnic circulation. Braces and cuirasses such as orthopedic surgeons apply, are useful in relieving local conditions of weakness in muscles, joints, ligaments, etc. Supports, e. g., long splints, sandbags, etc., are used in sciatica and neuritis. They are valuable in acute inflammations, as rheumatic fever or any inflamed or painful joint. Rubber tissue (Longstreth) is most useful for local support. Pillows, cushions, etc., wedges of soft material rest parts of the body and elevate the mattress to fit special parts. Bandages to legs support weak and relaxed tissues, veins, engorged bloodvessels, etc., in diseased or asthenic states. Splints are used for inflamed, weakened, injured, or con-

tracted joints, for threatened pus formation, and for spasm, paresis, and paralysis. Adhesive plaster or rubber tissue supports relaxed or painful tissues. It is useful in acute states, pleurisy, pleurodynia, and localized inflammation of the lungs; also in protracted states, visceroptosis, and fibromyositis of abdominal parietes. These may simulate acute or chronic disease of abdominal viscera, appendicitis, etc. It is often advisable to begin treatment by counterirritation with tincture of iodine or cantharides and a plaster strap. Adhesive plaster is useful temporarily in enteroptosis until the external abdominal muscles, especially the transversales, psoas, quadratus lumborum, and iliaci, regain tone and power from suitable training. Specialized shoes support weakened arches, or deformities. The cause of forty-five to sixty-five per cent. of cases of rheumatism of the foot is due to weakened arch. Longstreth's "elevation" to allow the calcaneum to rest in a hollow and avoid undue pressure on calcaneometatarsal ligaments is vastly preferable to full arch supports.

A flexible shank in the shoe, mocassins, and the practice of walking barefoot are also valuable adjuncts in the treatment of this class of disorders of the foot. Following is a list in outline of the great variety of orthopedic apparatus: Trusses for actual or threatened hernia and weak rings. Athletes use a testicle supporter which is useful also in asthenias. Jurymast for support or traction in diseases of cervical and upper thoracic vertebrae; also in many forms of disability, as in paralysis following diphtheria, poliomyelitis. Plaster casts, moulds, troughs, bandages for limbs, hips, shoulders, thorax, etc. Supporting corsets, fixed or flexible, belts, girdles, abdominal supports, etc. Cuirasses, for Pott's disease, paralysis. Traction or suspension apparatus; e. g., regulated vertical or horizontal traction in tabes, contracted back, sacroiliac diseases; in retarded growth, fibromyositis, sciatica, etc. Plaster of Paris, adhesive plaster, and rubber tissue splints for fixation or immobilization in paralysis due to cerebral and local conditions, poliomyelitis, etc., in any condition, in short, requiring relaxation of joints and tissues, which may also need support to prevent excessive movements. Apparatus to induce mobility, flexibility, elasticity. Full movability of joints and tendons is essential to integrity of motor and static function. Full flexibility of muscles is necessary to maintain motor competence, prompt response to volition, transference of motor stimuli, to secure reaction times, and to permit and encourage ebb and flow of fluids and nerve impulses. Normal mobility of the backbone is essential not only to the function of the vertebral supports, but also to maintain the integrity of the lateral branches of the spinal nerves, rami communicantes, etc., in order to preserve vasomotor and visceromotor competence, ebb and flow of fluids and the inherent rhythms.

Rigidities and loss of elasticity or tone are common in young as well as old, especially after certain diseases; e. g., fibromyositis, arthritis, and scar tissue formation. They may also occur as the result of a sedentary life and may be due to local

spasms or vagotomy. Rigidities are especially hurtful in structures of the thorax. Impairing respiration, they impede cardiovascular action and lymph propulsion. For example, in muscles of the neck rigidities cause interference with passage of body fluids to and from the head, impairing function and structure of the organs of special sense.

*Devices to act as substitutes for nature.*—Prosthesis is strictly a surgical measure but many devices meet on a common ground of the internist and surgeon, among which are various familiar supplemental devices, mechanisms, agencies; e. g., glasses to correct refraction errors and muscular anomalies, colored glasses to modify light, etc., artificial teeth, bridges, crowns, limbs, agencies to aid hearing, to supplement the nose, etc.

*Removal of offending parts.*—In inherent or acquired anatomical or pathological anomalies which interfere with function or cause distress, it comes within the duty and power of the general practitioner to decide whether structures are supererogatory, supernumerary, or diseased, and whether they induce dysfunction, distress or disability, or act as causes of reflex irritation or focal sepsis. These ablations are properly surgical measures, but should be learned and controlled by the internist.

An irritation may become nonsensory and may cease to rise above the threshold of consciousness to cause sensation, yet may produce reflexly distress or disorder or even pain in remote but correlated structures. Researches along this line are now being carried on by the Henry S. Upson Commission under a research foundation formed as a memorial in his name.

These irritations include hypertrophied adenoids, diseased tonsils, redundant or supererogatory nasopharyngeal structures, bone spurs, mucous hypertrophies, and defective, impaired, deformed, maldeveloped and abscessed teeth. Correction of these anomalies is producing unbelievable releases of growth forces and restitution of mental and physical states.

*Mechanical agencies for altering reflexly blood and lymph currents.*—These agencies tend to enhance distribution and elimination.

They include pressure—compression and relaxation near nerve centres—suction, impacts, concussion, posture, gravity, heat, cold, local freezing, particularized motions, exercises; also rest, skin friction, colon irrigation, venesection, etc. Among them are: Heat, cold, superheated air chambers (Tyrauer), electric light and steam cabinets; Turkish (dry heat) and Russian (steam) baths; skin friction; subdermal traction, induced hyperemia (Bier) by compression and relaxation; suction; dry cups; by concussion of spinal areas to induce reflexes of contraction in hollow viscera and bloodvessels (Abrams); also by manipulation; pressures on vasomotor points to enhance ebb and flow in arteries and secondarily in veins and lymph channels. A fertile but uncultivated field of relief and cure is that of pressures exerted on the paravertebral tissues by finger tips whereby vasomotor and visceromotor effects are induced. Various movements elicit gravity and muscular compression, i. e., postures to induce changes in

interrelationships of viscera and bloodvessels, as Trendelenburg and Fowler positions, knee chest head hanging to check hemorrhage or to empty bronchi, and centrifugation by whirling the arms to induce hyperemia in fingers by driving blood to finger tips. Certain postures and special movements induce compressing action between internal and external muscles, e. g., psoas and abdominal parietes in enteroptosis, stagnation, prostatism, etc. Regulated or educational exercises, passive, active, and free accomplish good results. Belts are also useful here to constrict splanchnic bloodvessels, to induce counterpressure to arrest hemorrhage—Mombert's, Longstreth's, Kilmer's, Dawbarn's, Achilles Rose's, etc.; also the tourniquet, or rubber bandage, or encircling tube, e. g., constriction of the neck in seasickness by an elastic band with hooks and eyes around the neck. Rhythmic compression of the heart in apparently moribund states, is an important mechanical agency.

The power exerted on circulation by hot and cold packs, douches, etc., is well known. In cases of cerebral excitement, fear, or antagonism to cold water, use a sprinkler with gentlest force on the back, patient lying face down. Begin with warm water, 85 to 90° F., and gradually cool to 75 to 70°. This will rouse from stupor or allay delirium. This is also of great value in distresses accompanying many chronic states, arthritides, gouty exacerbations, and other disturbances of metabolic equilibrium. Alternate hot and cold douches with greater force of impact from a hose or tube in a warm bathroom are useful to stimulate sluggish local circulation. Colon irrigation is a mechanohydrotherapeutical and vascular regulative measure of use to unload the bowels of putrefactive matter and toxic mucus. The temperature should be below that of the body, about 90 to 80°, to induce evacuations; to soothe spasm it should be hot, 105 to 120°; to induce diuresis any temperature will do, the best being cool, 80 to 75°. All are useful in fevers, acute internal diseases, cardiovascular renal diseases, arthritis deformans, acne vulgaris, pruritis ani, eczema of rectal surfaces, etc.

Superheated air is of wide applicability (Tyrauer), though less used than it should be. This is true also of induced or reflected heat from electric lights, white and blue "leucodescent lamps." Less well known are the effects of centrifugation, or whirling the arms to drive blood forcefully to the fingertips and joints of hand and wrist. This is my own discovery and I have found it most useful to enhance sluggish circulation in the extremities, to enhance phagocytosis in gouty joints, in local inflammations, septic and other, to relieve rigidities, and to aid in cure of "wax-finger," or Raynaud's disease. Skin friction compresses surface distribution of blood. Venesection is useful in uremia, coma, and vascular overextension, and when the blood is vitiated and viscous as in cerebral hemorrhage. Local freezing (Abrams) over spinal centres affects disorders of the spinal centres shown at periphery. In neuritis of the arms, spasm, pain from fibromyosites, and in herpes zoster freeze over the fourth and fifth thoracics. Concussion on certain points, as the seventh cervical

or other vertebra, enhancing vagus tone is most valuable in a variety of conditions of loss of vagus tone, notably in aneurysm of arch of the aorta, angina pectoris, exophthalmic goitre, etc.

This communication constitutes an outline of the subject which is to be elaborated after further study.

1504 PINE STREET.

### THE AMBULANCE COMPANY.\*

By W. H. ALLEN,

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The ambulance company owes its inception, as do practically all the modern methods for the evacuation of the wounded, to the genius of Jonathan Letterman, medical director of the Army of the Potomac under McClellan during the Civil War. The deplorable condition of the wounded following the first battle of Bull Run led to earnest efforts on the part of the Medical Department to devise efficient methods for their prompt evacuation and care following action. Letterman devised and, after many difficulties and much opposition on the part of cer-

and, 3, to render such aid as will enable the slightly wounded to return to the firing line and the more seriously wounded to be transported to the rear. Under the third heading the care of the slightly wounded is mentioned first advisedly. The primary function of armies is to win battles and the paramount duty of the sanitary service is to aid the combatant troops in this function by instituting and carrying out such sanitary measures as will prevent the depletion of their ranks by disease, by securing the prompt return of the sick and wounded to their duties, and by the prompt evacuation of the non-effectives to the rear that the combatant forces may not have their movements embarrassed and their morale impaired by their presence. The knowledge that prompt and efficient care and transportation will be his lot in case he is wounded means much in sustaining the morale of the fighting man. The disabled man is at best a temporary loss to the forces in action and his care, while appealing to our humanitarian instincts as medical men, must await that of the slightly wounded man who may be returned immediately to his place in the line.



Courtesy of Major Raymond C. Turck and *The Military Surgeon*.  
FIG. 1.—Ambulance company lying in reserve.

tain authorities, secured the adoption of a comprehensive system, which with few modifications is now in use by the sanitary service of all modern armies.

The functions of the ambulance company are threefold: 1, to furnish ambulance service in camp and on the march; 2, to transport the wounded from the regimental first aid stations and where necessary from the firing line itself to the field hospitals,

\*Read by invitation before the Arizona State Medical Society, April 18, 1917. The illustrations are from the article by Major Raymond C. Turck in *The Military Surgeon*, March, 1917, and are reproduced through the courtesy of Colonel J. Van R. Hoff, acting editor.

The infantry division, which is the great administrative and tactical unit of modern armies, consists in our army of three brigades of three regiments of infantry each, a brigade of two regiments of field artillery, a regiment of cavalry, a battalion each of engineers and signal troops, a sanitary train of four ambulance companies and three field hospitals, and ammunition, engineer, and supply trains. It aggregates in round numbers 23,000 men of all arms and branches. The cavalry division has three ambulance companies.

The personnel of an ambulance company consists



of one captain, four lieutenants, two sergeants first class, seven sergeants; one horseshoer, one mechanic, one saddler, one farrier, two cooks and sixty-eight privates first class and privates.<sup>1</sup> These are organized into a bearer detachment, a pack detachment, an ambulance detachment, and a wagon detachment. The bearer detachment is further subdivided into four platoons of four litter squads each and the ambulance detachment into three platoons of four ambulances each. The companies of a division are under the command and supervision of an officer of the rank of major, known as the director of ambulance companies. He in turn receives his orders from the division surgeon. His relations to the companies are in general similar to those of a major of the line to his battalion.

The transportation in the case of an animal drawn company comprises four pack mules to carry the dressing station equipment, twelve ambulances, and three escort wagons. The first wagon is known as the combat wagon and carries additional supplies for the dressing station, a reserve of surgical dressings to replenish those used by the dressing and regimental first aid stations, and on the march twenty litters for the use of the bearer detachment. The second wagon is the baggage wagon. It carries the company baggage, supplies, and equipment for the horseshoer, farrier, saddler, and mechanic, the fifty pounds of baggage allowed to each officer, and, when practicable, the blanket rolls of the enlisted men. The third or ration wagon carries two days' field and one day's reserve rations for the men and two days' grain rations for the animals.

The organization and transportation of a motor company is still in the experimental stage, but the transportation at present assigned comprises one light touring car for the officers, twelve motor ambulances, one spare parts car, and two one and one half ton motor trucks. The question of the method of transporting the dressing station equipment is yet undecided. My personal belief is that it should be carried by four motorcycles with sidecar attachment similar to those in use for package delivery, the contents of each to be packed in four knapsacks in order that it may be transported on the backs of the men when the terrain or the conditions are of such a character as to preclude the approach of the motorcycles to the site of the dressing station. Recom-

mendation to this effect has been made to the surgeon general.

On the march, when not in the presence of the enemy, the ambulances are distributed among the regiments of the division and transport those who are unable to march. In camp, when practicable, the ambulances rejoin their companies and are parked with the grouped sanitary train. They also furnish the ambulance service for the camp. The wagons carrying the equipment for the camp infirmaries are ordinarily attached to them. In the presence of the enemy one ambulance company will ordinarily march in the rear of the advance guard, while the remaining three will be grouped with the remainder of the sanitary train. When the combat is imminent the dressing station parties, comprising the bearer and pack detachments, move up in rear of the combatant troops to which they may be assigned. Ordinarily one company is attached to each

brigade. The trains, consisting of the ambulance and wagon detachments, are placed immediately in rear of ammunition trains. As the action develops, orders are issued by the division surgeon through the director of ambulance companies or, when authorized or in emergency, by the latter officer for the establishment of as many dressing stations as are required. The dressing stations are established as far



FIG. 2.—Sanitary organizations in column.

forward as possible without unduly exposing them to the fire of the enemy. Their location will vary with the character of the terrain and the facilities for shelter, cover, water, and evacuation of the wounded. For purposes of discussion it may be assumed that ordinarily they will be located within a mile of the firing line.

The equipment of a dressing station is carried on four pack mules. It consists of: a medical and surgical chest, containing instruments and supplies for emergency operations, a few medicines in the form of tablets, and a liberal supply of morphine and stimulants; a box of miscellaneous supplies, such as Red Cross guidons for marking the route from the front to the dressing station, lanterns for use by bearers in searching for the wounded at night, denatured alcohol for stoves, candle lanterns and candles for lighting the dressing station, basins, etc.; two boxes of surgical supplies, containing first aid packets, compressed bandages, gauze and cotton, splints, etc.; and two food boxes, containing beef extract, tinned soup, condensed milk, cocoa, tea, coffee, etc., a bucket, alcohol stove, and large stir-

<sup>1</sup>Under a recent order the total number of enlisted men has been increased to 150.

ring spoon; buckets; bags for carrying water; and two tent flies for use when no shelter is available. As before noted, the combat wagon carries a large reserve of supplies and a liberal number of oil lanterns as well as a flagpole with national and Red Cross flags for marking the station.

On its establishment, the bearer detachment with their litters and personal equipment for rendering first aid are sent forward under the direction of a medical officer to clear the wounded from the first aid stations, established by the regimental sanitary detachments, and, when necessary, from the front itself. They are instructed to mark the route to the dressing station with the Red Cross guidons for the guidance of the slightly wounded, to direct the ambulant patients to it and to transport those unable to walk. They will apply first aid and attach diagnosis tags to those who have not already received attention. The dead are also tagged for purposes of record and to avoid loss of time in further examination by subsequent parties. The bearer detachment is ordinarily divided into as many sections as there are aid stations, each under the command of a non-commissioned officer.

On its establishment, the dressing station is divided into the following departments: receiving and forwarding, slightly wounded, seriously wounded, dispensary and kitchen.

It is well to establish the receiving and forwarding department a short distance in advance of the other departments in order that the necessary sorting of the wounded may be accomplished before they reach the other departments and disorganize them. For the same reason the department for slightly wounded, if possible, should be placed in advance of that for seriously wounded. If this is not done the latter department will be flooded with the slightly wounded, who always arrive before those requiring transportation. All wounded pass through the receiving and forwarding department, where a rigorous division and selection of cases must be carried out. This sorting continues through all establishments of the sanitary service to the end that the slightly wounded may be returned to the front with the least practicable delay and the seriously wounded receive as prompt treatment and evacuation as possible. Those able to return to the front will receive treatment and be directed forward as soon as possible, a notation to that effect being made on their diagnosis tags, while the ambulant cases unable to do so will be dressed,

gathered in parties, and sent to the rear under the direction of the highest officer or soldier among them. They will generally be directed to the station for the slightly wounded. A memorandum of the number and disposition of the cases will be kept at the receiving and forwarding department and the required list of sick and wounded made out. The seriously wounded are treated in the department for that purpose. Emergency operations only will be performed, such as ligations, tracheotomies, etc. The character of the treatment given will depend upon the number of the wounded and other circumstances but is ordinarily only of such a character as will prepare the wounded for further transportation. A liberal use of morphine and administration of hot liquid food is ordinarily indicated.

The ambulance train and wagons, which have been left behind, are usually held in the vicinity of the nearest field hospital some four or five miles in the rear. These should be sent for and brought up at the earliest possible moment to clear the dressing station. Under modern battle conditions in which the enemy covers every avenue of approach from the rear with a hail of shells to prevent the bringing forward of supplies, this may be delayed for long periods and ordinarily will be possible only under cover of darkness. Under favorable conditions, such



FIG. 3.—Ambulance company bivouac.

as a retreat of the enemy, it may be possible for the ambulances to clear directly from the field of battle, thus obviating the transportation by litter bearers. Under these circumstances, the dressing station and, if possible, the field hospital, may be established at that point. It should be the practice, as far as possible, to transport the sanitary formation to the patient rather than the reverse.

The army ambulance furnishes accommodation for eight sitting or four recumbent patients. The train of an ambulance company will thus furnish accommodations for ninety-six sitting or forty-eight recumbent patients at each trip. When the ambulance accommodations are insufficient for the casualties application may be made to the division commander for the use of all empty transportation vehicles returning from the front. Little dependence can be placed on this mode of conveyance, however, as it will be impossible to divert them in the slightest from their course back to their ammunition depots and other supplies. As soon as a field hospital is established, its seven wagons or trucks may be placed at the disposal of the ambulance train. Ci-

vilian transportation will be impressed and gathered into trains prior to or during an engagement and be used to supplement the ambulance train. When time permits, a list of the wounded should be turned over to the officer in charge of the train. A special notation of those wounded likely to require attention or die en route to the field hospital should be made on this list. If impracticable to furnish this list at the dressing station, an endeavor should be made to prepare it en route and a copy turned over to the field hospital. Each ambulance carries a supply of surgical dressings and food of the same character as those at the dressing station. These are intended for the use of the wounded en route should there be delay or a long trip, but in emergency they may be turned over to the dressing station.

In transportation it is important that the wounded should be handled as little as possible. With this end in view no patient should be removed from a litter after having once been placed on it, before reaching the field hospital. Delay and discomfort to the patient will be reduced by turning the litter in to the field hospital and securing an empty one for it from that formation. The litter is placed on supports and used as a dressing and operating table at the dressing station. Each ambulance carries four litters as part of its equipment and there are twenty additional litters on the combat wagon for the use of the bearer detachment, making a total of sixty-eight litters for each company.

The weakest link in the chain of transportation is that between the aid station and the dressing station. The present organization of our army provides for only sixteen litter squads of two bearers each. This is entirely insufficient and is far below the quota allowed in other armies. It is found to be impracticable for two men to carry a patient on a litter for any distance. To remedy this defect an increase in personnel of the ambulance company to 150 men in the case of an animal drawn company and 125 in a motor company is under consideration. The latter number has been fixed as the maximum personnel that can be transported in the motor vehicles on the march.

To give an approximate idea of the work developing on an ambulance company in combat the following figures based on the experience of previous wars may be cited. These figures are the ones ordinarily employed in the solution of sanitary problems and are subject to wide modification in actual practice.

The experience of the present war has tended to increase the ratio of dead to wounded and of seriously wounded to slightly wounded as the result of the great increase in use and efficiency of artillery fire:

Approximate strength of a brigade.....	6,000
Ten per cent. casualties.....	600
Twenty per cent. killed.....	120
Eight per cent. seriously wounded.....	48
Thirty-two per cent. wounded requiring transportation.....	192
Forty per cent. wounded able to walk.....	240
Total wounded .....	480

It will thus be seen that a tremendous and in certain cases an overwhelming amount of work will devolve upon the personnel and transportation of an ambulance company following a battle. To provide for emergencies, the sanitary personnel of unengaged troops may be temporarily assigned to assist that of the ambulance companies actively engaged.

No attempt can be made in this paper to discuss the multiplicity of details covering the administration, supply, and training of a company. The outlines of these are laid down in the Army Regulations, Manual of the Medical Department, and other official and unofficial publications, but can be mastered only by practical experience with a company. It is to be



FIG. 4.—Loading ambulance. Note splints and dressing.

feared that in the organization and training of the new armies many of our confrères in civil life, who will now join us, will have a stony path to follow before they and their companies will be able to render that service to the wounded and to the nation which is their due. We can find encouragement and guidance, however, in the example of our ally, Great Britain, which has successfully overcome in this war the same difficulties which now confront us and much can be gained by a careful study of the papers now available concerning the work of our brothers-in-arms, the Royal Army Medical Corps, as well as those by our own officers. Therefore I most earnestly urge that the physician give his time to a study of the official publications mentioned, the *Military Surgeon*, the foreign correspondence in the medical journals and, if available, the *Journal of the Royal Army Medical Corps*.

**Vaccine in Trichophytosis barbæ.**—M. F. Engman and R. A. McGarry (*Journal A. M. A.*, February 17, 1917) report two cases of trichophytosis barbæ promptly cured by the injection subcutaneously of a few doses of Strickler's ringworm vaccine.



## THE LOUSE PROBLEM.

By HORACE C. HALL, M. D.,

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The discovery of the plasmodium of malarial fever made it possible to follow out its life history and conclusively bring before the public in general the fact that the destruction of all mosquitoes meant not only the elimination of the yearly epidemics of malaria, but also the periodical visitations of both yellow and dengue fevers. Knowledge of this fact made it possible to dig the Panama Canal and reclaim for habitation vast fertile marshes, and bequeathed to the future the possibilities of preventive medicine. The great law giver of Holy Script, Moses, was inspired to diagnose and enunciate measures against the spread of contagious diseases (Leviticus xii-xvi). Has it been by divine dispensation that ultramodernism has evolved and proved the theories of immunity and serotherapy, exemplifications of which have been noted in the results obtained in the prevention and cure of diphtheria and typhoid fever? Our modern medicine has thrown off the cloak of superstitious mysticism in recognizing the fact that a working knowledge by the greatest number as to how an epidemic disease is conveyed and spread, is of primary importance in securing public health. The exponents of hair splitting identification and giving of long Latin names to causative microorganisms, as well as those even who are able to recognize and cure infectious contagions must become reconciled to having the importance of this knowledge inversed in the ratio of results secured by preventing disease. It is a matter of common knowledge in all civilized countries that smallpox is a contagious disease and a loathsome pestilence as difficult to treat as it is easy to prevent by a timely vaccination; but scientific research has been unable to recognize its specific cause.

Regardless of criminal negligence or primitive ignorance of the people, the laws of the transmission of disease have ever been fixed. Mother Nature never makes a mistake, and exacts her full punishment whenever her laws have been transgressed. Wherever the laws of cleanliness and hygiene have become of minor consideration, on account of segregating people into armies, prisons, etc., conditions favorable to the spread of disease and pestilence have developed. In not very remote times this was supposed to be a visitation of divine wrath; but now we know that it has and will be due to the contamination of the water and food supply, as well as such vermin as the louse, common house fly, and mosquito. In recent epidemics of typhus fever in the Balkans, the application of modern measures of disinfection, hygiene, and general sanitation gave results little short of miraculous. Since 1914 our neighbor south of the Rio Grande has paid the price of civil war, and a combination of the ignorance of a greater part of her people and a criminal neglect by those who could have made some determined effort to control national sanitation. Typhus fever and smallpox have been epidemic in Mexico since the Spanish conquest and have lately taken a decimating toll from the larger commercial centres. Unchecked, they are stalking through the rural districts, and since the establishment of direct railroad communications

with the interior, are a constant danger to our border sections.

The body louse has been conclusively convicted of being the carrier of typhus fever infection, transmitting it from one person to another; and the head and crab louse, as well as the bedbug are under grave suspicion on the same charge. Nicolle was able to transmit typhus fever to monkeys by injecting them with the blood of typhus patients; while Anderson and Goldberger did the same in their investigations in Mexico City. Nicolle proved, in France, that the disease could be transmitted from monkey to monkey by the body louse, while Ricketts, who lost his life from an attack of typhus fever while working on the transmission of the disease in Mexico, and Wilder proved that the disease was transmitted from man to monkey by the *Pediculus vestimentum*. Olitsky, Denzer, and Husk, who also lost his life while making the investigation, published conclusive evidence concerning the body louse as an etiological factor in typhus fever. In 1916 the writer called attention to the identity of "Rio Grande fever" with the so called "Brill's disease," which is recognized as a mild form of typhus fever, and attempted to describe some of the precautions being carried on by the Texas State Quarantine Service to prevent the further introduction of lice infested persons into Texas. Since that time we have found seven cases of typhus—five typical epidemic, one mild, and one fulminating type—in the immediate vicinity of the Laredo, Texas, Station. Our precautionary measures have detected and returned for treatment, in the isolation quarters on the Mexican side of the river, more than a hundred and twenty-five typical cases. These results have depended upon the detection of lice—head, body and crab—and other vermin and their eggs, with their subsequent complete destruction. Recent revelations may cause the discovery and elimination of vermin to be regarded as more important than a routine quarantine measure.

The head louse has been so named because it is most frequently found in the hair of the head. It rarely strays from beneath the covering of the hair, and when not feeding seeks the groove of the neck immediately below the occipital protuberance. The reason that it is most frequently found in young children may be explained by the fact that infants are unable to take preventive measures against their increase and ravages. Ordinarily the color is grayish, with small black spots or a curved line across the body. In the negro its color is black, in gray haired persons and blonds it assumes the color of the hair in which it may be found. To the naked eye there is not any appreciable difference in the two sexes; but the female is a more constant and hearty feeder. This may be due to the fact that the female only deposits her eggs after their having been completely developed by a feeding upon human blood. After feeding, the female deposits from fifty to sixty eggs or nits, which she fixes to the hair with a secretion of mucoid glue. The eggs are attached to the hair very near its covered or protected root, and several of the tiny white droplets may be so attached to a single hair. Within six days these nits hatch small lice, which begin their feeding immediately. After

the louse has hatched, the empty shell remains attached to the hair; and it follows that those nits, more than half an inch from the hair roots, are but harmless empty shells. In this way it may be calculated how long a person with long hair has



FIG. 1.—Wood tick.

been infested with the vermin. A single female louse has been known to deposit as many as 8,000 eggs in a week's time. The diagnosis of the trouble is made by finding either the louse or fertile eggs, whether by accident or after a fit of scratching and subsequent irritation. This may cause cutaneous affections such as eczema, impetigo, and superficial suppuration, which in turn adds fuel to the fire and offers a more easily secured supply of nutrition to the vermin. In small and weakened children swelling of the cervical and occipital glands may indicate lice before they are discovered below the matted hair. A superabundance of natural oiliness of the hair is not favorable to the increase of the vermin.

**Prevention.**—It is a known and inexplicable fact that the head louse will not infest the hair of some persons, even after they have been placed on the scalp, as a matter of test. In other cases they increase indifferently, while persons with dirty scalps, or long black hair, are frequently unable to rid themselves of the vermin until after the hair has been closely clipped. In all known or suspected cases the hats, combs, brushes, head ornaments, and gear should be thoroughly treated to prevent the hatching of any attached nits and the subsequent reinfection of a cleansed head and hair. As many of the eggs are insecurely attached to the hair, and fall to shawls or other articles of clothing covering the shoulders, it will be a wise precaution to care for the destruction of those eggs.

**Radical cure.**—For this it is necessary to clip the hair with No. 0 clippers, burning the hair subsequently, anoint the scalp with vaseline, and wash out with green soap and water. In women who desire to preserve their hair a different procedure must be adopted. From what has been said the usual mere mopping of the hair with any curative mixture will only reach the empty and harmless eggs, leaving the live louse and fertile eggs beneath the matted hair unmolested. The hair is loosened, and the head thrown down to allow the

hair to fall over the brow, thus exposing the roots of the hair, fertile eggs, and scampering lice. With a pressure of not less than thirty pounds on a finely divided spray, a solution of equal parts of vinegar and kerosene is thrown into the hair and on the scalp. The head and hair are then wrapped in a towel, moistened with the same solution, for an hour; and the person is warned not to approach a fire or strike a match. After this the hair and scalp are anointed with vaseline and combed with a fine toothed comb or stiff brush. If this can be done at bedtime it is better to bind the hair and head in a dry towel, to be washed with green soap and warm water the following morning. The kerosene kills the live vermin, and the vinegar softens the glue by which the nit is attached to the hair and allows many of the eggs to fall through the hair to the scalp. The vaseline renders the eggs nonfertile as to hatching, collects the fallen eggs, dandruff scurf, and dirt, as well as rendering the hair soft and lubricated for the comb or brush to glide the loosened nit along the cylinder and beyond the end. Special care should be taken to treat those nits nearest the hair root. By the Mexicans, a mixture of sulphuric ether and xylol is used with good results. Acetic acid may be substituted for the vinegar, or gasoline for the kerosene oil. Watery solutions of germicides and disinfectants are useless and irritate the scalp, and the louse breathes through spaces impervious to water. An interesting experiment is to place a louse under a cover glass and allow the space to fill with water; and it will be found that the louse will live for more than a half hour, and not show any indications of having been drowned. Of the many thousands lower peon class Mexicans we have inspected at this station, we have found that more than eighty per cent. of them have either live lice or fertile nits. Relatively and for the reason of



FIG. 2.—Body louse.

their having longer hair, more live lice are found in the heads of women.

**Crab lice.**—The relatively few cases of crab lice we have found have been treated in the same manner as head lice, with equally good final results. We have found head lice and crab lice on the same individual, but have never discovered an individual with both body and crab lice. Where crab lice are found the clothing is either boiled in water, dipped

in gasolene and vinegar and allowed to drip and dry, or disinfected in the steam chamber to be mentioned.

*Body lice.*—*Pediculus vestimenti* has been correctly named, as it is hatched, lives, and deposits its eggs within the folds of the clothing. It is com-



FIG. 3.—Black hair, black lice.

monly known as the "body louse," probably for the reason that it feeds upon the body trunk, and but rarely is found on the extremities or head. It prefers the loosely covered areas between the shoulder blades and around the loins, and, unlike the head louse, is more frequently found on male adults than upon women or small babies. It is a night feeder and difficult to discover within the folds of the garments other than those nearer the body surface. The fact that it will not feed upon the surface of a perspiring body nor deposit its eggs on clothing moistened with perspiration may explain why it is relatively rare among the natives of the tropical coast countries, and why typhus fever is not endemic in these regions. It will not remain nor deposit its eggs

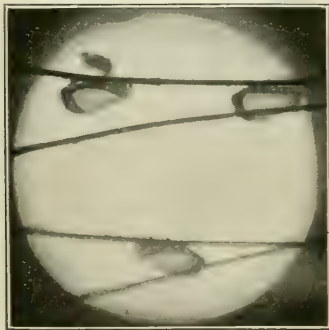


FIG. 4.—Brown hair, brown lice eggs.

upon silk clothing; and the lower class Mexican native consider its presence proof positive that he is in good health. This is a little larger louse than the head pediculus, of a slightly yellowish white color, a few hours after feeding. If seen immediately after its meal, the undigested blood of its victim may be readily observed in the alimentary tract and gives that part of its body a reddish yellow color. It does not show the black spots or striations of the

head louse, and in proportion has a slightly larger head. The female is very prolific, depositing as many as 10,000 eggs within a week's time. Undoubtedly due to certain odorous secretions of the skin, certain individuals attract or repulse the vermin, and in a congregation of lousy people, some few will be found free from vermin. The lesions observed on the trunk are such as would be caused from scratching, and are most frequently found on the areas indicated. In the absence of scabies, these lesions should be sufficiently suspicious to indicate that that person is lousy, even though the vermin cannot be discovered in the folds of the garments.

The eggs are pearly white, slightly larger than those of the head louse, and are well concealed and attached within the folds of the garments. Where many eggs are deposited there will also be noted



FIG. 5.—White hair, white lice.

black spots and on white clothing fecal deposits. Again, where the eggs or black spots are observed, it is fairly certain that that individual is lousy. It is best to look for the eggs with a reading lens, through which they appear as very small pearls, firmly attached to the cloth by a mucoid glue. They will be found most numerous around that part of the clothing covering the shoulders and around the loins, and belt waist line, as the louse deposits them shortly after feeding. The maturity of the eggs depend upon a feeding of human blood, as is the case in the head louse and mosquito.

*Prevention and cure.*—The elimination of this louse means the elimination of typhus fever. Of the seven cases found on American soil at this station since last November, it was proved that five had been bitten by lice, and passed a portion of the incubation period of the disease in Mexico before passing our inspection and submitting to precautionary measures against vermin. The only safe assumption to make is to consider that all of the lower class Mexican immigrants from the known infested districts



either have live lice or fertile eggs on them, which is substantiated by being able to demonstrate the suspected condition in at least eighty per cent. of these individuals. Any of the other suspected immigrants are searched for lice and their eggs. At this station we first look for head lice, give treatment to rid the victim of these, burn the clipped hair and pass him along to the body louse treatment. The individual is allowed to remove his clothing and take a shower bath with soap and water while his clothing is being treated. It is not thought that the bath is a measure to free him from lice, as in more than a hundred thousand observations we have found a single louse adhering to the body. Nor are the eggs attached to the hair of the body. The bath is a measure for general cleanliness and to keep the individual occupied while his clothing and effects are being disinfected. The clothing and effects not likely to be damaged by heat are disinfected in a steam chamber.

The process is completed within twenty-five minutes and efficient in the disinfection. This method may be used only at stations at which expensive plants have been erected. It is not applicable when delicate fabrics, plumes, glued articles, celluloid brushes and leather trunks or grips are to be treated. Boiling the rough fabric in clothing and blankets would be as efficacious, if it is certain that the dyes are fixed. Again the process of boiling and drying consumes considerable time, and is not practicable when many individuals are to be treated. Before the installation of the autoclave, we dipped such fabrics in a mixture of gasolene and vinegar, ran them through a clothes wringer, and dried them with an electrical fan. If there should be any probability of having use for the autoclave in epidemic work, it should be constructed on a heavy truck, the wheels of which have broad enough tires to admit of easy truckage in sandy or muddy localities.

Where finer fabrics are to be treated the process of fumigation or final exclusion must be applied. The better class passengers from Mexico have peon laundry maids and sleep in infested crowds and localities, and, as we expected in many cases, both they and their baggage were infested with either live lice or fertile eggs. Considering every live louse coming from an infested district to be a source of danger, and not knowing that the unhatched eggs are harmless, it has been deemed expedient to treat all baggage.

From rigid tests of the process at this station we found that fumigation as ordinarily applied is a false security, and of not any real disinfecting value. Hydrocyanic acid gas meets the requirements, when properly applied, but has the disadvantage of being dangerous to human life. We have had constructed an air tight chamber 30 x 30 feet, with walls of three thicknesses, between and over which were placed impermeable paper and oiled roofing. A tall ventilating flume was installed with an exhaust fan to be controlled by an outside switch, and an outside generator to be placed in operation, after the chamber has been properly closed. The baggage, trunks, grips, etc., are opened to allow the free entry of the fumes, and remain exposed for one hour.

After this the ventilator and exhaust fan are switched into operation, and the chamber rendered safe to human entry. We have been using this process for more than a year, and have not had the semblance of an accident to date. It was the writer's original idea that this chamber should be so air tight that the exhaust fan would form a complete vacuum, after which the fumes would be allowed to enter and be forced into the baggage, which would not have to be opened or disturbed. On account of dampness, the wood used in construction rendered it impossible to put this theory into practice. In the future construction of such a contrivance boiler plate iron will be used, as the acid fumes cause cement and mortar to loosen and fall. We have an hydrocyanic acid generator attached to the autoclave, but the machine is in too constant use to make this attachment practicable. This process does not injure the finest fabrics, rubber, silk, or leather goods. It kills all animal life and renders the eggs nonfertile as to hatching. It may be carried out where the vacuum can be secured, within a very short time, and the articles to be treated need not be opened and ruffled up to secure exposure to the fumes. When a vacuum cannot be secured, an hour's exposure is double the required time to be efficient. The gas is generated as follows: Sodium cyanide, one ounce; sulphuric acid, one ounce; and hydrant water, two and a half ounces. This amount is used to the 100 cubic feet to be treated, including that occupied by the baggage to be fumigated. A glazed burnt clay generator is used, and the cyanide is added to the liquid mixture. Where the cyanide has not been previously prepared in "cyanegg," it is best to inclose it in large capsules during the solution of which there is time to close and clamp down the generator top. The Quarantine District includes several small border hamlets not of sufficient size to support the installation of an expensive plant; so we are having constructed a smaller chamber on an automobile truck, the engine of which operates the vacuum pump. Such a plant is expected to be speedily mobile, and do the work of the heavier truck autoclave. It should prove practicable for the disinfection of army outposts, save time and labor in trucking the heavier autoclave, burning the tentage, etc., or having them brought into the central plant for treatment.

It has been erroneously supposed that the body louse could not live on other than human blood for more than six days. Our experiments have shown that this louse is cannibalistic, however, and will live for more than thirty days on its weaker brethren, head lice and crab lice and on raw beef meat. This explains the fact that freight cars and sleepers, which had been used in the transportation of infested Mexican troops during the Mexican civil war, contained lice, fleas, bedbugs, and mosquitoes when brought to this side with other freight and passengers. For this reason all freight and passenger coaches coming from the known infested district are sealed and fumigated with the hydrocyanic process. In the case of Pullmans and passenger coaches it is well to remember to fumigate before allowing the vacuum cleaner to operate. Some few members of the Mexican railroad section gangs

became lousy, and we suggested a disinfecting car, inexpensively made air tight, to make periodical visits over the road to disinfect these gangs, their effects, beds, and quarters. Care should be taken to draw off the water supply of sleepers and passenger coaches and any standing water near quarters being fumigated. Foodstuffs other than that in tins should not be treated with hydrocyanic acid. Such attention to details render the process of hydrocyanic fumigation harmless to human life.

For stock cars and quarters which cannot be sealed for fumigation the pressure spray with a solution of vinegar and gasoline to be forced into the cracks, etc., where vermin may be found hidden is used. Leanto or grass thatched quarters should be burned and contents of any value should be properly treated.

During epidemics, schools, churches, public conveyances, and places of amusements should be either closed entirely or properly treated.

Before being discharged from quarters the convalescent patient has had his clothing and general effects properly treated. As regards typhus fever being contagious after the patient has been properly freed from lice and fertile eggs, I am thoroughly convinced that there is no danger in mere contact. Until more is known about this, however, it is advisable to isolate the suspect, after having him properly freed from vermin.

## REPORT OF TWO INTERESTING CASES OF ECTOPIC GESTATION.\*

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AND JOSEPH C. TAYLOR, M. D.,

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Infection by Neisser's diplococcus is recognized as one of the etiological factors in extrauterine pregnancy. This is not true, however, in every case, as in a great many instances other factors have been the cause of the tubal constriction. Notwithstanding that infection does play an important rôle, it does not follow that every case should be looked upon even with suspicion until the deciding etiology has been clearly established. The gonococcus in its activity as a parasitic and surface riding destroyer leaves such marked pathological changes that even though the microorganism is not found the evidence of its past devastation remains.

Extrauterine pregnancy is not brought about when only the ciliated epithelium is destroyed. It is not a question of ovum lodgment due to mucous membrane change, but entirely one of interference with ovum motility during its progress through the tube. Ovum motility is a normal physiological process during which it sheds its corneal and pellucid sheaths, gradually being covered with trophoblastic cells, forming a globular, shaggy looking mass. During this change until its implantation, primary maturation takes place.

The site of normal ovum implantation depends upon the valency of the ovum and the anatomical structure of the site. Granted that the ovum is im-

pregnated at the ampulla, fecundation follows and the ripened ovum progresses toward its normal developmental habitat, the uterus. This process is slow, taking from eight to ten days. During this time there should be no interference with the progress of the ovum. The slightest retardation, however, from local or extratubal conditions will hold the ovum short of its normal destination.

Ovum maturation bears a close relationship to ovum retardation. Extratubal conditions, constrictive and otherwise, may be the factors as well as local epithelial destruction and lumen stenosis. It is only a question of retarding the onward migratory equilibrium of the ovum at the time of its maturation which produces implantation or extrauterine pregnancy. Adhesive constrictions from even a slight puerperal storm—sapremia—may bring this about as well as a preexisting pus tube. It has further been shown that when the ovum has reached its fullest stage of segmentary development it will attach itself to any adjacent part. At the exact moment of its maturation, if retardation takes place at any portion of the tube, implantation will occur. It makes little difference whether this is at the ovary, peritoneum, tube, or uterus. Implantation will not occur at any time even with retardation; maturity and retardation must be concomitant.

Normally, there is an even ratio relative to impregnation, segmentation, and fecundation and the lodgment in the corpus uteri, for when the ovum has reached the highest development of its fecundative activity and is ready to implant, it will be in the uterus. This same condition prevails if the ovum has matured and by virtue of retardation in its progress has been unable to reach the endometrium. Hence, there are characteristic varieties of topographical ectopics which continue along typical lines and produce certain diagnostic symptoms.

I report herewith a case which presents interesting pathology along all difficult lines of early diagnosis.

CASE I.—The patient was forty-one years of age and has been married sixteen years. Her previous personal history was negative except for slight, so called rheumatic attacks. Careful laboratory tests failed to show any Neisser infection. Her husband was also free from any history or evidence of past infection. She was of an extremely neurotic type and gave the impression of neurasthenic taint. She has never suffered any injury. Menstrual history: Puberty at fourteen; flow regular but scanty. Was always anemic. In the last few years menstruation has become less in quantity and more pale in color, at times skipping a number of days or showing only pale, streaked blood. Last menses began March 15, 1916; duration one and a half days, scanty and only pale and blood streaked. Dys. negative at all times. Intermenstrual history negative. Never had dysuria or any vulval complications. Bladder symptoms negative. Puerperal history: Had two children, fifteen, and ten years of age. With the first child, pains began one and a half days before labor; dry birth, being in labor two and a half days. Post partum history was negative. In bed fourteen days, getting up feeling well, nursing baby and menstruation returning when baby was weaned. Post partum menstrual history negative until conception of the second child whose birth was also dry, ten hours in labor, nine days in bed. Post partum menstrual history negative except a flow of blood for six weeks after confinement. No chills or fever. Patient has had eight abortions, all induced. The first, fourteen years ago, was performed by a midwife with a catheter; the last five years ago with a curette. All abortions were done at about six weeks. With the fifth abortion the patient had slight chills and fever but was not confined to bed for more than a

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day or so. Present history: Menses though due did not appear on April 17th; the patient felt nausea and indigestion. She consulted a physician, who performed an abortion by dilatation and curettage. She menstruated very scantily on the 19th, and had no pain. She was curetted by the doctor again on April 19th. On April 21st she had "soreness of the intestines," but no sharp, short, lancinating pain in either side. A little flow, scant in quantity, appeared. She went about her housework. April 24th she had a slight pain, colicky in character, "as if there was gas in the bowels," for half an hour; on placing a hot water bag to the right side the pain disappeared. Two weeks later she again had an attack lasting from three to four hours, and began to have indigestion and eructation just as she had experienced in pregnancy. Had general abdominal pain and distention. Took an enema and felt better. Another attack came on May 8th which was treated with tampons. Diagnosis of "a pelvic exudate" was made by her physician, who said it would absorb. On May 10th or 11th, "a piece of skin came from me as if I had been burned; it covered the tampon." Patient continued this way without marked pain but with a sensation of soreness which increased whether walking or working about the house until she was compelled to go to bed, where she remained until it diminished. On May 23rd she came under my observation. She was in bed. Vaginal examination showed a right sided intraligamentous mass, very tender at the base. The cul de sac was not full, but tender as was the tuboovarian region. The mass was soft and

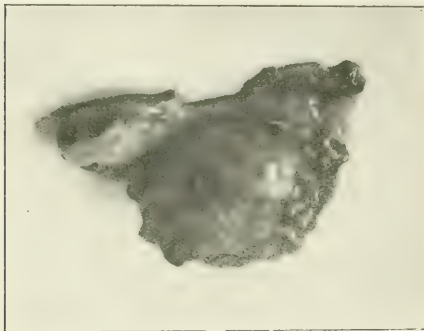


FIG. 1.—The thinned out posterior broad ligament sheath at the upper portion of one end, the flattened ovary plainly visible, and at the other end the cornual portion of the tube with its distended portion at the point of rupture downward.

boggy, but not tender to the touch except at the base of the broad ligament, as mentioned before. The uterus was softened, enlarged, pushed forward and displaced laterally. The patient's general appearance was excellent. She was not anemic. Temperature 99° F., pulse 80. She gave no history of fever at any time or any rise in pulse rate. Abdominal palpation elicited tenderness in the deep right ilioinguinal hypogastrium and lateral manual manipulation produced a marked gurgling intestinal sound as though flatus were being forced through a kinked adhesion. Diagnosis of right extrauterine pregnancy with intraligamentous rupture was made, based upon the intermittent attacks of pain and soreness, transitory and recurring, especially when walking any distance, developing into colicky attacks, and each attack continuing over a longer period of time, the patient being free from pain between attacks; negative history of any infection; history of "skipped menses"; membrane passed, probably decidua; mass in the right side, unilateral and free from marked tenderness; normal temperature and low pulse rate; empty cul de sac; and on the left side laterally placed antverted uterus pointing to ligament involvement. Parametritis due to curettage—acute septic traumatic parametritis—would have presented a similar mass, but with thickening along the lateral edge of the uterus, plus marked broad ligament and uterine tenderness and an increasing exudate, first soft and edematous, then hard and fibrinous. The continuous and always present remittent parametritic temperature was missing.

The empty cul de sac, deep anemia, marked cul de sac and abdominal tenderness, and location of cervix and uterus excluded external tubal rupture or tubal abortion. The previous history, clinical picture, and physical findings eliminated intraligamentous fibrinoid. Pain, along base of broad ligament, was due to involvement of ganglion of Franken-

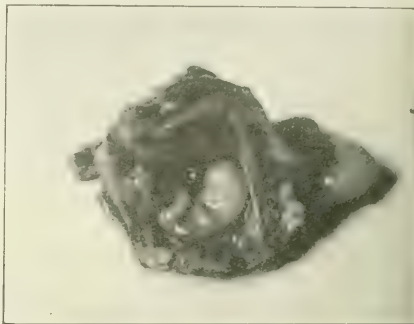


FIG. 2.—The mass posteriorly opened; about an eight weeks fetus.

haeuser and peritoneum encroachment. Immediate operation was advised. A median incision presented the usual subperitoneal discoloration peculiar to abdominal bleeding. On opening the peritoneum, the omentum was found lying upon it, discolored by blood clots. Trendelenburg position and pushing omentum upward revealed the pelvis and presence of blood clots. The right annexa was enlarged, being the size of a goose egg. There were adhesions to the small intestine and the upper part of the mass was directed backward, outward and downward, adherent at its distal end and deep in the pelvis. This latter proved to be the fibrinated extremity. The mass was in the broad ligament. It was black in color and hanging from the upper and posterior portion of the broad ligament was the flattened ovary with a small retention cyst. The posterior broad ligament sheath was thinned and shimmering through it a large blood clot was visible. The tube was tortuously, irregularly, and in some places indistinctly riding on the upper part of the mass, its distal and ampulla end attached to the small intestine in the pelvis.

The infundibular ligament and tubouterine cornua on the right side were clamped with a curved clamp and a V shaped section cut into the broad ligament. The clot mass

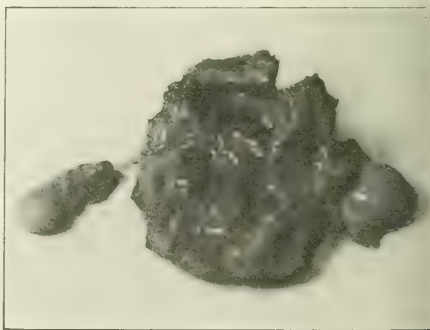


FIG. 3.—The mass with the fetus removed and the umbilical cord intact from its placental origin to the umbilical attachment.

was removed *in toto*. The ureter was plainly visible and exposed when the mass was taken from the broad ligament. Owing to the thinness of the posterior broad ligament sheath, the right round ligament was curved over and attached to the posterior uterine wall, suturing it in, further peritonizing with the posterior ligament sheath, and ligating by overcasting in the same suture the ovarian and



uterine arteries. The left tube and ovary were normal, but bound down by adhesions. The fimbria was open and throughout the tube showed no sign of infection. The left tube and ovary were freed from adhesion bands but were not removed. The abdomen was closed without drainage.

The patient was carefully watched and especial attention was given to measuring the quantity of urine for fear of right ureteral constriction following the pelvic toilet. This was deemed necessary on account of ureter exposure and novel method of peritonization. She made an uneventful recovery and was discharged cured on the fourth day.

Examination of the mass (Fig. 1) showed the thinned out posterior broad ligament sheath; at the upper portion of one end the flattened ovary was plainly visible, and at the other end the cornual portion of the tube with its distended portion at the point of rupture downward. Fig. 2 shows the mass posteriorly opened and the existence of about an eight weeks' fetus. Fig. 3 represents the mass with the fetus removed and the umbilical cord intact from its placental origin to the umbilical attachment.

The importance of this case lay in correct diagnosis. The majority of ectopic pregnancies develop to intraperitoneal rupture from tubal abortion through the fimbriated extremity or external tube rupture. In either instance, the new state of affairs is a pelvic hematocoele. This fills the cul de sac. The external or tubal wall rupture seldom leads to abundant bleeding, hence there will not be a profound collapse. The bleeding is intermittent and fills the abdomen and pelvis with blood, hence there will always be cul de sac bulging, particularly if a large clot becomes encapsulated and forms a firm mass. The pain in external rupture is distinctly sharp and lacerating; in a tubal or internal rupture the pain is of a pulling and tense character. In a broad ligament rupture the pain is slight and only occurs upon exertion. In internal rupture there are sympathetic labor pains with early rectal and vesical symptoms; in broad ligament rupture this does not occur. The bleeding in tubal abortion is severe and serious; in broad ligament rupture it is not, as the bleeding is held in check by the broad ligament sheath. It is only when pressure destroys the peritoneum that abdominal clots occur, not from active bleeding, but from the old blood clot which had previously formed in the broad ligament. In tubal abortion, the uterus is pushed forward high in the pelvis, riding upon a soft, bulging, doughy mass in the cul de sac. In broad ligament rupture the uterus is always displaced laterally and opposite to the mass. An intraligamentous rupture can continue in its growth and form a lithopedion. The importance of early diagnosis is not so much on account of the danger of hemorrhage, but of local destruction by pressure and tissue saturation, or by continued growth and organic encroachment.

The second case, which I would like to report, is one of double ectopic gestation with unusual findings.

CASE II.—Mrs. J. R., aged twenty-five years, had given birth to a healthy child five years before the present illness. Since that time she had enjoyed good health up to April 30, 1916, during which she menstruated normally. In May she did not menstruate until two weeks after her period was due; the flow was rather scanty and of a chocolate color, and continued for several days beyond the normal time for cessation, which was usually of the five day type. In June she flowed a little, off and on, nearly every day. In July she consulted a physician, who advised dilatation and curettage with the presumption that abortion had taken place, to which she gave her consent, about July 17th. After this the flow ceased for several

days, but again recurred, large clots being expelled. On the second day of this recurrence so much blood passed that the patient's physician called Dr. J. C. Taylor in consultation. Examination disclosed a large mass on the left side of the pelvis with some swelling on the right. A tentative diagnosis of ectopic pregnancy was made and patient was removed to the hospital for operation. Median abdominal incision was made and several large blood clots were found floating free among the intestines. These were removed and the pelvis inspected. On the left side a large tumor mass was raised up out of the cul de sac, ligated and removed. During this procedure, quantities of fresh blood were constantly expelled through the abdominal wound, the origin of which could not be ascertained. Large quantities of saline solution were poured continually into the abdominal cavity, and the overflow was stained more and more with bright red blood. The whole procedure was conducted very rapidly, as the patient's condition when she went on the table was one of marked exsanguination. On bringing the right tube into the field of vision it was found also to contain a ruptured ectopic in an active state of hemorrhage. This was quickly ligated and removed. The fetal contents of the sac on the left side would correspond to ten or twelve weeks' gestation and the one on the right to six weeks' gestation.

The remarkable feature about the case cited is the fact that the two gestations were approximately six weeks apart. The patient made a very favorable recovery and went home in splendid condition.

214 WEST SEVENTY-FIRST STREET.

HOSPITAL NO. 32 BIS, HOPITAL FRANCAIS DE NEW YORK, PASSY PAR VERNON (YONNE), FRANCE.

By ALONZO MILTON NODINE, D. D. S.,  
New York.

Oral Surgeon and Dental Consultant, French Hospital of New York; Assistant Dental Radiologist, New York Throat, Nose and Lung Hospital.

Hospital No. 32 Bis is located about sixty miles southeast of Paris on the P. L. M., and fifty miles from Verdun, from which section it receives its wounded. It is also known as the Fitzgerald Foundation, and is under the administration of the French Hospital of New York. The writer, who returned from France on November 4th, had the privilege of organizing a department of oral and dental surgery in this hospital.

Hospital No. 32 Bis is considered one of the best equipped in France, and enjoys in a high degree the confidence of the Service de Santé. It has been fortunate in having had for médecin chefs some of the most distinguished surgeons in the United States, namely: Doctor Flint and Doctor Churchman, professors of surgery at Yale; Doctor Pool, attending surgeon of the New York Hospital; Doctor Turnure, attending surgeon of the French Hospital of New York, and Doctor MacWilliams, of the Presbyterian Hospital of New York. The assisting surgeons are from the best hospitals in the United States and Canada.

The hospital has a department of oral and dental surgery and is equipped with its own electric light plant, hot and cold water supply system, disinfecting plant, steam heat, mechanotherapy department, thermotherapy department, electrodiagnostic department, bacteriological laboratory, x ray and fluoroscope laboratory, machine shop, carpenter shop, laundry, five automobiles and ambulances, vegetable

garden, pigs, pheasants, chickens, ducks, turkeys, pigeons, rabbits, and lambs.

The department of oral and dental surgery is equipped in as excellent and complete a manner as the rest of the hospital. The equipment, bought in New York, was shipped as excess baggage; this enabled the work to begin the day after the writer's arrival. The dental equipment consists of a Wilkinson chair, Ritter all cord electric engine, bracket table, four surgical tables and an operating table, sterilizers, and surgical instrument cabinet. We had a tiled floor, plenty of daylight, hot and cold running water, electric light, and a complete supply of drugs and anesthetics, both general and local, materials, instruments, and dressings, dental x ray plates, and films.

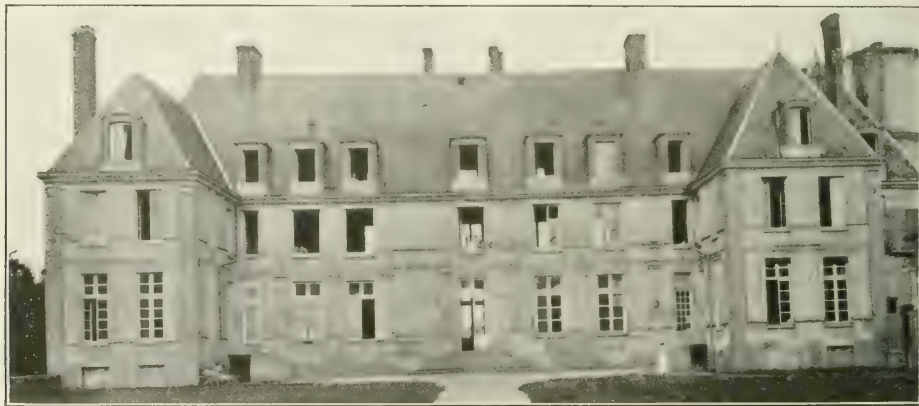
The château is historic and dates back to the tenth century. It has room for 165 beds in the wards, and a large tent which can accommodate forty beds. The large wards are in the château proper, the smaller

It has established an unexcelled reputation for the success with which it treats fractures. Many of the splints used have been designed and modified here and the hospital is in constant receipt of praise from visiting surgeons for the character of their work.

The method of radiographical localization in use at the hospital is considered by many the nearest approach to accuracy, and practically the best so far devised. It is the result of the work of two of the hospital surgeons, Doctor Irving, of the New York Hospital, and Doctor Flint, professor of surgery at Yale.

The use of gentian violet, the antiseptic employed here for a year and a half for dressings, continuous irrigation, etc., is the result of the experiments and researches of Professors Flint and Churchman, of Yale. Gentian violet is said by them to be superior to anything before employed for these purposes, taking everything into consideration.

The hospital supplies its patients with arti-



Hôpital Français de New York, Château de Passy, France.

are in the buildings surrounding one of the courts. All kinds of wounds, involving every part of the body and of every degree of severity, caused by bullet, bayonet, shrapnel, or accident, may be found among the patients received in this hospital. It has received as many as eighty wounded in a day.

So efficiently is it organized that with a notification of half an hour it can transport to the hospital sixty wounded in its ambulances from the railroad station about three miles away. The patients' clothes are changed, they are bathed and put to bed, their histories taken, and some slight nourishment given them in the way of hot milk, cocoa, or coffee, all within about two hours to two hours and a half after their arrival.

Again, another example of its efficiency is that it costs but forty cents a person per diem for food for the entire organization. The food is of excellent quality and good variety. Further, the entire cost for a patient per diem ranges from \$1.25 to \$1.50 a day, depending upon the number of patients. It is unique in yet another way: it receives no grants or subsidies from the French Government, either in supplies or money; it is entirely selfsupporting.

ficial limbs of the best American design and construction. The department of dental and oral surgery is equipped to take care of the wounds of the face and jaw, and to do all necessary dental work. During the writer's stay, patients with wounds of the face and jaw were not received, because the department was an experiment, and a continuous service is necessary to insure proper treatment and satisfactory results. This department is now organized for continuous service to the end of the war. Excellent dental and oral surgeons have volunteered for part of 1917, and others of superior training and experience have signified their willingness to go. This will make the service continuous, and to make such a service possible will be sufficient reward for any personal sacrifice by those who volunteer. It is hardly necessary to say that there is sufficient work to keep every one occupied.

In the department of dental and oral surgery 1,062 operations were performed in twelve weeks. These ranged in degree from stopping a toothache to opening the maxillary sinus under ether, curetting a maxillary sinus under novocaine, and reducing a mandibular ankylosis due to a penetrating wound of

the face, and removal of impacted third molar. All but three or four teeth, whose roots were filled, were filled by a most approved technic and radiographic evidence of the facts obtained. All septic roots were filled and then resected. All possible foci of the in-



Hôpital Français de New York. Department of oral and dental surgery. Writer caretting sockets of teeth after extraction. French Auxiliary nurse.

fection were eliminated, either by extraction and curettage or by resection of the roots. Where possible, plates were made to supply deficiencies. Nearly a thousand c. c. of novocaine were used.

The most gratifying results were obtained in establishing an hygienic condition of the mouth and teeth by the use of vinegar, water, and alcohol solution, advocated by Professor Gies, of Columbia University. This was used on a brush if possible, or else applied with gauze, using the gauze to wipe and rub the teeth and gums. The establishment of this service in the hospital not only eliminated a vast amount of pain and discomfort, but improved the appearance and physical health of the patients, and was appreciated by them in gracious and grateful manner.

8 WEST FORTIETH STREET.

## SUPERFICIAL ADENOCARCINOMA CORPORIS UTERI.

By SOLOMON WIENER, M. D., F. A. C. S.,

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Adenocarcinoma of the corporeal endometrium, commonly called carcinoma of the fundus, offers the best prognosis and affords by far the highest percentage of operative cures of any form of cancer of the uterus. This is due both to its comparatively slow method of metastasis, and to the early and persistent symptoms to which it usually gives rise.

Carcinoma of the endocervix spreads rapidly through a rich network of lymphatics into the parametrial tissues, and attacks neighboring organs at a very early date. Indeed, symptoms of involvement of the bladder or rectum may be the first to which the patient's attention is drawn. Corporeal carcinoma spreads by direct extension through the musculature of the uterine wall. The myometrium therefore acts as a thick barrier which must be

pierced before the growth can spread to the peritoneal cavity, and thence be generally disseminated. As a rule this process takes months in developing. Meanwhile the growth, being still strictly confined to the interior of the uterus, breaks down, ulcerates, and gives rise to more or less profuse bleeding per vaginam. It is in the fact that in carcinoma arising at this site the irregular hemorrhage occurs early in the life history of the tumor that the patient's salvation lies.

However, the diagnosis of corporeal carcinoma while still in the operative stage can never be definitely made by the case history and palpation alone. It should always be suspected in every irregular or persistent or uterine hemorrhage not associated with pregnancy, be it ever so slight. Herein lies the brilliant field of the diagnostic use of the curette. The sharp curette passed ever so lightly over the surface of the endometrium brings away a surprising amount of tissue; this is mostly in small masses of a peculiarly firm consistency, yet very brittle and crumbly. To the trained eye this all but suffices for a positive diagnosis, though of course the crucial test of the microscope must be applied to confirm the presence of carcinoma.

The subject of early superficial corporeal carcinoma has recently acquired renewed interest through the discussion which has been waged as to the possibility of the complete removal of such a growth by curettage alone. Curettings have been examined and pronounced carcinoma; subsequently the uterus has been extirpated and no trace of carcinoma has been found therein.

Such a case was reported by Ladinski (1). Recently Frank reported a case in which extensive curettings showed typical adenocarcinoma. Hysterectomy was performed. Upon opening the uterus no evidence of carcinoma could be seen. "On the posterior wall just above the internal os, an area about one centimetre square appeared somewhat velvety. . . . A small portion of the area above the cervix microscopically showed adenocarcinoma with

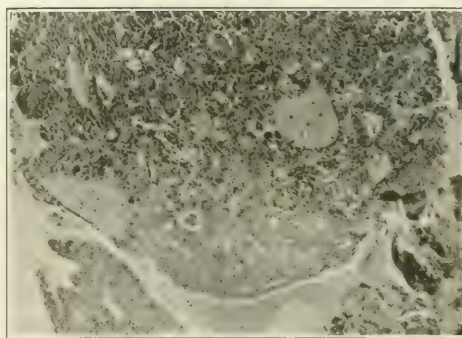


FIG. 1.—Curettings showing typical adenocarcinoma.

slight invasion of the musculature. In a few adjacent spots small accumulations of cancer cells were found in the deeper lymphatics of the myometrium."

It seems to me that such a case as the one the report of which follows goes a long way toward



proving that it is possible to remove completely an early adenocarcinoma of the endometrium by the curette. However, it is certain beyond any peradventure that nothing short of a total extirpation of the uterus should be depended upon in attempting a permanent cure.

CASE (Surgical No. 164555).—Annie L., aged fifty-four years, was admitted to the service of Dr. H. N. Vineberg at Mount Sinai Hospital, June 19, 1916. Family history: Negative. Past history: Married thirty-eight years; seven children; no abortions. Was well until her present illness. Menses always regular. Menopause fifteen years ago. Present illness: The patient ascribes her present illness to a strain of the back which occurred three months ago inci-

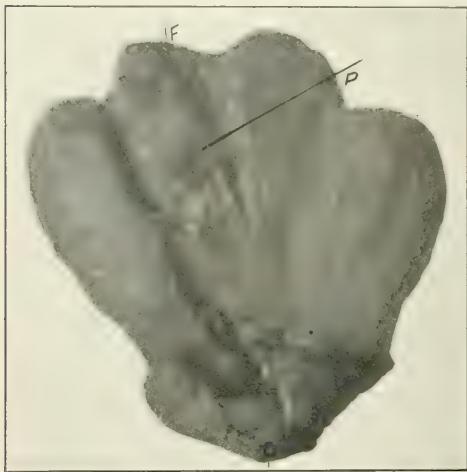


FIG. 2.—Uterus laid open. F, fundus. C, cervix. P, the dark area showing the extent of involvement of the endometrium.

dent to lifting a heavy box. About eight weeks ago she began to stain; this continued until three days ago, when she began to bleed profusely per vaginam; the blood was odorless. She thinks she has lost some weight and feels weak. Summary: Menopause fifteen years; spotting eight weeks; vaginal bleeding three days. Examination showed a woman in fairly good general condition; the heart, lungs, and abdomen were negative. There was a slight cystocele; the cervix was smooth, and there was a slight bleeding from the uterus. The uterus was anteverted, movable, and not enlarged. Palpation of the annexa was negative. Without anesthesia a small sharp curette was inserted into the uterus and very gently passed over the surface of the endometrium. This brought away considerable tissue in small friable masses. This tissue was examined by Dr. F. S. Mandlebaum, the hospital pathologist, who reported adenocarcinoma.

Thereupon I performed an abdominal panhysterectomy with bilateral salpingo-oophorectomy. Upon opening the abdomen the uterus was found freely movable, its serosa everywhere smooth and shining. There was no involvement of the parametria or retroperitoneal lymph nodes. The operation was a typical one and offered no technical difficulties whatsoever. Convalescence was smooth, the patient leaving the hospital in sixteen days. Five months later she returned for observation; at that time she was in perfect health; bimanual palpation of the pelvis showed it free of any masses or areas of induration.

Examination of the specimen of uterus and annexa showed the ovaries atrophic. Upon opening the uterus its walls were found considerably thickened and sclerosed. The endometrium was normal in appearance except at one point on the posterior surface two centimetres from the fundus. Here there was a sessile polypoid mass about one

centimetre in length projecting into the cavity of the uterus; this was deep purple in color, its surface ragged and irregularly tufted (traumatism of curette).

Figure 2 shows the area of the endometrium occupied by the base of this mass, in contrast with the extent of normal uninvolved mucosa.

Figure 3 gives a somewhat exaggerated impression of the extent to which the polypoid mass projected into the lumen of the uterine cavity. Sections were made through the polyp down to and into the myometrium. Similar sections were made in adjacent and distant portions of the endometrium. All of these were examined by Doctor Mandlebaum. They showed small areas of adenocarcinoma on the surface of the polyp; nowhere was carcinoma found reaching down to or involving the muscularis of the uterine wall. Sections taken from all other portions of the endometrium were normal.

*Epicrisis.*—In a woman fifty-four years of age there was a sudden onset of bleeding fifteen years after the menopause, a striking symptom which fortunately led her to seek immediate relief. Light diagnostic curettage brought away suspicious friable, crumbly pieces of tissue in considerable amount. No attempt was made to curette deeply or thoroughly, this being looked upon as a highly pernicious procedure in suspected carcinoma because of the danger of opening up fresh channels for the rapid spread of the growth. Curettings reported adenocarcinoma. Panhysterectomy was performed rather than a radical Wertheim operation. In early corporeal carcinoma simple pan-



FIG. 3.—Profile of the uterus laid open. F, fundus. C, cervix. E, endometrium. P, polypoid mass.

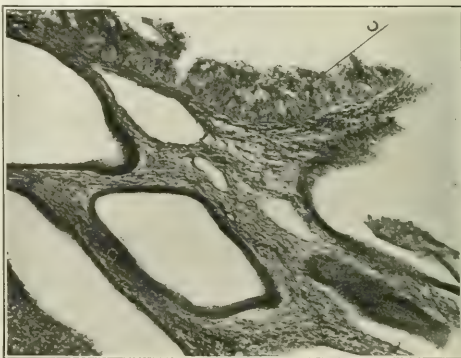


FIG. 4.—Section through the polypoid mass showing a small area of carcinoma, C, which had escaped the curette, on the surface of the normal uterine mucosa.

hysterectomy offers the same hope of radical cure as the Wertheim type of operation, while its morbidity and mortality are very much lower. The patient was found entirely free of recurrence five months after operation. While this is of course much too early to judge of the end result,

the superficial character of the growth offers high hopes of a radical cure.

The writer believes that this is one of the earliest cases of adenocarcinoma corporis uteri on record. It would seem to demonstrate beyond a doubt the feasibility of the total removal of such a growth by curettage. This is an interesting scientific fact. It does not in the slightest militate against the dictum that the presence of the smallest area of carcinoma in a uterus demands the extirpation of the entire organ.

For the photographs and photomicrographs in this paper I am indebted to Mr. W. P. Agnew, of the College of Physicians and Surgeons, Columbia University.

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67 WEST EIGHTY-NINTH STREET.

## ACIDOSIS IN CHILDREN WITH THE REPORT OF A CASE.\*

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By acidosis is meant such an increased amount of acetone in the urine as to cause a disturbance of the equilibrium of the metabolic processes of the body, thereby causing definite symptoms, often even of a serious nature.

The chief cause of the disturbance of the organism in acidosis is an abnormal diminution in the amount of carbonate and phosphates of the blood. An increased acidity of the blood stimulates the respiratory centre to an increased activity in order that there may be a reduction in carbon dioxide; hence the prominent symptom of hyperpnea without cyanosis, as we would see in pulmonary or cardiac disturbances.

The carbon dioxide tension of the alveolar air and of the blood, together with the measure of alkali ingestion, are therefore the measures of acidosis (1).

The low level of carbon dioxide tension in the young is one of the causes of the susceptibility of young children to acidosis. Acetone exists in small quantities in the urine of healthy children; it is found in larger quantities in many febrile conditions; and it is also found in the recurrent vomiting of children.

Acetone is probably formed from the nitrogenous material of the body. It is increased by a nitrogenous diet and may disappear by a diet of carbohydrate (2). The proteins are also yielding considerable acids on account of their contents of sulphur and phosphates (3).

Steinitz showed that the result of the introduction of definite amounts of fat in the intestines was an increased formation of alkaline soaps, the alkalies required are thus prevented from reaching their

normal destination in the body. The alkalies are excreted in the feces in the form of soap and often in such quantities that the balance of alkali in the body may remain constantly negative. The tissues and fluids of the body normally give an alkaline reaction. The production of large amounts of acids are not harmful, however, provided there are enough alkalies produced in the body, or taken in, to leave a reserve of alkalies (4).

The treatment of acidosis consists in withdrawing fats and perhaps all food, washing out the stomach, cleaning the intestinal tract, and administering glucose and alkalies.

CASE I.—Rebecca S., female child, aged three and one half years, of healthy parents. Past history: Birth normal; weight, nine pounds; was breast fed for three months, after that was bottle fed. Had pertussis at the age of two years, which lasted six weeks. She still partook of four eight ounce bottle of whole milk daily. She hardly got any solid food, and ate very little bread or cereals. She also had broth, chicken, and an egg or two daily. Present history dated back three days, when the child took sick with vomiting, fever, and prostration. The vomiting persisted. On my visit, I found the child semicomatose, the face flushed, the pupils dilated, respiration hurried, the tongue coated with a brown fur, and an odor from her breath. The pulse was weak and somewhat irregular. Temperature 102° F.

Examination of the chest as to heart and lungs revealed nothing abnormal. Abdomen was not distended. The extremities were cold. Meningeal symptoms were absent. Examination of the urine showed a marked acetone reaction and diacetic acid. The child was put on sodium bicarbonate injections per rectum and a four per cent. solution of glucose by mouth, and she made a quick recovery. Later the diet was regulated, whereby cereals and toast were substituted for the bottles.

I wish to impress the importance of the examination of the urine in doubtful cases. These cases are sometimes mistaken for pulmonary conditions on account of the hurried respiration.

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148 HENRY STREET.

**Control of an Outbreak of Diphtheria.**—W. D. Stovall (*Journal A. M. A.*, April 14, 1917) states that he was called to investigate an epidemic of diphtheria in a school for the deaf and dumb, numbering 250 inmates and attendants. Schick tests and throat and nasal cultures were at once made upon all and those giving positive cultures were isolated, while those reacting positively to Schick's test were given an immunizing dose of antitoxin. As a result of this plan of attack no further cases of diphtheria developed and the epidemic was cut short. It was found that more persons gave positive nasal cultures than showed positive throat cultures, an observation of importance in determining the extent of the spread of the infection and guiding in isolation. Seven persons with positive cultures also reacted positively to the Schick test, showing that they were potential cases of diphtheria, and would probably have acquired the disease had they not received antitoxin.

\*Read before the Clinical Society of the People's Hospital, February 14, 1917.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal

and The Medical News

*A Weekly Review of Medicine*

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A. R. ELLIOTT PUBLISHING COMPANY,

Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single copies, fifteen cents.

Remittances should be made by New York Exchange, post office or express money order, payable to the A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JUNE 9, 1917.

### THE SIXTY-EIGHTH ANNUAL MEETING.

In this week's issue we present to our readers an initial report of the year's gathering of our official medical organization, which was held in New York City between June 4th and 8th. This meeting was one of unusual interest and was marked by certain features which have never characterized similar meetings in the past.

It is rare that a city like New York even feels a thrill of enthusiasm when myriads descend upon it, so elastic are its capacities for absorbing both matter and energy, but this week its streets were alive with an unaccustomed form of activity and a thrill of the unusual was in the impalpable feeling that makes up the social consciousness.

It was not alone that ten thousand physicians were renewing old acquaintances, nor telling each other their mutual experiences in their manifold scientific and humanitarian activities, nor yet again losing themselves in the pleasurable phantasy life of good restaurants, good theatres, and good cheer. This year there was an added restlessness which marked the medical herd instinct. A new opportunity for service was evidenced everywhere. In the address of welcome from the president of the New York Academy of Medicine, Dr. Walter B. James

gave concrete expression to that needed spirit of the herd instinct that we call team work, which in the masterly and forceful address of the president of the Association, Dr. Charles H. Mayo, of Rochester, published in this week's issue, went into an outlining and a formulation of action to render that team work of value in this titanic effort of the world at sloughing off old values and of reestablishing itself "a new world dedicated to the principles of democracy and of liberty."

In this work of reconstruction the physicians of this country play no uncertain rôle. The first to cross the water in service, they will be called upon from the furthest outlying trench to the base hospital. They must determine the fitness of the men to fight, keep them in form while fighting, patch them up when injured, or be the final arbiters that the man has done his "bit" and his "soul goes marching on."

It is no wonder then that this was a sober meeting of the Association; one filled with the feeling of responsibility, of sacrifice, and of quiet determination to do and dare. It was *the* meeting of the American Medical Association of which there has been no other.

### ADVANCE IN ABDOMINAL SURGERY DUE TO THE WAR.

To do and dare or to die is an inspiring motto under which to work. The necessity of face about decisions and promptness of action brings inestimable gain. Certain daring experiments in surgery, unjustifiable perhaps in the calculating times of peace, are giving a new assurance to the skilled initiative which finds its field of action in the military hospitals. The mystery of abdominal surgery is as yet largely unexplored. This branch of operative work is comparatively in its beginnings. Choice between certain death on the one hand or a possible chance of life through abdominal exploration has turned the tide at the front away from the older method of expectant treatment to adoption of radical operative treatment as an indicated routine measure in evident or suspected wounds of the abdomen.

A series of lectures on War Surgery of the Abdomen recently delivered in London by Cuthbert Wallace (*Lancet*, April 14-28, 1917) suggests some of the many things concerning wounds of the abdomen which surgical knowledge may reap from experience at the front. It is true, as Wallace says, that abdominal surgery in the military hospital differs but little from that in civil life. Yet the



varied location of wounds here met with, their great number, the complicated nature of the injuries, present a field of profitable study. The variety of wounds inflicted by the various forms of projectiles, their often freakish mode of entrance and passage, the obscurity from external appearance of the actual location and seriousness of the injury form a chapter of rare interest in surgery. Even more do the lessons to be learned depend upon that peculiar condition which not only allows of daring exploration, but which through increasing experience urgently demands it. It is upon this that Wallace lays especial emphasis. Facilities for surgical treatment which have prevailed in former wars were such as to favor the expectant treatment and keep the value of abdominal operation out of sight. Such was the attitude which the author found still prevailing in the British hospitals and which had been that also of the French and Belgians. His work has been largely instrumental in instituting a new régime. Particularly favorable to it have been the recent conditions of stationary fighting. This permits of a sufficiently rapid evacuation of the wounded man to the casualty clearing station within twenty-four hours, later than which danger of spreading infection makes the operation usually inadvisable. Death by this time will often be inevitable if the case is serious enough for operation, and surgical interference would render death acutely painful. Before twenty-four hours' surgical interference is strongly indicated. The two mortal dangers are hemorrhage and shock, with later peritonitis. Warmth is the most essential preparation to lessen as much as possible the condition of shock and the rest must depend upon "rapid decision, rapid action and dexterity." Since death is in the main inevitable, there is practically no risk in operating. The results have also justified this course of action, for the death which otherwise would have ensued has been arrested. Wallace's final word is that mortality has been reduced ten per cent. at the field hospitals, and fewer patients have died after being sent to the base.

The significance of such a summary can be realized only in the face of the almost complete mortality attending upon these cases. The fact also that abdominal wounds constitute approximately a third of those which come for care adds to the weight of this radical advance in their treatment. The method of operation is no less resolute. The discovery of the true nature and extent of the injury only by complete exploration permits of no half measures. An extensive paramedian incision is the rule. The revelations that are disclosed confirm the wisdom of this procedure. An apparently small

and insignificant wound will reveal many perforations unsuspected from external inspection. Moreover the capricious course of the projectile, especially those entering from the back, may cause most serious and extensive injury within the abdomen and its contents.

The indication for operation in the case of each individual viscus, solid or hollow, the particular type of wound peculiar to each, the association of other organs in the injury, together with the relative prognosis for the various viscera form sections compact with interest for abdominal surgery. Wallace finds ether the safest anesthetic, since both chloroform and spinal anesthetics aggravate the lowered blood pressure. Abdominal surgery is thus peculiarly forced upon the attention through these conditions. Its urgency calls for certain exceptional exercise of surgical qualities. Its justifiably vigorous measures make of it one more book of profitable experience and knowledge opened by the war.

#### THE DANGERS OF LUMBAR PUNCTURE.

It is exasperating to the enthusiastic physician on the trail of a diagnosis to have the patient himself, or his relatives, refuse to allow a lumbar puncture on the grounds of the danger involved. Perhaps the fluid has been withdrawn once and the patient suffered considerable pain at the time or, being of a neurotic makeup, complained for days afterwards of a headache, dizziness, pains in back, etc. The temptation is great in such instances, especially where the diagnosis is obscure, and one hesitates between a hopeful and a hopeless prognosis, to tell the apprehensive relatives that this procedure is absolutely without danger. We would be going a little too far, however, in doing this. Let us look into some of the dangers which are actually existent.

First of all, there is the danger of infection. Do we see a smile? Perhaps there are some who are so confident of their technic that infections have been relegated to the limbo of the impossible, wherever that is. But of such the real surgeon is not. About a year ago an investigator who modestly styled himself a "laboratory technician" published in the *Modern Hospital* an account of some careful bacteriological studies which he had made in operating rooms, of supposedly perfect technic, but where infection had been occurring with alarming regularity. Platinum loop and test tube in hand, he followed the operations step by step from the time the first package of gauze was put in the sterilizer until the last dressing was put on the wound, taking cultures here, there, and everywhere. And always at some point in the routine he found a flaw. The

germ, Lilliputian in its contours, Brobdingnagian in its potentialities, fastened somewhere on a link in the chain and thus the whole chain was rendered weak. So if infection can occur in the operating rooms of surgeons who make it their constant care to prevent them, they may also occur in the practice of the family physician who, down in the bottom of his honest old heart, looks upon all the refinements of sterilization as just a little absurd. Infection then may occur in lumbar puncture and this must be borne in mind when urging the family to consent.

Unpleasant aftereffects are by no means rare, especially in the class of patients who react badly to everything of this sort. Remembering that "one of the functions of the cerebrospinal fluid is to maintain an equality in the intracerebral pressure, and any sudden alteration, such as is produced by the withdrawal of five, ten, or fifteen c. c. of the fluid, is apt to disturb such equilibrium," headache, nausea, and vertigo which do not always clear up in a day can sometimes be anticipated. Sudden death has even been known to follow lumbar puncture. This is usually due, of course, to a brain tumor and, if this is suspected, the greatest care should be exercised. Then, too, the patient may be suffering from general paresis, the course of which cannot be predicted with certainty even a day in advance. The withdrawal of fluid may precipitate or be coincident with convulsive seizures. These may terminate in death, and if we are then able to convince all the relatives that death was not due to the lumbar puncture, our place is in front of His Honor, addressing the twelve good men and true rather than rising at two a. m. to increase the amount of cannon fodder.

Leaving out of the question, however, all actual accidents and sequelæ of spinal puncture, we must consider another class of patients, the neurotic and hysterical. To these the introduction of a needle, which their imaginations represent as Gargantuan, into their spinal column, about which the laity have all sorts of weird ideas, is a mysterious and terrifying thing. The usual association of ideas is injury to the backbone, broken back, and either death or paralysis. It is quite possible then for such individuals to develop a hysterical paralysis, probably taking the form of paraplegia, following this procedure. Here again it is easy to visualize the task before the physician who would persuade the patient and his relatives that the paralysis was imaginary and not caused directly by the puncture.

Let us then not be betrayed by scientific enthusiasm into stating boldly that lumbar puncture is absolutely without danger. We should rather tell the patient and his friends that it is considered an ordinary diagnostic procedure nowadays, that it is neces-

sary to clear up certain points in his particular case in order that we may treat him more intelligently and that, exercising such caution and skill as will be given to it, the danger is very, very slight.

#### CAUSATION OF PEPTIC ULCER.

The pathological conditions known as gastric and duodenal ulcer, while rather common and long recognized as clinical and pathological entities, have never been understood etiologically. Many conditions which accompany these diseases are mistaken for causes, but are actually results. Not even the hyperacidity so often associated with gastric ulcer bears this relationship. Indeed, it is usual to find varying degrees of acidity from achylia to marked hyperchlorhydria. Of all the hypotheses concerning peptic ulcer none seems more plausible in the light of newer clinical findings and laboratory experimentation than that of a disturbance of the internal secretions brought about by antecedent loss of balance of the autonomic and sympathetic impulses. Perhaps the speculation as to the reason why the stomach does not digest itself is resolved by an understanding of the influence of the reciprocal activities of the two parts of the vegetative nervous system on the peptic action.

Some of the older hypotheses as to the etiology of the peptic ulcer are strengthened by later studies, although somewhat altered in their ultimate significance. Of these, however, the vascular theory must even now be set aside, for whatever relation an ischemia of the gastric or duodenal walls have in this respect it is an indirect one caused by spasm of the musculature and its blood supply, and is not usually due to stasis in the bloodvessels, diseases of the bloodvessels themselves, or embolic or thrombotic processes in the bloodvessels of the areas involved. Psychogenic and toxic factors have much more weight in the newer hypotheses. Psychogenic nervous reactions, those brought about by toxic substances, and those duct disturbances of the internal secretions from somatic disease cause spasm of the bloodvessels and an ischemia in the affected area. For instance it is well known that contractions of the entire stomach wall, as hourglass contraction, are often purely psychogenic. Irritation of the vagus—vago-tonia—seems particularly to be such a result. The stomach has, however, a double nerve supply—through the vagus, and through the sympathetic. These actions are antagonistic and controlling. Disturbances in this innervation cause the motor or secretory changes which in turn cause the various morphological and chemical symptoms as well as the x ray pictures and test tube changes. The innervation of the musculature of the stomach has a

parallel in the dual innervation of the heart muscle, with the difference that in the heart muscle the sympathetic produces stimulation and the vagus paralysis, while in the stomach the actions are just the reverse.

Disturbances of vegetative balance—vagotonia and sympathicotonia—permit toxic actions, and these cause pathological conditions in peptic function, and similar to conditions which can be produced experimentally by the injection into the circulation of certain drugs. Pilocarpine, muscarine, physostigmine, and choline have a selective action upon the autonomic nervous system. Atropine paralyzes this system. Adrenalin, on the other hand, has a stimulating effect upon sympathetic nerves. But there is no known paralyzer of the sympathetic nerves similar to the action of atropine on the autonomic. The adrenals are supplied chiefly by the sympathetic series, while the thyroid is supplied by both the vagus and the sympathetic. Those suffering with peptic ulcer have many of the symptoms associated with these gland conditions; and it would seem that there is a very definite causal relation between them, gastric ulcer conforming, however, to stigmata in vagotonics, while duodenal ulcer conforms to sympathicotonics. In other words, gastric ulcer is especially associated with disturbances referable to the vagus, while duodenal ulcer, to the sympathetic. The endocrinic system undoubtedly influences the excitability of these vegetative nerves, probably through the agency of the hormones. An excess of adrenalin in the circulating blood causes the sympathicotonic, but the excess of secretion circulating in the blood which causes the vagotonic is not known, but has been called hypothetically “autonomin” and is supposed to stimulate the autonomic system. Moreover, the differences in blood pictures in gastric and duodenal ulcers has a counterpart in the differences in blood pictures in hyperthyroidism, and after the injection of adrenalin or in adrenalin hyperfunction. In the former conditions there are mononucleosis and relative eosinophilia; in the latter polyglobulia and relative eosinopenia (G. A. Friedman, *Archives of Diagnosis*, January, 1917). Similarly this observer found that the changes in the percentage of blood sugar were due to gland disturbances, and that the secretion of islands of Langerhans required the presence of some other agent for its glycolytic action. In pyloric ulcer the percentage of blood sugar is below normal, while in duodenal ulcer it is above normal. Gastric lesions may be dependent upon excess or insufficiency of adrenal secretion, duodenal upon thyroid excess or insufficiency; or they may be due to alternating underfunction and overfunction of these glands. Simultaneous overproductions or under-

productions in these gland systems seem to have no effect to produce these lesions. This fact points to a reciprocal, antagonistic, and controlling mechanistic relation between the two systems. Extirpation experiments bear this out. Removal of either the adrenal or thyroid causes overfunction in the gland remaining, and produces ulcer in the organ controlled. The thyroid and the adrenals may be said to liberate antagonistic biological elements which, circulating in the blood stream, have the actions already noted. In any event disturbances need not be permanent; restoration of function causes healing of the ulcers, as is the case with most of the ulcers encountered clinically.

While lesions of the stomach and of the duodenum seem to be dependent upon tangible pathological conditions often built on an hereditary base, their production is nevertheless largely influenced by improper living and untoward life pressure—social adjustments—causing a derangement of the endocrinous system, the direct result of a loss of balance of the autonomic and sympathetic nerve impulses. Hygienic and medical treatment accorded these patients is purposed to restore tone to the affected nervous systems and in turn normal function to the disturbed glands.

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#### HEALTH AND THE CABINET.

The soldier is the man of the hour. To make him one, keep him one, restore him to be one in case of injury, this is the supreme need. Without health he is nothing; with it effort may be made availing and purpose fulfilled.

Thursday afternoon in the House of Delegates of the American Medical Association, Dr. Frank Billings spoke of the duties which have been heaped upon the central medical organizations of this country. They are staggering under the load and demand some relief to bring order out of chaos. Such relief can only come through control.

To accomplish this task means organization. Centralization of power concerning the health of the soldier is a national need, and that need should be represented by power in the Cabinet of the United States.

For lack of this centralized power the army medical organization has been powerless to prevent disease in our camps in times of peace. Epidemics of measles, scarlet fever, cerebrospinal meningitis have maimed and killed, and this under peace conditions and with small camps. With 500,000 men in camp and under the stress of war conditions, what will the harvest be unless better organization be effected? Such a better organization must be made and now.



# THE AMERICAN MEDICAL ASSOCIATION

## Sixty-Eighth Annual Meeting

Held at New York City, June 4 to 9, 1917

### Place of Meeting

NEW YORK CITY gave a warm welcome to its several thousand visitors this week, which, notwithstanding the general undercurrent of seriousness which the war conditions has engendered, has proved one of the most enthusiastic of gatherings held in recent years.

The city itself with its many attractions and its enormous capacity for absorbing visitors hardly felt the shock of the several thousand physicians and their friends. The Times Square region and the streets between the Waldorf, McAlpin, Manhattan, Astor, and Biltmore Hotels resembled the board walk at Atlantic City at times of the annual gathering of the American Medical Association, so frequent were the opportunities for renewing old friendships, which constitutes so large a part in the value of these annual meetings.

In spite of its business preoccupation, however, the metropolis gave a cordial welcome to the American Medical Association at its sixty-eighth annual meeting and furnished from among its six thousand physicians an interested audience for all the proceedings of all the sections of the association. All the 102 hospitals of the city were thrown open to the visitors and special clinics were arranged which afforded an opportunity for both New York and visiting physicians to see some of the most renowned surgeons in the world operate under the most favorable conditions. The Hotel Astor was selected as the headquarters of the Association. Here a bureau of information was maintained, a special branch post office was conducted for the members, and the scientific and commercial exhibits were held. The general meetings were held at the Waldorf-Astoria Hotel and the several section meetings were held at the Academy of Medicine and at various hotels in the city. The committee of arrangements foresaw every possible contingency and made provision for every phase of the activities of the Association, so that the proceedings went off without any friction whatever. The social features were well planned and admirably executed, and the New York meeting will be reckoned as one of the most successful in the history of the organization.

### Proceedings

#### HOUSE OF DELEGATES.

At ten o'clock Monday morning, June 4, 1917, the House of Delegates, convening in Hosack Hall of the New York Academy of Medicine, was called to order by the chairman, Dr. Hubert Work, of Pueblo, Col. After the first order of business, the preliminary report of the Committee on Credentials, the House was declared duly organized. Roll call was dispensed with. Since the minutes of the Sixty-seventh Annual Meeting had been printed and distributed to the delegates, after necessary changes had been made, the reading of these minutes was omitted and upon motion they were adopted as printed.

**Retiring President's Address.**—DR. RUPERT BLUE said that on account of the present international situation, emergencies affecting the association had arisen which required immediate action by him as president. This action he desired to report to the House of Delegates. It related to the need of medical preparedness.

**Appointments to Membership of State Red Cross Committees.**—At the last meeting of the House of Delegates the Committee on Red Cross Medical Work recommended that the president of the American Medi-



CHARLES H. MAYO, M. D.,  
Of Rochester, Minn., President.

cal Association invite the attention of the State medical societies to the desirability of prompt organization of State and county committees on Red Cross medical work so that the medical profession would be prepared to respond should the country need its services. This plan called for the appointment of State committees to consist of not more than nine physicians, three of whom should be chosen by the president of the American Medical Association, three by the president of the Congress of American Physicians and Surgeons, and three by the president of the American College of Surgeons. In conformity with the above and on request of the Director General of Military Relief of the American Red Cross, three members were so named by the president of the American Medical Association. Two of the three members named were the president and secretary of the State Medical Society. The letters of appointment were sent out by the Red Cross.

*Appointment of Committee to Report on Resources of the Association and Utilization for War Requirements.*—On the request of Dr. Franklin H. Martin, member of the Advisory Committee on National Defense, and Dr. F. F. Simpson, chief of the Medical Section, Council on National Defense, a committee of three was designated by Doctor Blue to report on the best way of utilizing the activity of members and the facilities of the American Medical Association. The personnel of this committee was as follows: Dr. Arthur Dean Bevan, Dr. Alexander Lambert, and Dr. J. W. Kerr. This committee made the recommendation that the president and officers of the association offer the services of the entire organization to the Government for the purpose of organizing the medical profession for war. In conformity with this recommendation Doctor Blue tendered the services and resources of the association to the Government through the General Medical Board of the Council of National Defense at its meeting on May 1, 1917. This action met with a hearty reception and a vote of thanks was tendered to the Association for its patriotic offer.

*Suggestions to the Component Societies Relating to Medical Preparedness.*—At the instance of the secretary of the Association, letters were addressed to the presidents and secretaries of component medical societies of the Association inviting their attention to the need of officers in the Medical Department of the Army and Navy and in their respective reserve corps. It was suggested that the societies should consider the number of their members who could be spared and steps should be taken by the societies to safeguard the interests of those who responded to the call of duty. The present conditions had no precedent in this generation; in all probability extensive demands would be made on the country in the present crisis and the medical profession would have the privilege of contributing largely in meeting those demands. The steps taken thus far were only a beginning. The president trusted that the House of Delegates would approve the action taken by him. (Unanimously approved with enthusiasm.)

*Reference Committees.*—The following were named:

*Committee on Credentials.*—Dr. D. Chester Brown, Connecticut, chairman; Dr. F. C. Warnshuis, Michigan; Dr. C. P. Meriwether, Arkansas; Dr. H. P. Newman, California; Dr. C. W. Hannaford, New Hampshire.

*Committee on Miscellaneous Business.*—Dr. J. S.

Blake, Massachusetts, chairman; Dr. D. E. McGilivray, Washington; Dr. Alexius McGlannan, Maryland; Dr. H. P. Ritchie, Minnesota; Dr. F. Le M. Rapp, West Virginia.

*Committee on Reports of Officers.*—Dr. H. G. Wetherill, Colorado, chairman; Dr. E. A. Hines, South Carolina; Dr. B. R. McClellan, Ohio; Dr. Southgate Leigh, Virginia; Dr. A. E. Bulson, Jr., Indiana.

*Committee on Constitution and Bylaws.*—Dr. Floyd M. Crandall, New York, chairman; Dr. C. L. Stevens, Pennsylvania; Dr. George A. Lung, U. S. N., New York; Dr. Perry Bromberg, Tennessee; Dr. M. N. Voldeng, Iowa.

*Committee on Rules and Order of Business.*—Dr. G. Wythe Cook, District of Columbia, chairman; Dr. H. L. Bartlett, Maine; Dr. John O. Polak, New York; Dr. J. W. Riley, Oklahoma; Dr. J. H. Irwin, Montana.



RUPERT BLUE, M.D.,  
Surgeon General, U. S. Public Health Service,  
Retiring President.

*Committee on Medical Education.*—Dr. William S. Lator, New Jersey, chairman; Dr. L. W. Littig, Iowa; Dr. Robert N. Noble, U. S. Army; Dr. R. A. Hatcher, New York; Dr. Dean Lewis, Illinois.

*Committee on Legislation and Political Action.*—Dr. M. L. Graves, Texas, chairman; Dr. E. J. Goodwin, Missouri; Dr. C. J. Whalen, Illinois; Dr. Sol G. Kahn, Utah; Dr. F. W. McRae, Georgia.

*Committee on Hygiene and Public Health.*—Dr. William C. Rucker, U. S. P. H. S., chairman; Dr. A. T. McCormack, Kentucky; Dr. John Ridlon, Illinois; Dr. LeRoy Crummer, Nebraska; Dr. E. B. Heckel, Pennsylvania.

*Report of Secretary.*—

DR. ALEXANDER R. CRAIG reported the membership of the American Medical Association on May 1, 1917, to be 82,501. The fellowship of the American Medical Association on May 1, 1916, was 43,181. During the past year 416 fellows had died, 1,894 had resigned, 477 had been dropped as not eligible, 672 had been dropped for nonpayment of dues, and twenty had been removed from the rolls, being reported "not found," making a total of 3,470 names to be deducted from the fellowship roll. There had been added 4,308 names to the fellowship roll, of which 3,066 were transferred from the subscription list. The fellowship of the American Medical Association on May 1, 1917, was 44,010, a net increase for the year of 829. This gain was due largely to circularizing subscribers to the *Journal* who were eligible, urging them to become fellows.

*Report of Board of Trustees.*—Dr. W. T. COUNCILMAN, chairman, presented the following report: The various activities of the As-

sociation in the interest of the medical profession and of the public had been carried out in the usual successful and progressive manner. During 1916 there were issued 3,564,522 copies of the *Journal*, making a weekly average of 67,255 copies. Economy had been exercised in exchange copies and copies sent to advertisers. There was a financial loss of approximately sixty-six dollars on the *Archives*, hardly sufficient to mention. There was a net gain of forty-six on the mailing list and during the year 28,447 copies were printed. There was a gain of over \$322 on the *Children's Journal* in 1916. The Coöperative Medical Advertising Bureau was doing very satisfactorily. Two new State journals were established during the year, the Rhode Island and the Nebraska, both of which had joined the Bureau. The principal item of expense in the publication of the *Journal* was that of paper; this was equal to one third of the combined expenses. This was not all; ink, rollers, wire, linotype metal, and supplies generally as well as labor had increased in price. It was proposed to decrease the size of the *Journal* and to economize in sending out sample copies; the apportionment of surplus income used for altruistic purposes would also be cut. At the February meeting the Board of Trustees passed a resolution to the effect that all papers read at the annual session would be treated as volunteer papers and published in full in the *Journal*, rejected, or published in abstract as might seem best.

#### TREASURER'S REPORT.

Reserve fund, December 31, 1915.....	\$124,060.46
Receipts for year ending December 31, 1916:	
Interest .....	5,351.89
	<hr/>
	\$129,412.35
Disbursements for year ending December 31, 1916:	
Transferred to general working fund	8,763.40
	<hr/>
Reserve fund as at December 31, 1916 .....	\$120,648.95
<i>Treasurer's General Account.</i>	
Balance as at December 31, 1915.....	\$28,308.41
Receipts for the year ending December 31, 1916:	
Interest on certificate of deposit .....	\$341.66
Interest on bank balances....	90.05
	<hr/>
	\$28,740.12
Disbursements for the year ending December 31, 1916:	
Transferred to general working fund	28,736.60
	<hr/>
Balance as at December 31, 1916	\$3.52
<i>Davis Memorial Fund.</i>	
Balance as at December 31, 1915.....	\$3,339.79
Interest received for year ending December 31, 1916.....	100.92
	<hr/>
Balance as at December 31, 1916	\$3,440.71

**Report of Judicial Council.**—Dr. ALEXANDER LAMBERT, chairman, presented the report. Acting on the information at Detroit last year, the Judicial Council again presented to the House of Delegates the recommendation that appellate jurisdiction, limited to questions of law and procedure but not of fact, be accorded to the Judicial Council and a paragraph was added to Section 4, Chapter 7 of the by-laws of the Association to the effect that in all cases which arose, 1, between a constituent association and one or more of its component societies; 2, between component societies of the same constituent association; 3, between a member or members and the component society to which said member or members belonged, or, 4, between members of different component societies of the same constituent association, the Judicial Council of the American Medical Association should have appellate jurisdiction in question of law and procedure, but not of fact. This would prevent a failure of justice toward individuals, or toward component societies of a constituent association, or even toward the constituent associations themselves when, in the heated ardor of discussion, a proper and necessary orderly procedure was disregarded and when the contestants failed to accord fair play and to grant to the minority a full privilege of presenting their side of the controversy. The council took pleasure in reporting that the Wyoming State Medical Society had reorganized under the name of the State Medical Society of Wyoming.

**Report of Council on Health and Public Instruction.**—This report was submitted by Dr. FRANK BILLINGS, chairman. The work of the council during the last year had been curtailed on account of the limited appropriation due to financial conditions and the increased cost of publishing the *Journal*, making necessary the abandonment for the time being of the program of investigation, education, and legislation which the council had followed for the past four years. It was hoped that this work could be taken up and carried forward again later on. During the past year the council had confined its efforts to the production of educational material which could be supplied to State boards of health, educational and philanthropical bodies, women's clubs, and other similar organizations. From June 1, 1915, to May 16, 1916, the council printed and distributed 1,133,500 pamphlets, of which 750,000 were Minimum Health Requirements for Rural Schools; the others were on defense of research, conservation of vision, prevention of cancer, public health, sex hygiene, social insurance, care of babies, and public health measures in relation to venereal disease. The council was opposed to the use of alcohol except in the preservation of pharmaceutical products.

**Report of Council on Medical Education.**—This report was presented by the chairman, Dr. ARTHUR D. BEVAN, of Illinois. In 1904 only four medical schools were requiring for admission the standards now being enforced or adopted by sixty-five medical colleges. Then only a few medical colleges had six or more expert full time teachers in their laboratory departments, where now there were over seventy such colleges. Then, less than a score of



medical colleges had close relationship with dispensaries and hospitals, which were now possessed by over sixty medical schools. In 1904 a still smaller number had adopted the methods of teaching by bedside and ward section clinics, which were now generally followed by a majority of the colleges. All this had resulted in a decided improvement in the character and training of medical graduates. Add to this improved training the experience gained by seventy-five or eighty per cent. as interns in hospitals and it would be appreciated how greatly improved was the medical service which could now be offered to the Government compared with that available fifteen years ago. In this development the medical schools had avoided the weakness of the English and German systems of medical education. The entry of the United States into the European war had led to a consideration of procedures which might be necessary on the part of the medical colleges to meet the demand for medical officers. Early in April medical colleges were urged to graduate before the usual time—or to grant certificates showing that graduation at the end of the term was quite probable—students who had secured a general average of eighty-five per cent. or higher during the four year medical course and who should succeed in gaining admission to the Naval Reserve Force. These students were to be assigned to active duty at once for instruction and training with the view of being later examined for appointments as assistant surgeons in the United States Navy. Reports received from thirty-seven State licensing boards were unanimous in the statement that such graduates would not be handicapped when they should later come up for license, only being required to show documentary evidence of their having been in the Government medical service. Careful consideration by the General Medical Board showed that for the present it was not imperative for the medical schools to adopt the proposed continuous sessions and omit the usual summer vacation. Besides the General Medical Board of the Council of National Defense and the Council on Medical Education were of the opinion that the emergency was not at present sufficiently acute to justify a shortening of the medical course or the lowering of educational standards.

**Report of the Committee on Red Cross Medical Work.**—This report was presented by the chairman, Dr. GEORGE M. KOBER, of the District of Columbia. The committee was created at the request of the American Red Cross at the 1912 session in accordance with Section 8 of Chapter VII of the constitution and bylaws of the American Medical Association. It had been the aim of this committee to stimulate the creation of a committee on Red Cross medical work in every county medical society and as a result of the efforts of the committee 756 county societies in forty-nine States were in close affiliation with the American Red Cross, ready to cooperate with that body in all emergencies. It was understood that the personnel and agencies of the Department of Military Relief of the American Red Cross were at the disposal of the army and navy of this country. In order to secure a thorough cooperation between the National Committee on Red Cross Medical Service and the States, the

American Red Cross appointed a committee of nine in every State. The members of these committees were chosen as follows: three by the president of the American Medical Association, three by the president of the Congress of Physicians and Surgeons, and three by the president of the College of Surgeons. It was extremely desirable that all county medical societies that had not yet organized committees on Red Cross medical work would do so at the earliest possible moment so that they might participate in the patriotic duties expected to be performed by the medical profession in all parts of the country. The Medical Board of the Council of National Defense on April 23, 1917, declared it to be the patriotic duty of even premedical students to remain under instruction until the country could avail itself of their trained services. In justice to this class of men and also the graduates of the Class of 1917, who in the interests of real efficiency had been urged to complete their hospital year, their position should be clearly understood in every community and defended by the medical profession upon the ground of genuine preparedness. There was a distinct need for medical officers in the regular army and navy with about 1,300 vacancies to be filled.

#### OFFICERS FOR 1918.

Dr. Arthur Dean Bevan, of Chicago, president; Dr. Edward H. Bradford, of Boston, first vice-president; Dr. John McMullin, of Washington, D. C., second vice-president; Dr. Lawrence Litch-



ARTHUR DEAN BEVAN, M. D.,  
Of Chicago, President elect.

field, of Pittsburgh, third vice-president; Dr. Alexander R. Craig, of Chicago, secretary; Dr. William Allen Pusey, of Chicago, treasurer; Dr. Hubert Work, of Pueblo, Col., chairman of the House of Delegates; Dr. Philip Marvel, of Atlantic City, N. J., vice-chairman of the House of Delegates.

The place of meeting will be Chicago, Ill., the time to be determined by the Council.

## SECTION IN PRACTICE OF MEDICINE.

June 6, 1917.

**Visceral Disturbances in Patients with Cutaneous Lesions of the Erythema Group.**—Dr. HENRY A. CHRISTIAN, of Boston, chairman of the Section, said that there was a definite clinical entity with skin lesions of the erythema group, purpura, erythema, urticaria, and angioneurotic edema, in which visceral lesions occurred as the result of the same type of lesion. The most common of these visceral manifestations were arthritis, gastrointestinal symptoms, hematuria, and various disturbances of renal function. The visceral disturbances occurred unaccompanied by the skin lesions. The symptomatology of the group was very complex and without the presence of the skin lesions at a given time the cases presented great difficulties in diagnosis. The clearest conception of the condition represented by the patients just described could be obtained by regarding the disease as due to some disturbance in the small bloodvessels—vessels of the capillary or precapillary and postcapillary group—almost always focal in distribution, which caused dilatation, diapedesis, and exudation, singly or in combination. The ultimate cause of this disturbance was completely unknown. The areas of vascular involvement might be either in the skin surfaces, mucous surfaces, serous surfaces, subcutaneous tissues, muscles, or viscera. With this possibility of distribution symptoms might be extremely various and in recurring attacks, for the condition was usually recurrent and very different symptoms appeared in the same individual.

With this in mind the variety of skin lesions was easily accounted for. The frequent arthritis had its analogy in the arthritis of serum sickness and the chronic joint disturbances with frequent exacerbations in some patients with hemophilia. Diarrhea, blood in the stools, and abdominal colic occurred, as there was serous exudation or hemorrhage into the intestinal wall. Colic was due probably to local changes in the intestinal wall causing spasm. This was suggested in a case where x ray study showed evidence of muscle spasm at the pyloric end of the stomach. In the colic of chronic lead poisoning evidences have been noted in the x ray of spasm in intestine or stomach during the period of colic, which supported the view that observed spasm was related to gastrointestinal disturbance. Such spasm and disturbances in the bowel wall could lead to actual intestinal obstruction as in another case where the obstruction in an ideal loop could be demonstrated by x ray.

The exact relation of the renal disturbances was not quite so clear. Hematuria could occur in the same way as blood in the stools from disturbances in renal vessels. That this did happen was well shown by a case where autopsy showed focal hemorrhages in the kidney without signs of nephritis. This patient had pulmonary tuberculosis, but the clinical course and autopsy findings indicated an acute process developing during the later course of the skin and visceral disturbances of the erythema group. His urine during life yielded no tuberculosis by guineapig test and at autopsy no tuberculous lesions were found in the kidney. How

far these renal lesions were to be considered as acute nephritis it was difficult to say. In several of the speaker's cases functional study showed markedly decreased renal function. Five of Osler's twenty-nine reported cases ended fatally with what was termed uremia. That the patients had severe disturbances in renal function was evident. Whether this was nephritis or suppressed renal function from edema and hemorrhage into the kidney was not certain; there were no autopsy examinations except in one patient referred to by Osler in whom proliferative glomerular nephritis was found. Some of the uremic manifestations might easily have resulted from lesions in the brain of the same nature as those occurring in skin and viscera and may not have been actually uremic.

**Clinical Manifestations of Gallbladder Disease.**—Dr. FRANK SMITHIES, of Chicago, illustrated his remarks with lantern slides of tabulations of the chief clinical symptoms and signs made according to the histopathological changes observed in gallbladders removed at laparotomy. The significance of events in the history preceding the complaint for which patients sought relief lay primarily in the so called "diseases of childhood," the infectious diseases such as measles, diphtheria, typhoid, scarlet fever, etc. Twice as many females as males suffered from gallbladder disease and the condition occurred in males later in life. In nine per cent. of the 1,000 cases studied the disease was malignant; in 434 cases there was cholecystitis without gallstones. A common lesion associated with gallbladder disease was appendicitis. When stones occurred they did so at any stage of the infective process, large stones forming in as short a time as three weeks. There were fifty-nine cases with gallstones in which there was no disturbance pointing to gallbladder disease. Less than eight per cent. of the patients were of obese type; 463 had lost considerable weight; four per cent. had chronic diarrhea, though most of them had good appetites. There was jaundice in only 161 cases where gallstones were demonstrated later, and jaundice in twenty-five per cent. in which there were no gallstones. It was difficult even with a good history and complete laboratory and other examinations to make a diagnosis before laparotomy as to what would be the gallbladder findings. Pain was a persistent symptom in ninety-five per cent.; it might be located anywhere. Gallbladder disease was a progressive inflammatory disease which might become chronic histologically. Gallbladder inflammation might become complicated with gallstones within three weeks of the onset of inflammation. In eight per cent. definite alterations in duodenum and stomach in the way of ulcer accompanied the disease.

Dr. DAVID RIESMAN, of Philadelphia, said that gallbladder troubles were very frequent and were vying with appendicitis for popularity in Philadelphia. It might be possible to trace this to the fact that for several years there had been in that city a great deal of typhoid fever. It was possible in many acute infectious diseases, such as typhoid, pneumonia, and influenza, to demonstrate tenderness over the gallbladder area and if some of these patients could be followed up for a period of years or even months it might be found they had acquired chole-



cystitis. In conditions like food poisoning, gallbladder involvement frequently occurred and passed unnoticed. Cholecystitis occurred frequently in elderly people following indiscretions in diet; there was no jaundice, but the leucocyte count was high, and the condition usually ended in recovery.

#### **Dilated Duodenum with Special Reference to Chronic Duodenal Obstruction in Visceroptosis.**

—Dr. DOUGLAS VANDERHOOF, of Richmond, Va., said that persistent incomplete obstruction of the duodenum by the root of the mesentery was not uncommon and led to gradual dilatation of the duodenum. This was especially apt to occur in visceroptosis when the small intestine in the pelvis caused traction on the mesentery. Dilated cecum and ileal stasis might be contributing factors. The clinical manifestations of chronic duodenal obstruction were frequently misinterpreted. The speaker advanced the idea that so called "hysterical vomiting" in thin women was due to duodenal compression. Severer grades of obstruction were mistaken for cholecystitis or peptic ulcer. If unrelieved, death might ensue from persistent vomiting and acidosis. The speaker's experience with dilated duodenum embraced twelve cases, six of which were due to chronic mesenteric obstruction. One of these, a fatal case, was recognized only at autopsy; three were confirmed by Röntgen ray examination, and two were demonstrated at operation.

Dr. LEWIS A. CONNER, of New York, said that undoubtedly many cases classed as functional recurrent vomiting had some incomplete obstruction of the terminal portion of the duodenum. The difficulty was to distinguish them as they were not all due to this cause. However, this should be borne in mind. Why, if it was a temporary condition, it should persist for some time was difficult to explain. It was important to emphasize that it was the obstruction and not the dilatation that was the important part. The chief reliance should be placed on the Röntgen findings for diagnosis. Every type of severe, persistent vomiting, called the duodenal type, soon became intestinal vomiting and could not be relied on as a characteristic of such obstruction. When there was high intestinal obstruction, suppression of urine was one of the most constant signs and careful watch of the urine quantity might help in diagnosis and also give a clue as to the severity of the condition and necessity for surgical interference.

Dr. G. R. SATTERLEE, of New York, said he wished to bring out the important point that duodenal dilatation and obstruction were frequently associated with an atonic cecum. In cases where there could be no operation and the diagnosis could not be made even with the x ray, putting the patient in the Trendelenburg position by raising the foot of the bed frequently brought relief, while the treatment was directed at the toxemia.

**Clinical Features of Prolonged and Severe Secondary Anemia.**—Dr. ALFRED STENGEL, of Philadelphia, discussed briefly the sources of secondary anemia, both those plainly recognized and those obscure, outlining the hematological and clinical features in the early stages which constituted the ordinary clinical picture. He did not consider splenectomy always an advisable procedure and

knew of cases where the patient derived no subsequent improvement after operation. In the last few years those interested in diseases of the blood had become confused by the discovery of cases of so called "hypoplastic anemia," a form of disease without marked changes in the red corpuscles. Secondary anemia in its early stages was easy to recognize, but enough emphasis had not been laid on the late stages. Long ago Ehrlich pointed out that after large hemorrhage the blood presented many polymorphonuclear cells without granules and he regarded this as evidence of perverted bone marrow function. The condition of the blood indicated the loss of bone marrow function. The clinical history of the case was important in diagnosis of advanced secondary anemia resembling pernicious anemia on the one hand and the aplastic type on the other. Pernicious anemia sometimes became aplastic. The clinical history helped, but the existence of a very large group of cases must be kept clearly in mind. In chronic secondary anemia the bone marrow was so worn out that the blood making function was apt to be destroyed, and it took a long time to restore the integrity of the blood. The best aid was transfusion.

#### **Treatment of So Called Pernicious Anemia.**

Dr. LEWELLYS F. BARKER and Dr. THOMAS P. SPRUNT, of Baltimore, reported a method of treating so called pernicious anemia which included removal of all ascertainable foci of infection, an abundant roborant diet, arsenical treatment, the administration of hydrochloric acid immediately after meals, and of pancreatin and calcium carbonate three hours after each meal. Splenectomy and transfusions of blood were not found necessary. Several of the patients thus treated have remained well over a long period. It is too soon, however, to know whether or not there will be recurrences. No claim for a permanent cure is made.

Dr. HENRY A. CHRISTIAN, of Boston, said that in regard to the treatment that Doctor Barker had outlined, forced feeding was very important but was frequently difficult. He thought that blood transfusion might be said to act as an appetizer.

Dr. N. E. BRILL, of New York, said he knew of no subject so obscure as anemia, whether primary or secondary. For ten years he had been teaching students the theory that the condition was due to insufficient oxygen in the blood.

**A Clinical and Experimental Study of a Lymphoid Splenomegaly with and without Leucocythemia.**—Dr. KENNETH M. LYNCH, of Charleston, S. C., presented a clinical study of two cases of splenic enlargement: one with a lymphocytosis of the blood and the appearance of premature lymphocytes, but without evident lymph gland involvement, the other with no leucocythemia but involvement of abdominal lymph glands and both showing cirrhosis of the liver. Splenectomy was done in both with immediate death of the first patient and death of the second in one month. The spleens of both patients and the lymph glands of the second showed the picture of lymphatic leucemia. A similar experimental disease in guineapigs was produced with the injection of emulsions of both spleens, and this disease was transmitted from animal to animal by similar injections and by injection of ascitic fluid.



A similar disease was also produced by inoculation of dogs, rabbits, and guineapigs with pure cultures of a micrococcus isolated from the second human spleen, and the organism was recovered from some of these animals.

Doctor SMITHES, of Chicago, said that if the



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technic of transfusion was more generally known, splenectomy would not be necessary. An intelligent patient had a fighting chance when he came under observation at the start. Certainly more could be done for these patients today than during the past twenty years.

Doctor LINDEMANN believed in transfusing blood in large amounts.

Dr. E. L. TUOHY, of Duluth, said that in cases that did not show excessive pigment in duodenal content in very severe secondary anemia, there was usually a positive Wassermann.

Dr. A. G. CASTELLI, of New York, thought the best results were accomplished by intermuscular injections of arsenate of iron.

Doctor BARKER in closing the discussion said that two points had been brought out: 1, the great tendency in differential diagnosis to include subgroups, and, 2, the great advantage of removal of foci of infection and use of transfusion in treatment. The disinclination to take food could be overcome by proper persuasion until appetite was restored. Many believed they removed infection when they did nothing of the kind. It was much easier to talk about than to do; many foci were overlooked, but if they could be found they should by all means be removed. Fever was sometimes due to the anemia and it should first be proved that it was due to a focus of infection. Formerly these cases were considered hopeless, but today the majority of these patients were speedily restored to life and work.

**The Vegetative Nervous System in Pulmonary Tuberculosis.**—Dr. FRANCIS M. POTTENGER, of Monrovia, Cal., said that the normal physiological action of the following structures was dependent upon the vegetative system so that the importance of a knowledge of its action could readily be understood: 1, pilomotor muscles, muscles of sweat glands as well as the glands themselves; 2, heart and bloodvessels; 3, gastrointestinal tract with liver and pancreas; 4, genitourinary tract; 5, certain parts of the eye, and 6, all other smooth muscles and secretory glands of the body. There were very few diseases which did not in some manner disturb some portion of this great system of nerves, but there were some which would show the disturbance in function in a more pronounced manner than others.

Dr. WALTER TIMME, of New York, said that vegetative nervous disturbance might be a basis for tuberculosis or other infectious diseases. The vegetative nervous system controlled the continuity of vital function, not the function itself. In controlling this continuity of vital activity, the vegetative nervous system had to do with subrepair, not only with glandular secretion and excretion, but cell repair itself. Therefore, if the tissues happened to be out of sorts with the controlling vegetative fibres, those tissues could not react and repair themselves, and were destroyed by this process. Any organ under control of the vegetative nervous system that had a disturbed equilibrium as far as the system was concerned, must fall prey to infection of toxemia



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or injury, and here was the reason why tuberculosis attacks not only the lungs, but any portion of the organism whose reactive capacity to repair had been impaired by nonequilibrium of the elements that supplied it. In speaking of the selective activity of any poison to any part of the organism, it should

be remembered that this depended not only on the bacterium, but on the point of least resistance. Predisposing heredity meant transmission from parent to offspring of a disturbed vegetative nervous system.

**The Value of Prolonged Rest in the Treatment of Pulmonary Tuberculosis.**—Dr. JOSEPH H. PRATT, of Boston, illustrated his address with lantern slides showing the different methods of securing complete rest and fresh air for these patients. The results of rest obtained by prolonged rest were remarkable. Poor consumptives were treated in their homes, and private patients were treated in their homes; poor patients were treated in hospitals and private patients were treated in hospitals. The prolonged rest cure was followed by a system of graduated exercise. Tuberculosis was a disease of nervous unbalance, chronic infection, and physical deterioration. This conception explained why rest accomplished so much good. If the patient could be built up and metabolism improved, rest would effect a cure in combination with other measures. When there was nervous stability and no lung activity, it was followed by graduated exercise which would strengthen the patient. Physical stability was secured after nervous stability.

**Report of Studies Concerning Acute Lobar Pneumonia.**—Dr. RUFUS I. COLE, of New York, said the types of pneumococcus had been determined in only seventy-nine cases. The type of infection had now been determined in 500 cases in the Rockefeller Institute and it was now being done as a routine procedure in many States and by many

patients dying; Type IV cases were mild and the mortality not more than ten per cent. This proved of great value in prognosis.

**Studies on the Cause and Treatment of Bronchial Asthma.**—Dr. I. CHANDLER WALKER, of Boston, said that these studies had been made chiefly



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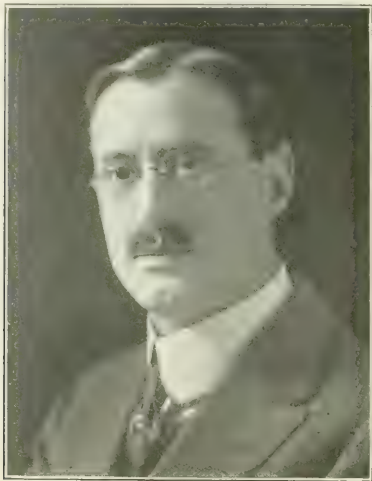
EMIL GEIST, M. D.,  
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from the point of protein sensitization and the skin test had been used to demonstrate this sensitization. Of 150 patients who were studied, eighty-three, or fifty-five per cent., were sensitive to some protein and sixty-seven, or forty-five per cent., were not sensitive. In the eighty-three sensitive cases, horse dandruff proteins were the cause of asthma in twenty per cent. of the cases; the wheat proteins, *Staphylococcus pyogenes aureus* protein, and the early pollens were each the cause of asthma in fifteen per cent.; the late pollens in ten per cent.; cat hair protein in five per cent.; *Staphylococcus pyogenes albus* protein in three per cent.; a group of common foods in seven per cent., casein, egg, chicken meat, and feathers, and in the remaining ten per cent. several proteins were the cause of asthma. The sensitization of the same patient to different tissues or fluids of the same animal varied. This held true for the different structures of the same plant and for the individual proteins of the same seed or kernel; even aminoacids from different foods reacted unlike.

About one in six of the nonsensitive patients was relieved of asthma for several months by vaccines made from a diphtheroid organism, which was a predominant organism in their sputum. The serum of about one in eight of the nonsensitive patients agglutinated *Staphylococcus pyogenes aureus* and vaccines of this organism relieved the patient of asthma for several months. Patients who were sensitive to food proteins were relieved of asthma by the omission of these foods from their diet. Those sensitive to bacterial proteins were relieved of asthma by vaccines of those organisms to which

boards of health. One third of all pneumonias were due to Type I, one third to Type II, ten per cent. to Type III, and the remainder to Type IV. Observations were made as regarded mortality and severity; Types I and II were of the average; cases of Type III were very severe, half or more of the

they were sensitive. Patients who were sensitive to the proteins in horse dandruff and in cat hair were relieved of asthma by subcutaneous injections of these proteins; these hair proteins did not desensitize against serum, nor did serum injections desensitize against the hair proteins. When chronic



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bronchitis was associated with asthma, vaccines were often necessary in conjunction with the protein injections. There seemed to be two types of colds and bronchitis. One type was anaphylactic and the other was bacterial. The anaphylactic type was relieved by proper protein treatment and the bacterial type required vaccines.

SECTION IN GASTROENTEROLOGY AND PROCTOLOGY.

June 6, 1917.

**Surgical Treatment of Enterocolonic Chronic Diarrheas.**—Dr. SAMUEL G. GANT, of New York, said that chronic diarrhea could be temporarily relieved by rest, diet, antiseptic and astringent drugs, and irrigations through the anus, but often recurred when the patient returned to business, ate normally, and discontinued medication. Chronic inflammation or ulceration of the intestines, however produced, was rarely controlled except by surgical intervention. Differential diagnosis must be made between the different types of frequent movements so that the patient could be intelligently treated or referred to a proper specialist. Increased knowledge made the old classification of intestinal catarrh, tuberculosis, syphilis, and dysentery untenable. The term dysentery should be discarded as it is only a symptom complex—abdominal pain and diarrhea with blood and mucus in the stool—symptoms that complicate any chronic inflammatory intestinal disease, and the author proposed that enteric and colonic affections responsible for frequent stools be classified etiologically, viz.: catarrhal, tubercu-

lous, luetic, entamebic, gonorrheal, bacillary, balantidic, flagellate, helminthic, and coccidic colitis.

Catarrhal enterocolitis might be associated with constipation or diarrhea sometimes relieved by dieting and antifermentive medicines. Where small and large intestines were involved by numerous ulcers, colonic medicated irrigations, and high oil and bismuth injections sometimes were effectual. If not, appendicostomy or cecostomy should be performed and the bowel flushed with normal salines daily. In luetic, enteric, and colonic affections extirpation of the involved gut, ileosigmoidostomy, or rectostomy was indicated. Salvarsan was valueless when the mucosa was extensively ulcerated or the bowel stenosed. In the gonorrheal type daily colonic irrigations of argyrol or ichthyol should be instituted. Entamebic affection improved temporarily by colonic irrigations and emetin, but appendicostomy and cecostomy usually cured. In bacillary affections serums were effective in mixed infections or when the intestine was distorted with ulcers, fistulae, or strictures. The helminthic type was rare and called for vermifuges and appendicostomy or cecostomy and flushing. Operative interference in tuberculous affections was contraindicated when the patient was dying from phthisis or tuberculous lesions elsewhere.

Successful operations accomplished removal of the disease, diversion of the fecal current, or provision for through and through colonic irrigation. The operations were enterectomy, cecectomy, sigmoidectomy or proctectomy, enteroanastomosis or unilateral or bilateral exclusion, enterostomy, appendicostomy, and cecostomy or enterocostomy, resection being the operation of choice. Usually the writer performed appendicostomy or cecostomy in conjunction with exclusion, healing the lesions directly by through and through flushing.

Obstructive diarrhea represented a type where evacuations were made frequent or liquid by lesions that blocked the bowel, and were usually mistaken for diarrhea caused by gastrogenic, enterogenic, or neurogenic disturbances because of failure to make proper examination.

Obstructive diarrhea might be caused by congenital deformities, stricture, tumors, foreign bodies, calculi, fecal impaction, adhesions, angulations, diverticula, volvulus, kinks, hernia, invagination, procidentia, enteroptosis, enterospasm, parasites, hypertrophy of O'Beirne's sphincter, rectal valves, levator ani, coccygeal deviation, and anorectal affections. Different surgical procedures were required for the above causes.

**Chronic Diarrheas Due to Enterocolonic Conditions.**—Dr. JULIUS FRIEDENWALD, of New York, gave the following classification of chronic diarrheas as used in a recent study of one hundred cases. 1. Simple catarrhal enterocolitis, thirty-one cases. 2. Ulcerative colitis: a, Amebic, eight cases; b, bacillary, one case; c, tuberculous, four cases; d, luetic, two cases; e, carcinomatous, two cases. 3. Mucous colitis, nine cases. 4. Simple colonic infections, six cases. 5. Intestinal stasis, eight cases. 6. Chronic appendicitis, three cases. 7. Disturbances of the glands of internal secretion, five cases. 8. Diarrheas of toxic and undetermined origin, eight cases.



Thirteen cases due to achylia gastrica were not included in this study.

In all the enterocolitis cases mucus was found in the stools, and in some blood was observed. Proctoscopic investigation usually presents characteristic findings. The Schmidt test diet was used in studying the stools. The treatment consisted of diet, astringent irrigations, and internal medication. In amebic dysentery infusions of Chaparro amargosa in doses of from six to eight ounces was recommended by Nixon in cases resisting emetin. Localized tuberculosis around the ileocecal region was found in two cases, both of which were operated in with gratifying results. In persistent diarrheas in individuals past forty, other conditions being excluded, carcinoma of the pancreas should be suspected.

Attention was directed to the use of autogenous vaccines in the treatment of mucous colitis. In the chronic appendicitis cases complete relief followed appendicectomy. In the diarrheas due to disturbed endocrine function there was usually present a hyperperistalsis of the intestines. The toxic diarrheas were those which occurred in such diseases as gout, nephritis, cirrhosis of the liver, etc. In chronic nephritis uremic ulcers had been observed both in the small and large intestine. The diarrhea in these latter cases resulted from the excretion of the irritating toxins through the mucous membrane of the bowel.

**Autointoxication in Chronic Constipation.**—Dr. H. W. SOPER, of St. Louis, said that the term auto-intoxication indicated the group of symptoms usually associated with intestinal stasis. A review of the extensive literature showed that the whole subject was chaotic. The group of symptoms referable to focal infection resembled very closely the symptoms produced by intestinal toxemia. Pus infections of the rectum and lower colon have been found in many cases of "autointoxication." Many cases of autointoxication were found in diarrheal conditions. Fluid colonic feces probably facilitated the absorption of poisonous material. Abnormal metabolism of the food protein was a factor to be considered in the causation of intestinal toxemia. Autointoxication might result from primary disturbances in the central nervous system, particularly in the group of cases known as the functional psychoses. Doctor Soper concluded as follows: 1. Treatment should be directed against any existing infectious agent. 2. Reliance should not be placed upon the Bulgarian bacillus as a corrective agent. 3. Cathartics should be avoided. 4. An initial radical change should be made in the dietary in an attempt to change the bacterial flora. 5. Colonic function must be restored by regulation of diet and physical means, at times by surgical procedure.

#### SECTION IN ORTHOPEDICS.

June 6, 1917.

**Bone and Joint Infections Treated by the Carrel Technic.**—Dr. GEORGE W. HAWLEY, of Bridgeport, Conn., said that the fundamental principle of the Carrel treatment was the chemical sterilization of living tissue. The problem was simple and definite: complete exposure of the infected tissue, con-

tact of the sterilizing agent to every part of the wound, and closure of the wound when proved sterile. The method was first used in the treatment of large wounds. Since then it has been successfully applied in chronic suppurating wounds and old infected compound fractures. Doctor Hawley de-



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scribed the technic, which was difficult and laborious. Reports of cases showed remarkable results in cases of acute and chronic suppurating infections of the bones and joints.

**Treatment of Anterior Poliomyelitis at Fordham Hospital.**—Dr. S. W. BOORSTEIN, of New York, outlined the treatment as follows:

Light massage and muscle training were given three times a week. Mothers reported at the clinic once every two weeks and received instructions in giving certain exercises at home daily. Braces were used freely and discontinued early. Deformities were corrected whenever necessary and early walking encouraged. No electricity was used even for testing. Special attention was given not to overuse or overmassage the muscles. Muscle training was used successfully even in infants below the age of two. Results were encouraging: 11.6 per cent. cured, 33 per cent. showed marked improvement, and 44.9 showed moderate improvement.

Conclusions: 1. The best results could be obtained if each case was studied and controlled individually. 2. Light massage and muscle training improved these cases without resort to electricity. 3. It was easier to get mothers' assistance where electricity was not used than where it was used. 4. The benefit from proper use of braces far outweighed the atrophy which it produced. They were especially useful in deltoid paralysis. Braces should be discontinued as early as possible. 5. The earlier the children began to walk the more quickly they improved, provided, of course, they did not use the limbs excessively.

## SECTION IN PHARMACOLOGY AND THERAPEUTICS.

June 6, 1917.

**Cooperation between Pharmacology and Therapeutics.**—Dr. ALBION W. HEWLETT, of San Francisco, made this the subject of his chairman's



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address and pointed out the need for a healthy co-operation between those engaged in the scientific study of drug action and those who used drugs for the cure or alleviation of disease. He said that now, more than ever before, advance in therapeutics depended on an intelligent utilization of the methods, criticisms, and discoveries of pharmacology. Among the factors tending to separate the pharmacologist from the therapist were the scientific scepticism and deliberate procedure from the unknown to the known on the part of the former, and the necessity to try the unproved where the proved had failed in the case of the latter when faced with a crisis in the life of his patient. The latter practice too often, however, led to inaccurate reasoning and unjustified and uncritical enthusiasm and optimism in the interpretation of the results. The conditions of the observations of the two groups of men were commonly quite different, and the doses used frequently were not comparable, the pharmacologist using very large doses, the therapist much smaller ones. Finally, the presence of disease had to be taken into consideration as modifying the actions and effects of drugs. With the study on man of the effects of therapeutic doses of drugs, however, aided by the newer and more accurate methods now available for observing and recording effects and the analysis of these in the light of the results of animal experiment, a position was fortunately being reached in which pharmacology and therapeutics could be brought into close contact and cooperation. Pharmacologists should be encouraged to go into the clinic to a greater extent with their problems and clinicians to take into consideration the results of pharma-

cologic investigation. Closer contact between the science of drug action and the art of therapeutic application should be maintained.

**The Crucial Test of Therapeutical Evidence.**—Dr. TORALD SOLLMANN, of Cleveland, stated that the true crucial test of a therapeutic agent lay in its consumption by the patient, but the difficulty of applying his test lay in the determination of the fact that it was the remedy which led to the improvement. The *post hoc* reasoning was not acceptable, but all too common and constituted one of the greatest pitfalls of therapeutical evidence from clinical observation. The fact that the conditions of disease did not remain constant, and that it was very difficult to foresee the probable outcome in a given case, added enormous difficulty to the interpretation of the results of clinical observations. The true task which confronted him who sought clinical evidence was to establish the causative relation between the remedy and the event. The imperfect appreciation of this fact had done much to block therapeutical advance, had merited the disgust of critical men, and had fostered the tendency on their part toward therapeutical nihilism. Many of the data offered as therapeutical evidence were mere impressions—usually the latest—of impressionable enthusiasts who were likely to be unduly biased by the hope that the remedy would accomplish the desired ends. It was possible, however, to avoid all of these shortcomings and others by the introduction of adequate methods of control and of study. Since the natural course of disease was not amenable to adequate control, two indirect methods were necessary to set its influence aside so far as the basis for deductions was concerned. The first of these might be called the "comparative method" or the "blind test," and consisted in attempting to distinguish two unknown preparations by their effects. This could be accomplished by preparing the drug to be tested and one of proved value in similar ways, and submitting them to the observer without his knowledge of which was which. By this method the true status of the new preparation could be determined. This was the only method which truly overcame the pitfalls of clinical observation and made the results purely objective. The other method was the statistical one, but it had the disadvantages of requiring a very large number of observations and of not taking into account the individuality of the different cases. The first method was the one which should be employed in every case where it was at all applicable.

Dr. SAMUEL J. MELTZER, of New York, in the discussion, emphasized the fact that even when the observers were men of high standing, clinical evidence was very likely to be biased by the inherent enthusiasm of the investigator over the possibilities of a new remedial agent. He cited a number of such instances from his own long experience and urged the need for the adoption of some such plan as that suggested by Doctor Sollmann and the rejection of the greater portion of such so called evidence as was obviously influenced by the prejudices and preconceptions of the authors.

**Simple Apparatus for the Administration of Oxygen under Pressure.**—Dr. SAMUEL J. MELTZER briefly reviewed some of the beliefs which have

been held with regard to the value of the inhalation of oxygen, pointing out that it had been contended that its inhalation could not have any effect on a normal animal, 1, because the hemoglobin was already saturated, and, 2, because the amount taken up was regulated by the needs of the cells and could not be increased. It had also been shown that the oxygen pressure in the tissue fluids had no influence on the amount which the cells would take up. On the other hand, Dr. Leonard Hill had shown that after the inhalation of oxygen a normal man could exert himself for twice as long as normally. All physiologists were agreed that in disease oxygen was possibly capable of doing some good. The usual practice of giving oxygen through a funnel held an inch and a half away from the patient's face and begun when the patient was moribund accomplished nothing. It was possible, however, to administer oxygen under moderate pressure by a simple apparatus consisting of an oxygen tank, a small rubber respiration bag, a hand controlled respiration valve and a hollow tongue depressor through which the oxygen passed. To obtain satisfactory results it was necessary to begin the administration while the patient was still conscious rather than to wait until he was dying. One or two illustrative cases were cited and the author demonstrated the apparatus upon himself.

**Action of Alcohol on the Isolated Mammalian Heart.**—Dr. CHARLES C. LIEB, of New York, said that alcohol was generally regarded by the therapist as a circulatory stimulant. The great majority of experimental pharmacologists believed that alcohol, if it acted at all, acted as a depressant to the circulation. In the hope of reconciling these two opposite opinions the present series of investigations was begun. He reported only the experiments dealing with the isolated mammalian heart. The hearts of rabbits and cats were perfused by the Langendorff method. In the first series of experiments normal rabbits were used. The hearts were perfused with Ringer's solution containing 0.1 per cent. dextrose. The addition of alcohol to the perfusion fluid in such amounts as to make 1/50,000 dilution had no effect on the heart's action. Higher concentrations always resulted in depression. The strength of the beat was, with one exception, always lessened. Generally there was also a decrease in the rate. The depression was not completely removed by a subsequent perfusion with fresh Ringer dextrose. There was no clear evidence that the heart accommodated itself to alcohol, although it was true that the depression was most marked when the perfusion was first begun and that finally a state of equilibrium was established during which the continued perfusion of alcohol had little effect on rate or strength. There was no evidence that the previous perfusion of a heart with alcohol increased or decreased the susceptibility of that heart to subsequent alcohol perfusion. Thus, in one experiment the first perfusion decreased the work of the heart by thirty per cent., the second by twenty-eight per cent., and the third by thirty per cent. There was apparently no relation between the strength of alcohol passed through the heart and the degree of depression. Different hearts responded very dif-

ferently to the same concentration of alcohol. Other series of experiments showed that exhausted hearts and those from animals suffering from distemper were not stimulated by the perfusion with alcohol, but in every case were depressed. In most of the



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experiments the rate of flow through the coronaries was measured but the results were so variable that no conclusions could be drawn.

Dr. SOLOMON SOLIS-COHEN, of Philadelphia, pointed out in discussion that isolated heart experiments were of very little value in relation to the clinical use of alcohol, and while it was undoubtedly true that under such conditions the drug depressed the heart it was equally certain that, taken in moderate amounts, alcohol clinically did increase the force and rate of the heart. It was also pointed out that the reactions of different persons to drugs varied widely, depending largely upon the condition of the vegetative nervous system. This was true of alcohol as well as of other drugs, and for an estimate of its clinical value all of these facts had to be taken into consideration.

**Acidosis in Morphineism.**—Dr. JAMES E. TALLEY, of Philadelphia, said that mild acidosis was common in the morphine habit. Grave acidosis known as acid intoxication, with coma and other dangerous symptoms developing during the withdrawal of morphine, appeared to be uncommon. The possibility of its occurrence, the means of preventing it, and the methods of curing it by intravenous injections of sodium bicarbonate were dwelt on. The history of a patient was cited who fell into a dangerous coma the first time the morphine was withdrawn, was rescued by intravenous medication, but later recurred to the use of the drug again. This time before beginning the withdrawal of morphine the patient was given sufficient sodium bicarbonate to keep the urine neutral and then when the narcotic



was withdrawn the patient manifested a slight acidosis but no acid intoxication. The conclusions were: 1. Dangerous acid intoxication might arise during the withdrawal of morphine in the treatment of morphinism, and acidosis might be an element in the sudden collapse sometimes encountered in the treatment of such patients. 2. The development of such a dangerous complication might be avoided by giving sufficient sodium bicarbonate to render the urine neutral and keep it neutral before beginning the reduction of the morphine.

**The Truth About Radioactive Therapy in Malignant Growths.**—Dr. ARTHUR FENWICK HOLDING and Dr. WILLIAM BAYARD LONG, of New York, said that as regarded their therapeutical activity radium and x rays might be favorably compared. They acted upon the cell nucleus by preventing the consummation of the mitotic process after it had started, but they probably were without direct effect on the resting nucleus. They also acted on the endothelial lining of capillaries, producing a swelling of the lining cells which might go on to complete occlusion and the indirect destruction of large numbers of cells through the removal of their nourishment. The more nearly embryonal in type the more easily was the cell destroyed by the rays and malignant neoplasms presenting a relative excess of nuclei were the ones which responded most promptly and most favorably to the use of either form of radiation. The latter statement also applied to the response of metastases and recently developed neoplasms, due to the fact that their vessels were apt to be rudimentary in structure. With the exception of basal cell epitheliomas, all operable tumors should be treated surgically as early as possible, and all such cases should have the benefit of raying with radium, x ray, or both, both before and after operation. No case would seem to have had the benefit of all that could be done unless such a procedure was followed.

**The Possibilities and Limitations of Röntgenotherapy in Malignant Disease.**—Dr. G. E. PRAHLER, of Philadelphia, said that it was possible to cure nearly all basal cell epitheliomata by the Röntgen rays alone. It was probably possible to cure all of them if they were first destroyed by electrocoagulation, provided they were treated before they had invaded the deep structures such as cartilage or the ethmoid cells. Squamous cell epitheliomata did not yield so well to röntgenotherapy alone, and in these cases the disease should always be first destroyed by electrocoagulation or excised surgically and followed by deep röntgenotherapy. Recurrent and metastatic squamous cell carcinoma would rarely disappear under röntgenotherapy. The results in all cases of malignant disease could be improved if operations were followed promptly by active and thorough postoperative x ray treatment. When extensive metastasis had taken place or general carcinomatosis had developed, the patient could not expect to get well.

**Review of Cases of Malignant Disease of the Throat and Sinuses Treated by Radium and Röntgen Rays.**—Dr. HENRY K. PANCOAST, of Philadelphia, said that malignant growths in the throat, sinuses, and ear were peculiarly adapted to radium therapy for the reason that the agent could

be brought into direct contact with the primary lesion, which should, however, be attacked from every possible direction by cross fire radiation, by radium or Röntgen rays, or both. Such treatment should, of course, be reserved for growths beyond the possibility of successful removal by operative procedures. It was essential that the maximum effect be induced as soon as possible, especially in sarcomata, in order to minimize the possibility of metastases. In tonsillar sarcoma successful results depended upon a very rapid subsidence of the growths and treatment must be continued long after a complete disappearance of all enlargements. With careful technic at least temporary relief or even permanent cures were obtainable in a very encouraging percentage of cases.

#### SECTION IN OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY.

June 6, 1917.

**The Relations of the Gynecologist to the General Surgeon, Past and Present.**—Dr. HOWARD W. LONGYEAR, of Detroit, chairman of the section, dwelt on the profound influence exerted by such pioneers as McDowell, Sims, and Emmett on the present course of the science of gynecology, and of the added influence of modern tendencies toward increased efficiency in all departments of human activity. Permeating medicine, and especially surgery, these tendencies have led to an increasing absorption by general surgery of the various specialties, including gynecology. In the time of Sims, general surgical procedures were often avoided by the gynecologist, but thereafter the field of gynecological operative work extended, gradually to the upper pelvis and abdominal cavity. About twenty years ago, a very large proportion of abdominal sections were performed by gynecologists. Since that time, however, the tables have again been turned. In a series of 2,652 abdominal sections performed in 1916, only 384 were performed by gynecologists, and no less than 2,268 by general surgeons. At the present rate in two decades from now the general surgeon will be engaged exclusively in abdominal work. What of the gynecologist? Is he to be driven by the general surgeon to the exclusive practice of obstetrics? The answer to this would seem to lie in the realization of improved methods of surgical training and practical work. It was to be borne in mind that the development of the modern abdominal operation was greatly aided by gynecologists. The success of the pioneer, Lawson Tait, was due to the bold manner in which he dealt with adhesions and, in a general way, formed the habit of going directly to the root of things by simple and effective, though from the present aspect crude, procedures. General surgeons of those times knew nothing of the gynecological surgeon and even looked with amused curiosity on his achievements. The discovery of the true etiology of the pus tube, which exerted an enormous bearing in the alleviation of the sufferings of womankind, was a gynecological feat that preceded appendix operation, and on the development of the latter Tait exerted a distinct influence. The danger in the extension of the general surgeon's activities to the specialties, including gynecology, was that with such a vast field, sur-

geons, though skilful, would not all be conscientious and, vice versa, not all conscientious surgeons will be skilful. The tendency to extension was becoming so marked that the surgical knowledge in each special region would soon amount to a thin veneer of surgery. To be sure, eventually the pendulum must begin to swing the other way. The establishment of the American College of Surgeons would aid in the elimination of many self-styled and poorly qualified surgeons. The future surgical specialist must in the first place be a doctor of broad general knowledge. A detailed course in differential diagnosis must be provided for him and will constitute the main factor of success in his subsequent professional work. He must have a hospital course in general surgery, and thus well grounded, could attempt a surgical specialty to be seriously studied in a term as an operating assistant to one already a specialist. A future for abdominal gynecology could be obtained only in this way.

**The Relative Efficiency and Toxicity of Chloroform, Ether, and Nitrous Oxide Oxygen in Pregnancy and Labor.**—Dr. C. HENRY DAVIS, of Chicago, pointed out that the impression had arisen that nitrous oxide oxygen can be used without danger to the mother or child. Yet the chemical results with it had varied in the hands of different observers, and some had returned to chloroform or ether, most of these admitting, however, that they had not given the method a conclusive trial. Studies of the effects of the three anesthetics on pregnant and nonpregnant guineapigs, taken together with clinical experience, had convinced Davis that either agent, administered for long periods and repeatedly on successive days, might cause degenerative changes, especially in the liver and particularly with chloroform. The injuries produced were probably permanent. Ether and nitrous oxide acted deleteriously by causing central asphyxia. Recovery was more rapid after the latter, owing to its quicker elimination. Prolonged use of an anesthetic might be dangerous to the fetus *in utero*. Chloroform administration for one hour caused marked fatty degeneration in the fetal liver, which was not prevented by simultaneous use of ether. Nitrous oxide given at the start of anesthesia was probably free of danger. Operations should, if possible, be avoided during pregnancy. Ether was better understood than either chloroform or nitrous oxide oxygen. Chloroform in labor was only apparently safe. It not only asphyxiated the liver cells, but caused central necroses in this organ. Hepatic degeneration occurred more easily in the fetus than in the mother. Ether was far safer than chloroform. As for nitrous oxide, even its administration short of the point of cyanosis was capable of killing the fetus, a result not prevented by simultaneous use of oxygen in the percentage in which it was present in air. A factor in this asphyxia *in utero* was that the nitrous oxide interfered with cell metabolism; not only was there less oxygen in the blood, but the cells were less able to use what there was of it. Yet a few inhalations of this agent in the painful stage of labor were probably not dangerous. No statistics existed which showed that the proper use of chloroform or ether in labor increased the ratio of stillbirths or of deaths of the child in the first

week. The betterment in the general condition of the mother, due to the prevention of pain, more than balanced the danger of the anesthesia. Nitrous oxide was safer than chloroform, though the most expensive of the three agents. In long operations, ether should be used; for examinations or short operations, nitrous oxide oxygen. Intermittent use of chloroform in labor was probably not dangerous, but in view of its manifest experimental toxicity, it had best not be employed at all. Under certain circumstances chloral hydrate and scopolamine were appropriate.

Doctor HILL, of New York, asserted that it was very unsafe to make deductions concerning the relative clinical value of the anesthetics from guineapig experiments and liver changes, in view of the fact that in such experiments amounts of the anesthetics twenty or thirty times as large were used as in clinical work.

Dr. EDWIN B. CRAGIN, of New York, on the other hand, maintained that much had been learned from such experimentation. One could not as yet precisely decide, however, on the indications for the various anesthetics. It was certainly illogical to give chloroform to a woman known to be already in a toxic state. Discontinuance of the use of chloroform in toxic cases in the Sloane Hospital, New York, resulted in a reduction of the mortality in these cases from twenty-eight to fourteen per cent. In private patients, nitrous oxide might well be used in the first stage of labor; ether, in the second or the final stage. For emergency cases, a few whiffs of chloroform were most useful. In prolonged forceps deliveries ether was safer than chloroform and served better than nitrous oxide. All three anesthetics were at present needful.

**The Pathologic and Clinical Significance of Chronic Endocervicitis.**—Dr. ARNOLD STURMDORF, of New York, asserted that chronic endocervicitis was a very prevalent condition, the results of which might be so severe as sometimes to menace the entire system. It was not considered specially in textbooks, which depicted only separate phases of it under various headings. The cervical mucosa was very susceptible to infection, whereas the corporeal endometrium, in spite of earlier views to the contrary, was really practically immune. Chronic corporeal endometritis as a separate condition could now clinically be safely discarded. The constant rhythmic contractions and dilations of the uterus were to be remembered as regulating the uterine circulation and favoring drainage. The myth of cervical sphincter must be cast aside. The muscular fibres of the cervix operated, not circularly, but in oblique segments, and contracted spirally upward. When the cervical lymphatics reacted to infection, the latter, if it ascended, passed, not to the corporeal endometrium, but as an intramuscular uterine lymphangitis. The cervix constituted a "uterine tonsil" as a primary infectious focus. The great reabsorptive capacity of the uterus led to systemic manifestations. The resulting symptoms were not, as so generally thought, neurotic, but toxic. Chronic endocervicitis often dated back to a so called vulvitis of early infancy. In the adult, it was nearly always gonococcal, but might also be due to strepto-

cocci, colon bacilli, etc. In infants, soiled diapers and general debility favored the condition. If the infection was superficial, the chief symptom was an intractable leucorrhea, not due to cervical erosions or tears. Sterility might result from the influence of the discharged material on the spermatozoa. The extent of a tear in the cervix was not the main morbid factor, but the extent of the accompanying infection, which might greatly spread. As a result of such spreading the uterine contractions were inhibited, causing menorrhagia or metrorrhagia. In pregnancy, premature expulsion of the ovum occurred. Amenorrhea might follow the condition. Dysmenorrhea and sterility with a halo and pouting os locally were diagnostic features. Nabothian cysts and a tendency to bleed easily were also important accompaniments. Treatment by prevailing methods failed, the infection being too deeply seated in the cervical glands and in miliary abscesses. Escharotics and the dilator might benefit the superficial cases, but curettage was bad in all cases. An operation which repaired a rent but ignored the infection yielded poor results, except where the infection had not spread, which was rare. The entire infected mucosa was removed by the author in the form of a cone. The muscular tissue was preserved, and the vaginal cervical mucosa separated throughout from the former, brought and held over it by appropriate sutures as a new lining for the cervical canal, thus preventing cicatricial contraction.

Dr. THOMAS S. CULLEN, of Baltimore, denied inflammation an important rôle in erosions or tears. Nabothian follicles resulted from simple blockage, without inflammation. Nor did he agree with Doctor Sturmndorf as to the extension of the inflammation upward. All these tissues drained well. In some tears one needed to do nothing. Where there was much eversion, operation was indicated. One should never amputate for erosion except where there were elongation and hypertrophy.

Doctor STURMDORF in reply stated that his paper was intended to obviate unnecessary operations. As for the presence of inflammation, including chronic corporeal endometritis, his studies had been based on the presence of plasma cells, and not mere round cell infiltration, as a criterion of true inflammation. Inability to find gonococci in the tissues was no evidence that they were not there. In fact, he believed that where evidences of infection existed in the absence of discernible microorganisms, a gonococcal infection had existed. Such an infection could be brought to light only by a species of provocative injection.

Dr. FREDERICK PETERSON, of New York, pointed out that infantile cerebral palsy was associated in forty-five per cent. of cases with epilepsy and even oftener with various degrees of feeble-mindedness. Hemorrhages were not infrequently found in the central nervous system of stillborn children. Spencer's series of 130 cases included four of thrombosis in the longitudinal sinus, seven of hemorrhage in the lateral ventricles, six of hemorrhage at the base of the brain, thirty of hemorrhage in the spinal cord, and fifty-three of meningeal hemorrhage. Hemianopsia might be associated. Eighteen per cent. of

cases of congenital idiocy were supposed due to difficult labor.

Dr. EDWIN B. CRAGIN, of New York, urged that since cases of breech presentation were more liable than others to prolonged labor, careful study of presentations was indicated, that they might, if possible, be corrected before labor. Examinations through the abdomen should be conducted oftener than in the past. A careful study of the mechanical relations in the individual case was likewise necessary. During labor, the patient should not be left too long in the second stage; even a Cæsarean section might be indicated. Application of forceps to an occipitoposterior head, where the existence of this position was not known, entailed danger; such a condition must be recognized and corrected before forceps are applied.

**Preservation of the Menstrual Function in Double Suppurative Disease of the Tubes and Chronic Metritis.**—Dr. JOHN OSBORN POLAK, of Brooklyn, N. Y., recommended as a substitute for the usual salpingectomy or salpingoophorectomy for chronic tubal and pelvic inflammations (pyosalpinx), excision of the infected fundus of the uterus with the infected tubes, following with certain modifications the technic devised first by Beuttner, of Genoa, and improved by Bell, of Liverpool. This procedure left sufficient healthy uterine body to preserve the menstrual function and one or both ovaries to continue ovulation. There could be no question as to the desirability of conserving the ovarian function provided it was associated with a periodical discharge of the menstrual blood. But in order to maintain this function it was necessary for both the uterus and the ovaries to be in a state of relatively good health. Furthermore, to put the organs of menstruation in a healthful state it was necessary first to rid the uterus and adjacent structures of any existing chronic inflammation, and, secondly, to leave the ovarian circulation as nearly intact as possible, thereby preventing cystic degeneration of the conserved ovary.

Both of these functions could be fulfilled by the Bell-Beuttner operation, which consisted in the incision of the fundus uteri along with the infected tubes. The technic was as follows: After separately and securely ligating the blood supply to the uterine fundus and tubes, a wedge shaped excision was made of the upper part of the body and fundus of the uterus. The anterior incision began just posterior to the insertion of the round ligament and ran across the front of the uterus to a corresponding point on the opposite side. The posterior incision began between the tubal insertion and ovarian ligament on one side and extended across the posterior surface to the same point on the opposite side. The incision was made in such manner that the entire fundal mucosa with the pars interstitialis and surrounding tissues of both sides were excised. The uterine flaps were then brought together with interrupted catgut sutures with superficial sutures between the deeper ones. This wound was then peritonealized after the manner of Rosini by reflecting the bladder above the line of incision. The abdomen was closed in the usual manner.



SECTION IN DISEASES OF CHILDREN.

June 6, 1917

**The Institution, Reestablishment and Maintenance of Breast Feeding.**—Dr. JULIUS P. SEDGWICK, of Minneapolis, in his chairman's address, said that an attempt was now being made to live up to former resolutions which have formerly been neglected. This was to centre interest upon the natural rather than the artificial method of infant feeding, for here was the crucial point in regard to infant mortality. The hormone which became active just before the arrival of the milk stimulated the natural supply. It had not been satisfactorily proved whether this could be aroused without pregnancy or not, but the premature infant was unable to stimulate the hormone. Therefore in the work at the University of Minnesota no attempt was made at first to put the infant to the breast. The milk were expressed without massage but with a simple milking which extended just beyond the colored areola, as far as the ducts really extended. Such manipulation was invariably successful. Doctor Sedgwick stated that he had never yet seen a case of agalactia. Trouble lay in the quality rather than the quantity of the milk. He emphasized that complementary and not supplemental feeding should be used where the supply was insufficient in quality, the additional nourishment being given immediately after the nursing, never instead of it. The breasts should be manipulated not less than eight times a day. Lactation has been reestablished by this process after a lapse of nine weeks. At first but three or four drops were expressed, but finally lactation was complete. Confidence and technical skill were the essentials. It was largely a question of psychology rather than physiology. The main point was that breast milk could thus be saved for most babies.

**The Technic of Wet Nurse Management in Institutions.**—Dr. ISAAC A. ABT, of Chicago, discussed the use of maternal milk from the wet nurse as primarily a therapeutic measure. Babies entered a hospital usually in an extremely toxic condition. Detoxication was the first necessity with administration of food to save life, which consisted of properly suited doses of breast milk. Therefore the hospital must provide facilities for obtaining this. He has in his hospital experienced no difficulty in securing wet nurses. The procedure was to select women from twenty to thirty years of age with a baby at least three or four weeks old. Baby and mother underwent a routine examination. The quality of the milk was determined by results in weight of the child rather than by stress upon chemical examination. The nursing of her own baby stimulated the supply of milk in the wet nurse. The foster baby was not fed at the breast but the milk was expressed manually, no pump being used, at regular intervals under the supervision and watchfulness of a trained nurse. Some of the milk was used immediately after expressing. The excess was put into sterile bottles and taken to the milk station to be reserved for the desperately ill, marasmic, premature, and those who have undergone operation for pyloric stenosis. The babies were fed by dropper or gavage. The wet nurse was kept under a simple hygienic

régime with a simple varied diet and plenty of sleep. Menstruation gave no indication for discontinuance of use of the milk, for it had only a slight temporary effect upon the quality of the milk. Lactation with no deterioration of quality has been continued as long as eighteen months.

Dr. F. B. TALBOT, of Boston, said that too much attention could not be given to the possession of at least two wet nurses by every hospital with an obstetrical service. He emphasized also the need of watching the nurse for substituting other fluid for the milk at time of expression. He added as one more measure of technic that it should be strained through sterile substance before bottling and also that the milk had been kept in the Dusseldorf clinic by freezing.

Dr. L. SILVER, of New York, mentioned the long period of lactation that obtained in Labrador.

Doctor SOBEL, of New York, spoke from the community standpoint in regard to the securing of wet nurses. Owing to obstacles in the way the Baby Welfare workers of New York have resorted to certain routine measures by which the birth reports were utilized. The homes in which the stillbirth or miscarriage has been reported were at once visited, or where a child under one year had died information was also solicited to find out if such women were willing to contribute to the maternal milk supply.

Doctor SCOTT, of New York, commented on the greater readiness with which wet nurses could be obtained abroad, where social conditions gave a different status to wet nurses with illegitimate children.

Doctor ABT, of Chicago, said in closing the discussion that hospital service was far more free for the wet nurse from disturbing conditions than in the private home. He had had no experience with galactagogue injections. He had tried every galactagogue, even extract of placenta, without success. The stimulation of the breast was the only reliable means and the best stimulant was the baby. When the milk must be used before a Wassermann could be made the milk should be boiled. Absence of infection through milk could not be assured, though probably infection came rather through the breast than in the milk. He showed that though the price of maternal milk was set high there was always a surplus available for those who could afford little or nothing, made possible by these prices for those who could pay. In regard to the relative amount of protein he said that the caloric value was unessential where the question was one of a therapeutical measure in the face of a desperate condition. The results were specific in that almost moribund babies revived who otherwise would die.

**Problems Connected with the Production and Collection of Human Milk.**—Dr. BERT R. HOEBLER, of Detroit, pointed to the responsibility laid upon the doctors to utilize the excess of milk which the mother produced. There should be a system evolved to save this excess and to control the supply of maternal milk which could overcome the natural hesitancy on the part of both mothers. The experiment had been successfully tried at Bellevue and in Chicago for expressing surplus milk under supervision, collecting it in sterile containers and

having it purchased for use. At the hospital the unmarried pregnant woman was also taught to care for her own baby and to nurse it. The milk was credited to them. Other mothers were also appealed to for their excess supply, even those who remained at home. These homes were inspected. The milk

was thus obtained of abortions, etc. The milk should be pasteurized or sterilized just as cow's milk was. Its need was purely therapeutic. He objected that long continued lactation was not good for the health of the woman. The diet should be well balanced, digestion kept good, and rest advocated.

Doctor ROYSTER, of Norfolk, also emphasized the importance of the psychological attitude of the woman. Education was important but was needed for the profession as well as the mothers. He uttered a warning against fallacious magazine articles in which accuracy was sacrificed to esthetics.

Doctor HEIMAN, of New York, spoke of the rapid change in the disappearance of sodium, potassium, and chlorine salts from milk while calcium, magnesium, and phosphate remained constant.

Doctor FERGUSON, of Chicago, spoke of the prohibitive prices which had been quoted, and urged that these should be reduced by studying the problem in hospitals. He said that no milk should be put on the market which had such a bacterial percentage as had been quoted. This must be due to human conditions and which should be avoided. It should be unnecessary to pasteurize or boil.

Doctor FAISON, of Charlotte, N. C., said that the colored population were altogether too unreliable to be depended on for a supply.

Doctor HILL, of Knoxville, stated, on the other hand, that he had at present three colored women with an overabundance of milk which they were supplying regularly where needed. They could be made a very efficient source of supply. They were con-



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was disposed of partly in the hospital and partly for private homes at order of the physician. Some was distributed free, if necessary, and the residue went to children's hospitals and wards. None was wasted. Wet nurses were sent themselves into private homes with their babies if required, though the supplying of the expressed milk was usually more satisfactory than the residence of the wet nurse. There was less danger of infection. These were problems which have been well worked out in dairy husbandry. Why should they not be in human economy?

Doctor SOUTHWORTH, of New York, said that the duty at present was to improve the institution. He spoke of the difficulty of getting proper cow's milk for the nursing mother and the consequent starvation of the baby.

Doctor BOWDITCH, of Boston, stated that at the Boston Floating Hospital it has been possible to procure excess breast milk in the winter, the use of which had proved very satisfactory. Organization of its supply was perfectly possible.

Doctor LUCAS, of San Francisco, suggested that this opportunity for studying the production of milk was the point at which obstetrics and pediatrics should meet. It was a most vital yet neglected issue. The psychological condition of the mother was an important factor, in which the follow up service could be of great value.

Doctor SCHWARTZ, of New York, said that the distribution as well as the getting of the milk was benefited from the combination of obstetrical with pediatric service out station service, for knowledge



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tent with small wages and gave a better quality of milk.

Doctor ROGERS, of Manchester, urged that adequate laws be advocated to guard against the desertion by the working mother, who left her baby to the bottle that she might return to her employment.

**The Use of Lactic Bacilli Milk.**—Dr. HARRY M. McCLANAHAN, of Omaha, described the preparation of sour milk which should always be made of pasteurized or certified milk, either whole or skimmed, in order that only the lactic bacillus should be left. It should be carefully stirred because at

skimmed milk without disturbance. Infants who were thus disturbed improved upon reduction of quantity or skimming or withdrawing of milk. Such older children did better with little or no milk. Thus he deduced that such infants should always be fed on partially skimmed milk or limited amount since they have this incapacity for fat. This intolerance of fat was associated often with idiosyncracies or dislike for food, probably because of satiety of fat from milk or butter.

Doctor AGAR, of Brooklyn, said that a corollary to this conclusion of the existence of such cases was that there was a larger class in which this intolerance was the result of high fat feeding.

#### SECTION IN NERVOUS AND MENTAL DISEASES.

June 6, 1917.

**Intraspinal Injections in Syphilis of the Nervous System.**—Dr. BERNARD SACHS, of New York, chairman of the section, stated that the advantages of the intraspinal treatment of syphilitic diseases of the nervous system had been grossly exaggerated and that all the claims made for it were no greater than the results which could be achieved by intravenous injections of salvarsan. The intraspinal method was more difficult and more dangerous to administer, was more painful to the patient, and had no advantage over the intravenous method. It had been claimed that by the intraspinal method very marked changes in the cerebrospinal fluid could be brought about, but the same changes could also be achieved by intravenous injection and by the introduction of normal blood serum.



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bottom it would be more sour, owing to the absence of oxygen. Pasteurization should be carried out before treating with the bacilli or the virtue of the bacilli would be lost. It was presumed that they inhibited intestinal bacteria. Their proteins did not make the tough leathery curds of sweet milk. This milk was useful for infants and children recovering from intestinal infection, those who have been badly fed and have a bad digestive condition, those who have disturbance resulting from an acute disease like pneumonia, and those with idiosyncracies of digestion. The gain was not so great for normal infants as with sweet milk. It was a mistake that lactic acid milk could harbor other bacteria.

Dr. L. C. GRIFFITH, of Philadelphia, spoke of the vague use of the term lactic acid milk, which confused buttermilk with whole milk. Skimmed lactic acid milk might be buttermilk in that the churning process might be used. It was of advantage in breaking up the casein.

Doctor McCLANAHAN, in closing the discussion, pointed to the uselessness of giving lactic acid milk if it was not pasteurized.

**The Familial Tendency to Fat Incapacity in Infancy and Childhood.**—Dr. THOMAS S. SOUTHWORTH, of New York, stated that there were many babies who did not tolerate well an excess of fat in cow's milk, and thought it was often an inherited tendency, which appeared in families in more than one case. It had been long known that certain adults have an intolerance of fat as shown in constipation and biliousness, when they could use



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Moreover, a change in the cell count did not necessarily imply an improvement in the patient's condition.

Physiological experiment had shown that the hopes placed upon the intraspinal method were



fallacious. All substances introduced into the cerebrospinal fluid were rapidly absorbed into the venous circulation. We could not hope to cure general paresis because the spirochetes were located in a nonvascular region of the cortex and away from terminal vessels. In tabes the degeneration was so marked that function of impaired parts could not be restored. While the intraspinal method could not be defended on physiological or clinical grounds, the intravenous method safely accomplished satisfactory results, particularly in syphilis of the central nervous system due to vascular changes and in the meningoencephalitic and meningomyelitic types.

Remissions in general paresis were frequent following upon intravenous injections and both in general paresis and in tabes it might be said that the morbid process had been checked or retarded for a considerable period of time. The aim of the future must be to find some substance which was easily soluble, would pass from the blood into the cerebrospinal fluid and nerve tissues, and would neutralize the effect of the invasion of the spirochetes without endangering the life of the host.

**Psychiatry in the Army Service.**—Dr. PEARCE BAILEY, of New York, was given the floor to explain the efforts which were being made to build up under the auspices of the Society for Mental Hygiene a psychiatric service in connection with the present war necessity. Mental breakdown constituted the severest menace of war times. Tuberculosis, syphilis, typhoid, even the casualties of war were in the minority in comparison with the mental breakdown. These, statistically speaking, were the greatest contributors to inefficiency and the question of sizing up the type which would probably break down and an efficient therapy for those who had broken down, these were very practical problems of medicine. Doctor Bailey outlined the need for competent and well trained neurologists and psychiatrists and urged the Section to action in this important matter.

**Psychiatric Teaching.**—Dr. ADOLF MEYER, of Baltimore, emphasized the importance of a knowledge of mental facts in the medical curriculum. Three years was not any too much to teach the facts of psychobiology, a branch of knowledge that entered into every department of life. Its specific applications in the study of human behavior needed special methods of study. These began with the training in making mental examinations and in taking case histories.

Doctor Meyer contended that after the general psychobiological principles were mastered and the student had acquired a technic of examination, he should then devote a year to the careful study of certain cases. These should be gone over not from the standpoint of disease types. Mental medicine was getting away from such academic and dogmatic concepts. These patients should be studied from the actual difficulties which they present. Their reaction formulæ should be grasped not as due to this or that disease, but as constituting this or that failure of adjustment. The purely provisional nature and

pragmatic aspect of what is called a disease in mental pathology was dwelt upon by Doctor Meyer.

**State Organization for Mental Hygiene.**—Dr. OWEN COPP, of Philadelphia, stated that the field of mental hygiene should cover all the duties and activities for promotion of mental health, the prevention and treatment of mental abnormality, the institutional care of the insane, feeble-minded, and epileptic and their supervision in the community. Public agencies for the purpose should be organized under a State board for mental hygiene, superseding boards of lunacy or insanity. The State should be divided into districts in charge of a district board for mental hygiene responsible for all local activities in this direction under the supervision and general policies of the State board. Each district should vary in extent and location with centres of population and their prospective growth and needs and should have a psychiatric hospital with preventorium, outpatient mental clinic, social service and educational bureaus, industrial colonies and family care system for harmless and useful patients and an infirmary for feeble, aged, and intractable patients suitably classified. Harmony and uniformity of methods should be effected through regular conferences of the State board with district boards and superintendents. There should be efficient supervision through experts, a psychiatrist in the medical field, a director of laboratories and research, a chief of social service, etc. Strict economy and voluntary cooperative purchasing of supplies were recommended.

**Influence of Labor upon the Brain Development of the Child.**—Dr. ARTHUR STEIN, of New York, announced the following conclusions: 1. Prolonged unassisted labor was responsible for much avoidable harmful compression of the infant's skull in the birth passages during the period of labor. 2. The damage sustained by the child's brain and meninges might and often did affect intellectual growth, resulting in the production of all degrees of mental impairment, from feeble-mindedness and imbecility to absolute idiocy. 3. The connection between obstetrical traumatism and nervous disease in the widest sense of the term had not received sufficient consideration in the past on account of the nonexistence of a systematic cooperation between maternity hospitals and institutions for feeble-minded children. 4. In the interest of more efficient control of preventable idiocy a better cooperation in form of more detailed records of the conditions during labor and of the subsequent mental development of the children was urged. 5. A better understanding between obstetricians and neurologists would help to diminish the number of imbeciles and idiots. 6. The obstetrical forceps, correctly applied, was a beneficent weapon against the abnormally prolonged passage of the child's head through the pelvic canal. 7. Pituitrin in small doses, two to three minims, hastened the course of labor in many cases, rendering the application of the forceps unnecessary and safeguarding the contents of the infantile skull.

**The Psychoneuroses.**—Dr. THEODORE DILLER, of Pittsburgh, studied 1,000 consecutive private cases of nervous disease beginning 1894 and 1,000

most recent cases and concluded that it was still worth while to make differential diagnosis between the various psychoneuroses, but that this was often difficult and sometimes impossible. He was greatly impressed by the fact that underlying many of the psychoneuroses there was to be discovered constitutional inferiority. This should always be sought for. Neurasthenia had very largely disappeared, but psychasthenia and constitutional inferiority and undifferentiated psychoneuroses had appeared in its stead. So despite the fact that neurasthenia had largely disappeared, the whole group of psychoneuroses had increased, especially if dementia præcox, even in its minor degrees, were allowed in this classification.

**Medicolegal Problems of the Traumatic Neuroses.**—Dr. EDWARD E. MAYER, of Pittsburgh, after discussing the types comprised under the term of traumatic neurosis, and considering the various viewpoints advanced concerning the war neuroses, made the following points: 1. The existing method of jury trials in which biased opinions carried as much weight as those of more careful and competent physicians was unfair. A medical commission reporting directly to the court was advocated. 2. The medical profession should attempt to prevent physicians being retained by attorneys upon contingent fees. 3. Objective symptoms only should be utilized in giving opinions in court. 4. Physicians should be allowed better opportunities for the examination and observation of persons than they were allowed at present if they were not retained by the plaintiff. 5. Hypothetical questions should always be answered with reservations in case the physician had personal knowledge that they did not contain all the truth. 6. General statistics were of no value in the prognosis of a court case. The future of each psychoneurotic patient must be determined according to his social habits, work, intelligence, emotional complexes, etc., as well as according to the kind of accidents and symptoms produced. 7. Physicians should never consider traumatic neuroses in general as an irrecoverable disease. 8. The court decision concerning compensation would be improved if its medical representative from the entry of the suit were notified and asked to make personal observation of the plaintiff at variable intervals before the trial.

**Psychoses Other Than Parietic Dementia in Syphilitic Individuals.**—Dr. ALFRED GORDON, of Philadelphia, considered two groups of cases: five cases with secondary manifestations and eighteen cases during the tertiary period. The first group presented a symptomatology which was ordinarily found in toxicinfectious psychoses. Confusional and delirious states were the chief symptoms and they were amenable to treatment. In the second group, Korsakoff's psychosis without the polyneuritis, manic depressive insanity, paranoid type of dementia præcox and cerebral syphilis were considered. In Korsakoff's form neuritis and pronounced somnolence were absent. The six cases of manic depressive psychosis led to the following conclusions: Although the subject of direct relationship of syphilis to the alternating psychosis was not definitely established, nevertheless there were great presump-

tions in favor of such a relationship, particularly in cases in which hallucinations occurred. As to the relationship of syphilis to dementia præcox his three cases showed that the patients were potential præcox men who would have manifested the disease in spite of syphilis, but in whom the syphilitic infection introduced certain modifications. With regard to two cases of melancholia it could not be asserted with any degree of definiteness that syphilis *per se* was capable of creating the characteristic picture of melancholia. Several cases were described in which considerable difficulty was experienced in differentiating syphilis of the brain from paresis. An analysis of the cases tended to show that while the mental disturbances during the secondary stage of syphilitic infection could be considered with a great degree of certainty as directly dependable upon syphilitic toxins, the same degree of certainty could not be entertained with regard to a direct relationship of psychosis developed during the tertiary period of syphilis. In the light of present knowledge it was not justified as yet to claim for syphilis the ability to create *per se* the well established forms of insanity which were observed without a syphilitic infection. On the other hand the possibility of psychoses being the result of syphilis could not be totally rejected.

#### SECTION IN GENITOURINARY DISEASES.

June 6, 1917.

**Chairman's Address.**—Dr. HUGH CABOT, of Boston, being in France, this was omitted.

**Treatment of Chancroids.**—Dr. F. W. ROBBINS and Dr. F. C. SEABURY, of Detroit, divided chancroids into four varieties: soft, miliary, elevated, and phagedenic. The elevated variety was apt to be confused with the true syphilitic chancre. It developed nine to twenty-one days after exposure, was not undermined, was resistant to treatment, and lasted four to eight weeks. The phagedenic type complicated both the hard and soft chancres. McDonough gave another variety, the serpiniginous, which was usually seen in the tropics and was very resistant to treatment. Treatment of all varieties was unsatisfactory, unless they were seen early, when almost any antiseptic would clear them up. In fact, sixty per cent. healed in four to eight weeks without any treatment. The early cases might be treated with calomel if not on the exposed surfaces, and by black wash if they were. The severe cases, if seen early, might often be destroyed by nitric acid, zinc ionization, and argyrol crystals.

The most satisfactory treatment was the application of ten per cent. cocaine followed by twenty-five per cent. copper sulphate which was left on for three to four minutes, then dried off and a wet dressing applied. The surface of the ulcer must be carefully curetted with a swab on an applicator before the application of the copper. Sixty cases were treated by this method with 100 per cent. cures. After the application of the copper a short high frequency spark was applied with a glass electrode which had a tapering point; this was kept up for one to three minutes. The surface changed to a greenish gray under the spark and

then a dressing was applied and the treatment repeated in two days if necessary.

Dr. NOAH E. ARONSTAM, of Detroit, stated that he preferred equal parts of phenol and iodine in such cases and the use of combined staphylococcus vaccines.



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in Surgery, General and Abdominal.

Dr. G. G. SMITH, of Boston, told of good results with the actual cautery and Dr. BARRINGER, of New York, preferred argyrol crystals after cocaineization.

**Clinical Considerations of Verumontanum Disease Based on Histology.**—Dr. ANTON G. RYTINA, of Baltimore, carefully described the histology of the verumontanum and stated that its removal had no effect on ejaculation and did not produce regurgitation of semen. It contained no elastic or erectile tissue, and therefore could have no erectile function as had been long supposed. Lantern slides bore out this statement as to the histological structure.

Doctors HARPSTER, CROSS, TOWSLEY, BUERGER, BAKER, and HERBST agreed that verumontanum disease was usually secondary to infection in the prostate and seminal vesicles which should first be cleared up before treating the utricle.

**External Urethrotomy and Seminal Vesiculotomy Combined in a Single Operative Procedure.**

—Dr. EUGENE FULLER, of New York, in this paper called attention to a class of cases wherein a serious lesion of the seminal vesicles coexisted with a like lesion of the deep urethra. Acute or chronic systemic sepsis, together with complete or threatened retention, were the usual indications demanding surgical interference. In the past operative interference in these cases had been directed toward bladder drainage coupled perhaps with an attempt to repair urethral lesion, the seminal vesicles being ignored. This had failed because septic foci connected with the seminal vesicles had not been

eliminated. The author related his experience in trying to manage these conditions by resorting first to seminal vesiculotomy combined with his post-prostatic cystotomy procedure, and then later at a subsequent operation repairing the urethra by an external urethrotomy. The objections to this procedure, which were enumerated, led him to the combination operation at one sitting. The results from this procedure were very satisfactory and radically curative in a considerable number of cases. The combined operation necessitated change of position on the operating table. First there was the knee chest position in which the seminal vesicles were exposed. Then the patient was changed to the lithotomy position for the external urethrotomy. Sometimes to adjust drainage tubes and packing it was deemed advisable to change back again from the lithotomy to the knee chest position. Detailed histories of four clinical cases were given. In conclusion stress was laid on the value of the method and the fact that it relieved a class of sufferers who had hitherto been sadly neglected.

**Genitourinary Moving Pictures.**—Dr. EDGAR G. BALLENGER, of Atlanta, exhibited a series of moving pictures taken for teaching purposes in the Atlanta Medical College, and strongly urged the value of movies in teaching medical students. There was a wide field of usefulness for moving pictures in teaching medicine. A little care and ingenuity in the preparation of these movies would enable the student to grasp essential facts and even details that generally put him to sleep when he attempts to study them. The correlation of cause, effect, and the remedy could be made very impressive. Bacteriology, histology, pathology, many things in physiology, chemistry, as well as a large part of medicine and surgery could be shown to great advantage in motion pictures. The mental pictures of organisms, their morphological and cultural characteristics, the gross and microscopic, pathological lesions produced, the symptoms, and the remedies or operations, if shown in well taken moving pictures would greatly assist students in obtaining a comprehensive grasp of medicine. Doctor Ballenger had taken 5,000 feet of moving pictures, but showed only about 1,000 feet, which included difficult pictures to take, such as cystoscopic views of bladder lesions and operative measures such as fulguration of tumors, removing calculi from the lower end of the ureter, catheterizing ureters, etc. There were also shown pictures of the *Spirochaeta pallida* as seen by the dark field illumination, and of spinal fluid being withdrawn and its abnormal cell count. He was of the opinion that in years to come medical colleges would take as much pride in their movie equipment as they now take in their laboratories.

#### SECTION IN PATHOLOGY AND PHYSIOLOGY.

June 6, 1917.

**The Influence of War on Medical Science.**—Dr. JAMES EWING, of New York, the chairman of of the Section, said that the influence of medical science on the conduct of war had been strikingly illustrated in the last two decades. On the other hand, the influence of war upon medical science was less frequently considered, but the present great war was likely to exert a far reaching influence on medi-



cine. The last war conducted without the aid of medical science was our Spanish-American War, where the troops in Cuba were more than decimated by disease. Typhoid infection reached such a degree of virulence as to prove fatal in seven to ten days. The Japanese conducted their war with the aid of medical science, and with nearly complete elimination of infectious disease as a cause of death. During the present war in Europe, until recently medical control had done much, but now the effects of undernutrition were making themselves evident in the prevalence of the great white plague and smallpox. Doctor Ewing thought that in this war the rules of sanitation, prevention and, nutrition, established in the laboratory, would be more important than the cure of established disease.

Another effect of the great war was the stimulus given to medical literature by the shutting off of foreign journals. Since 1914, several new journals have appeared, mostly from laboratory circles. The war should also increase the amount of postgraduate and undergraduate training in our schools, and if this was to be accomplished, there must be firm resistance against suspending scientific activities in universities on account of war demands. Doctor Ewing closed his address by saying that pathology and physiology must in the future receive a full share of material resources and moral support, for they were not sciences which were selfsupporting; they owed their life to the intellectual leaders in medicine, and were a measure of the loyalty which physicians held for their profession.

**Pigmentation in the Hind Gut: Its Clinical Significance.**—Dr. W. LANDRAM McFARLAND, of New York, said that this condition had not received particular attention in this country. Virchow, in 1847, was the first to report it. He was followed by Williams, Pitt, Rolleston, Grawitz, Pick, Lynch, Solger, and others. He explained the theories of etiology held by these authors. He went on to explain the nature of the pigment, which was generally considered not to be a blood pigment. It resembled a melanin, and some considered it of the "*abnutzungs*" class, between melanin and fat containing pigments. The color was gray black or brown, or might have the "toad's back" appearance described by Pick. The exogenous pigments were usually salts of silver or mercury and were readily accounted for by the patient's clinical history. The endogenous pigments were a more difficult problem. According to Aschoff, they were divided into hemoglobin pigments and autogenous pigments. The investigation of pigment within the intestinal wall was based on three lines: 1. Solubility of the pigment. 2. Its iron content. 3. Ability to take dyestuffs before and after treatment with acids, alkalies, and other chemicals. Doctor McFarland said it was only possible to conjecture how materially normal functions of the mucosa were retarded by the presence of pigment, but a study of the position of the pigment cells would indicate that their interference might be considerable. He said from his study of the subject that he had come to the following conclusions: 1. That in true melanosis of the hind gut, the pigment was derived not from blood pigment, but was a substance between true melanin and fat pigment. 2. That this pigment

was probably formed by an enzyme, which, manufactured by the intestinal contents, acted on the intercellular substance of the stroma of the intestinal mucosa. 3. That pigment containing cells were derived from plasma cells of the stroma of the intestinal mucosa. 4. That intestinal pigment was pri-



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marily an accompaniment, and *not* a cause of chronic obstipation. 5. That the clinical significance of intestinal pigmentation concerned the duration and intensity of obstipation, and, while a contributing influence in established obstipation, was not an initial etiological factor.

**Colloidal Gold Chlorid Test.**—Dr. J. H. BLACK and Dr. R. B. McBRIDE, of Dallas, Tex., discussed the nature of the solution and its application to diseases of the nervous system. A satisfactory water might be obtained by a single distillation from a copper tin lined still. This could be kept over one month in clean glass flasks. Stock solutions of reagents might be used. Protected solutions might be avoided by using clean glass and using this glass for no other purpose. A simple technic for the preparation of the solution was described with a discussion of the changes occurring. It was reported that a goldsol reaction typical for syphilis is nearly constant in cases of syphilis of the central nervous system. The reaction was more delicate than the blood or spinal fluid Wassermann and more reliable than pleocytosis and globulin content. The test was the most reliable for diagnosis and the best guide for prognosis during treatment, and probably tended to become negative in a regular and constant order. Known paretics always gave a paretic curve, although a paretic curve might be obtained in other conditions of central nervous system syphilis. There was no provocative goldsol. The presence of red blood cells or plasma in the spinal fluid often vitiated the result of the test.

SECTION IN PREVENTIVE MEDICINE AND PUBLIC  
HEALTH.

JUNE 6, 1917.

Dr. OTTO P. GEIER, of Cincinnati, was in the chair. The attendance was notably large.

Dr. H. M. BRACKETT, of St. Paul, Minn., presented resolutions protesting against the action of the Association in restricting the time given to this section. The following resolutions were adopted unanimously and were placed in the hands of Dr. H. M. Brackett, of St. Paul, Minn., Dr. W. S. Rankin, of Raleigh, N. C., and Dr. W. C. Rucker, of Washington, D. C., to present to the House of Delegates:

Whereas, Preventive medicine is of growing importance;

Whereas, The Section in Preventive Medicine in the American Medical Association brings many who are interested more especially in public health work to its meetings;

Whereas, The treatment of special subjects relating to preventive medicine requires concentration as to time;

Therefore be it Resolved, That the Section in Preventive Medicine through its representatives in the House of Delegates hereby requests that its work at the annual sessions of the American Medical Association be extended to six units, and that it be permitted to hold two meetings each day until its work is completed.

**Adequate Medical Service of the Future.**—Dr.

OTTO P. GEIER, of Cincinnati, called attention to the fact that we had passed for all time beyond the stage of the individual and personal relationship of family physician and patient to one where the community had to safeguard itself against any abuse of this circumscribed relationship, and demanded collective action in matters of health for the benefit of all. The concentration of population in cities had developed problems beyond the control of the private physician. Had the medical profession kept pace with society in its realization of the necessity for community thinking and community action? Were we thinking in terms of the mass, and adjusting our work to the new social needs? Did we actually appreciate the full meaning of the fact that every social disorder had a medical aspect? It was important to consider three well defined tendencies: 1, higher standards of private practice by refinement in diagnosis and treatment in group practice; 2, higher standards of public health practice, emphasizing school dispensaries; 3, development of industrial medicine, the new specialty. The proponents of social insurance had set forth the direct relationship between poverty and disease, but in their haste to legislate and their intolerance of further discussion, they had not aken time to write into their instrument the fundamentals that attack disease and thereby prevent poverty. As the proposed health insurance bill revolutionized the relationships of the physician, was it not time therefore that physicians should decide what that future should be? In strong contrast to compulsory insurance the industrial dispensary plan insured constant watchfulness over the health of the worker, and brought to light economic pressure for the elimination of industrial hazards. Coincidentally the worker's wage was raised because such care increased his capacity for work, and, therefore, still further reduced the necessity for charity in one form or another. The industrial dispensary was a new arm of the health department and made possible preventive

medicine such as had never yet been dreamed of. Accurate data on morbidity might be secured by this means. Absence from work and economic question was reduced, and it had been shown that by this means that loss of time through sickness might be reduced by one half without charge to anyone but the employer, who would gladly spend the money necessary because it was economically sound for him to do so. This type of socialized medicine was intensively preventive, intensively democratic; it discovered disease in its incipency, it attacked directly such problems as bad housing, venereal disease, alcoholism, and tuberculosis, and therefore made a fundamental contribution to social welfare. In comparison the proposed sickness insurance bill was merely a palliative and tended actually to cover over and hide the various social ulcers. It appeared that no social progress in matters of health could be made which was not preceded by progress in the practice of medicine. The medical profession, however, would be limited in its progress unless it recognized the close relationship between social work and medical work. These must be coordinately developed. Private health practice and public practice must be improved. The knowledge of the prevention of disease and its diagnosis and cure must be advanced. Higher personal and ethical standards must prevail. This better day would be hastened by a more general adoption of the group practice plan. More men must fit themselves for the distinct specialty of industrial medicine. The supervision of schoolchildren and preschoolchildren should be extended through the establishment of school dispensaries. These methods, financially sound for the profession and the public together, would constitute an adequate medical service and be a forward step in the ultimate socialization of medicine. Within the profession there should be a "clean up and brush up" campaign. Our own house should be put in order.

LEE K. FRANKEL, of New York, spoke as a layman concerning social insurance. Probably no social problem had had wider discussion. From the insurance standpoint the difficulty and error of the discussion of social insurance lay in a mistaken conception of the nature of insurance. Insurance was not prevention but indemnity from loss. Any scheme for health insurance implied replacing of waste lost through sickness. This meant a study of morbidity and the cost of sickness and cooperation of the physician in determining the extent of disability. Both abroad and in this country the cause of all dissension lay in a misconception as to the function of the physician in relation to this question. Similar scandals in this country should be avoided. Medical treatment was a matter entirely apart from the matter of cash payments. The basis of the employment of the physician was a matter for the profession itself to decide.

Dr. JOSEPH GOLDBERGER, of Washington, D. C., remarked that health insurance was a great incentive to the prevention of disease, that insurance companies found that it was a matter of dollars and cents to prevent disease, but that it would become the function of the general public to determine the whole matter unless the profession itself became generally awake to the importance of social insurance.

## SECTION IN SURGERY, GENERAL AND ABDOMINAL

June 6, 1917.

**Surgery of the Spleen.**—Dr. WILLIAM D. HAGGARD, of Nashville, Tenn., chairman of the section, said that he wished to draw attention to the significance of the pathological conditions of the spleen, especially in the infectious conditions like typhoid fever, tuberculosis, syphilis, etc. It was well known that the spleen was enlarged in these diseases and played a part in the infectious process. In pernicious anemia and the leucemias the spleen was involved and in some unknown way influenced the destruction of the red blood cells, and the pathological changes in the bone marrow. In hemolytic jaundice the spleen possibly was the chief factor of the toxic destruction of the red cells. He said that considerable confusion existed regarding the pathological conditions of the spleen and urged that more study be given to these cases. He made a plea for early operation before the underlying toxic or infectious processes had gone on to an advanced stage. It was in the early predestructive cases that the best results could be obtained by splenectomy.

**Surgical Significance of Gastric Hemorrhage.**

—Dr. DONALD C. BALFOUR, of Rochester, Minn., said that hematemesis might be due to primary lesions in the stomach or duodenum or to certain diseases and infections which were not associated with recognizable changes in the gastric mucosa. The surgical significance of hemorrhage in the first group was well appreciated and the treatment of hemorrhage due to ulcer concerned, first, those cases in which there was a history of bleeding and, second, those cases in which active bleeding was taking place. In the first group it had been the experience at the Mayo clinic that gastroenterostomy alone was liable to fail in the sense that hemorrhage would quite possibly occur later, so that radical treatment of such ulcers was particularly advisable. In cases in which active bleeding was going on, unless there were very positive indications for operation it was better deferred until it could be conducted in the interval between hemorrhages. In the second group there were many conditions which might be associated with hematemesis: hepatic cirrhosis, splenic anemia, various toxic foci in the abdomen and elsewhere might be the apparent cause of the bleeding as well as the mysterious group in which no recognizable pathological condition could be found.

There was gradually accumulating evidence that the spleen was more or less responsible for certain types of hepatic cirrhosis, and that splenectomy, if carried out early enough and if the spleen was enlarged, would probably prevent the progress of further liver changes. The most interesting group were those cases, for example, of gallbladder infections and appendicitis in which there was a marked gastric reflex and in which hematemesis had occurred. That these foci were directly responsible for hematemesis had been repeatedly proved by the results of operations. It was, however, more than probable that these various foci produced the bleeding from the gastric mucosa by first setting up

changes in the liver which were toxic in character and were due to the constant transference of toxins through the portal circulation to the liver. In many of the hemorrhages of an obscure character, the liver should be looked upon as probably the medium through which the cause acted and inasmuch as the spleen was so closely related to the liver it was probable that it was also a large factor in the problem.

**Fat Transplantation.**—Dr. ALLEN B. KANAVAL, of Chicago, presented a report of some results of the transplantation of fat in more than sixty cases. The work covered various forms of contracture, such as those caused by scar tissue about burns and injuries where transplants were used to soften the scar about the burned and injured areas, and contractures in sclerosis, wry neck, and Dupuytren's contraction. Transplants were also made into breasts for cosmetic purposes. He also reported the results of experimental investigations in these various conditions, including joints and bone cavities. General conclusions were that wherever there was a fair blood supply in the surrounding tissue, fat could be transplanted and could be shown to live in this new position; that there was little danger of infection, but that there was some shrinkage of the transplant as time went on, although the transplant did not completely disappear.

**The Problems of Unnecessary Operations and of Incompetent Surgeons.**—Dr. ARTHUR D. BEVAN, of Chicago, said that the problem of surgical therapy and incompetent surgeons should be fully investigated by the association. This should be done by organized effort and without sensationalism. The conditions existing demanded scientifically trained and honest men in order to put surgical practice on a scientific basis. The investigation should be made in a similar way to the work of the council on drug therapy. At present there were glaring defects and the status of surgical therapy was not firmly established. Many unnecessary operations were performed by incompetent men. This condition was due to three causes, ignorance, bad judgment, and dishonesty. Unnecessary operations could be avoided by improved methods of diagnosis and incompetent men could be eliminated by education and just criticism.

Dr. JAMES MOORE, of Minneapolis, said that the University of Minnesota, through the generosity of the Mayos, had established fellowships in surgery. He realized that education was only one way of attacking the problem and that honesty was not a matter of education. The fellowships were established in the hope of helping in the work of advancing the science of surgery and of giving competent men a scientific training. The fellowships lasted for three years and the men were given an opportunity for research work as well as clinical experience.

Doctor DEEVER, of Philadelphia, confirmed the remarks of Doctor Bevan and offered a resolution to appoint a committee of ten men to report to the section at their next annual meeting.

(To be continued.)



## News Items

**The Harriman Fund for Orthopedics.**—Yale University has received from Mrs. Edward H. Harriman, of New York, bonds yielding \$4,600 a year, for the purpose of establishing the Harriman Fund for Orthopedics.

**Medical Department Needs Funds for War Dogs.**—The Medical Corps of the U. S. Army is anxious to add dogs to its equipment, but there are no funds available for the purchase and care of these animals. The use of dogs for both sentry duty and searching for the wounded has proved satisfactory in Europe.

**German Measles at the Brooklyn Navy Yard.**—It is reported that during the last three days of May twenty cases of German measles occurred in the Brooklyn Navy Yard. The patients have been moved to the Kingston Avenue Hospital for Contagious Diseases, the city having offered the use of its hospitals to the government.

**Twelve Women Receive the Degree of M. D.**—The annual graduating exercises of the New York Medical College and Hospital for Women were held on Friday evening, June 1st. The degree of M. D. was conferred upon twelve young women, all of whom have offered their services to the government and have volunteered for any work that is needed to be done.

**A Reserve Corps for the Public Health Service.**—Representative Adamson, of Georgia, has introduced into Congress a bill to establish a reserve corps of the United States Public Health Service and to coordinate therewith and utilize the State, county, and municipal health organizations. This corps is to be used in connection with the sanitation of ports and of places used for the mobilization of industrial and military forces.

**Italian Medical Association.**—The June meeting of this association will be held next Tuesday. The principal feature of the program will be a paper by Dr. Sante Naccarati, secretary of the association, on The Modern Conception of the Psychoanalytic Method and Its Application to the Functional Neuroses, and Particularly to Psychasthenia and Hysteria; Dreams and Their Diagnostic and Therapeutic Value. Two cases will be presented.

**Doctor Goldthwaite's Unit Reaches England.**—Dr. Joel E. Goldthwaite, of Boston, and his unit of twenty orthopedic surgeons arrived safely in England last week. He will confer with Major Robert Jones, one of England's leading orthopedic surgeons, and after an inspection of the orthopedic hospitals in England and on the continent will return to Boston. The surgeons in his unit will be placed in hospitals where their services are most needed.

**Doctor Satterthwaite Honored.**—At the annual banquet of the American Therapeutic Society, held on the evening of June 2d, Dr. Thomas E. Satterthwaite, for many years active in the work of the society, was presented with a loving cup by the members of the society, as "a token of esteem and in recognition of his faithful and valuable services to the society and to the medical profession." The presentation was made by Professor Oliver T. Osborne, of Yale University.

**Civil Service Examination for Physician (Male).**—The United States Civil Service Commission announces an examination on July 10th, open to men only, to fill the position of physician in the Indian and Panama Canal Services, acting assistant surgeon in the Public Health Service, surgeon and assistant surgeon in the Coast and Geodetic Survey, and in positions requiring similar qualifications in other branches of the service. For full information regarding the examination and for the proper application blanks address the Civil Service Commission, Washington, D. C.

**Army Camp Sanitation.**—Colonel Reynolds, in charge of the newly created Medical Division of Sanitary Inspection, War Department, has received offers of assistance from a number of sanitary engineers in civil life. The work of the division, however, is entirely within the scope of the army, and at present it will be impossible to make use of men outside the service. The division will have charge of all sanitary matters pertaining to service in the field, and all sanitary appearances. Colonel Reynolds plans to have sanitary reports on the condition of each camp once a month or oftener.

**Doctor Harriss Gives Yacht to the Government.**—The steam yacht *Surf*, owned by Dr. John A. HARRISS, a retired physician of New York, was formally turned over to the Navy Department as an ambulance ship on May 27th. In giving this 400 ton vessel to help the Red Cross department of the Navy, Doctor Harriss stipulated that he be permitted to serve on board her and to pay all the expenses while she is in the service of the government. The *Surf* has berths for twenty-five patients and can accommodate 100 more on her decks.

**Civilian Committee Appointed to Investigate the Solace.**—Secretary Daniels has named Dr. William H. Welch of Johns Hopkins University, Dr. Abraham Flexner, and Mr. Nathan Strauss, of New York, as a special committee to investigate the charges of neglect in connection with the operation of the U. S. S. *Solace*. Surgeon General Braisted is conducting an investigation, but it was thought advisable by the Navy Department to have a report on existing conditions from experts not connected with the navy.

**Doctor Blake Honored by French Government.**—President Poincaré made Dr. Joseph A. Blake a member of the Legion of Honor at the formal opening of the American Red Cross Hospital of Paris, on Thursday, May 21st, and thanked him in the name of France for his valuable services since the beginning of the war. The hospital, which has 380 beds and is admirably equipped, was organized by Doctor Blake and is maintained by the American Red Cross Society. Doctor Blake is surgeon in chief, and he has five assistant surgeons and will have fifty nurses when the staff is complete. One hundred wounded soldiers are already under treatment in the hospital.

**Three New Army Hospitals.**—Orders were issued on June 1st for the establishment of three new base hospitals, one each at Baltimore, Detroit, and New York. Base Hospital No. 18, to be established at Johns Hopkins Hospital, Baltimore, will be under the command of Major Charles C. Billingslea, with Captain James E. Baylis as his adjutant. No. 15 will be established at the Roosevelt Hospital, New York City, and will be under command of Major Haywood S. Hansell, with Captain John H. Trinder as his adjutant. No. 17 will be established at the Harper Hospital at Detroit, with Captain Henry C. Coburn, Jr., commanding and Captain Thomas H. Johnson as his adjutant.

**Medical Camps Opened.**—The War Department authorizes the following statement:

"Two camps in which men from the Medical Reserve Corps will be trained in military medicine opened on June 1st. These camps are at Fort Riley, Kans., and at Fort Benjamin Harrison, Ind. A third camp at Fort Oglethorpe, Ga., will open on June 15th. The three camps will accommodate 700 men and the course of training will be three months at the maximum. The doctors will be trained first of all in the duties of the enlisted men of the Medical Corps so that they may take up as soon as possible the business of training recruits. The second month will be largely devoted to theoretical training in matters pertaining to military medicine, and field practice will be given in the last month. In case of immediate emergency it will be possible to dispense with the last month of training, or even the second if the need is great, but the first month of training is regarded as essential.

**American Medical Editors' Association.**—Dr. George W. Kosmak, of New York, editor of the *American Journal of Obstetrics and Diseases of Women and Children*, was elected president of this association at the annual meeting held in New York Monday and Tuesday, June 4th and 5th. Other officers were elected as follows: Dr. Robert M. Greene, of Boston, editor of the *Boston Medical and Surgical Journal*, first vice-president; Dr. Seale Harris, of Birmingham, Ala., editor of the *Southern Medical Journal*, second vice-president; Dr. Joseph MacDonald, of New York, managing editor of the *American Journal of Surgery*, secretary and treasurer, a position which he has held continuously for fifteen years. The society voted \$500 from its funds with which to buy liberty bonds, the first medical society on record to take such a step. The society also passed a resolution pledging their full aid and support to the Surgeon General's Office in securing medical men for the Officers' Reserve Corps. A special committee was appointed for that purpose.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, June 11th, County Medical Society (board of directors); Tuesday, June 12th, Laryngological Society, Pediatric Society; Wednesday, June 13th, County Medical Society; Thursday, June 14th, Pathological Society; Friday, June 15th, Northern Medical Association.

**Examination for Medical Inspector of Schools Open to Women.**—The New York State Civil Service Commission announces that the examination for assistant medical inspector of schools, Education Department, which is to be held on June 23d, is open to women as well as to men and to residents and nonresidents of New York State. The salary is \$3,000 a year.

**Nebraska State Medical Association.**—The following officers were elected at the annual meeting of this association, held in Lincoln, May 9th and 10th: President, Dr. C. L. Mullins, of Broken Bow; first vice president, Dr. Lucien Stark, of Hartington; second vice president, Dr. A. W. Montgomery, of Stella; secretary, Dr. Joseph M. Aiken, of Omaha; treasurer, Dr. A. S. von Mansfelde, of Omaha; librarian, Dr. W. P. Wherry, of Omaha.

**Rhode Island Medical Society.**—Dr. John Champlin, of Westerly, was elected president of this society, at the annual meeting held in Providence on May 23d, succeeding Dr. E. D. Chesbro, of Providence. Other officers were elected as follows: Dr. Gardner T. Swarts, of Providence, first vice president; Dr. John M. Peters, of Providence, second vice president; Dr. John W. Leech, of Providence, secretary; Dr. W. A. Risk, of Providence, treasurer.

**American Laryngological, Rhinological, and Otolological Society.**—Dr. George L. Richards, of Fall River, Mass., was elected president of this society, at the twenty-third annual meeting held in Atlantic City, N. J., May 28th, 29th, and 30th, succeeding Dr. Thomas J. Harris, of New York. Other officers were elected as follows: Dr. W. H. Haskins, New York, secretary, and Dr. Irving Day, Pittsburgh, treasurer. The three new members of the Executive Council are Dr. Thomas J. Harris, New York; Dr. F. P. Emerson, Boston, and Dr. L. W. Deen, Iowa City.

**Philadelphia Physicians Receive Commissions.**—The following commissions have been given in the Medical Officers' Reserve Corps: Major: Dr. Joseph McFarland, Dr. Arthur W. Yale, Dr. Melvin M. Franklin. Lieutenant: Dr. William B. Cadwalader, Dr. Robert A. Schless, Dr. Karl D. Winter, Dr. William Drayton, Jr., Dr. James Harold Austin, Dr. Harry Stober Carmany, Dr. Charles J. Cole, Jr., Dr. Leon Felderman, Dr. Charles A. Coll, Dr. Lewis H. Adler, Jr., Dr. John P. Bethel, Dr. Edward W. Collins, Dr. Charles S. Abbott, Dr. Charles H. Moore, Dr. Jacob E. Ellinger, Dr. Francis S. Ferris, Dr. Allen G. Beckley, Dr. Joseph P. Burns, and Dr. Edwin Shoemaker.

**Training for Volunteer Nurses' Aides.**—The Committee on Training of Volunteer Nurses' Aides recommends that the plan of training for volunteer nurses' aides now given in base hospitals under the auspices of the Red Cross Nursing Service be accepted and extended to such other hospitals as may be approved by the Red Cross for the purpose. The plan of service calls for a short course in theory covering fifteen periods of two hours each, followed by a course of training in practical work in hospital wards covering twenty-four periods of three hours each, but it is recommended that the period of practical work be increased from seventy-two hours to a maximum of 120 hours. The adjustment of the time in which these courses may be completed should be left to the hospital selected.

**Great Lakes Naval Training Station Criticized.**—The Illinois State Council of Defence has received a report from Dr. Frank Billings, a member of the council, severely criticizing the inadequacy of the facilities afforded at the Great Lakes Naval Training Station. The report states that the station is well prepared to care for 1,500 recruits, but does not afford proper sanitary accommodations for the present population of 8,200 men. While the overflow can be accommodated in tents without great hardship, the lack of adequate water supply and drainage and of isolation hospitals are serious matters which should be amended immediately. The officer commanding has requested funds for these purposes but they have not been provided by congress. The report has been referred to the President and to congress.

**National Board of Medical Examiners.**—The second examination given by this board will be held in Washington, D. C., on Wednesday, June 13th. The following States will recognize the certificate of the National board: Colorado, Delaware, Idaho, Iowa, Kentucky, Maryland, North Carolina, New Hampshire, North Dakota, and Pennsylvania. Favorable legislation is pending in twelve other States. A successful candidate may enter the reserve corps of either the army or the navy without further professional examination, if his examination papers are satisfactory to a board of examiners of these services. Application blanks and further information may be obtained from the secretary of the board, Dr. J. S. Rodman, 2106 Walnut Street, Philadelphia.

**Personal.**—Dr. Anthony Bassler, of New York, has been elected professor of gastroenterology at the New York Polyclinic Medical School and Hospital.

Dr. J. Bronsenbrenner has resigned his position of director of the research laboratories of the Western Pennsylvania Hospital in Pittsburgh, and has accepted the position of associate professor of hygiene at the Harvard Medical School.

Dr. M. B. Heyman, for many years assistant superintendent of the State Hospital for the Insane at Central Islip, Long Island, and later medical inspector for the State Hospital Commission, has been appointed superintendent of the Manhattan State Hospital, on Ward's Island, succeeding the late Dr. William Mabon.

**German Patents May Be Suspended.**—A movement to suspend German patents has been inaugurated by the introduction of a bill into Congress which provides that licenses to manufacture in the United States under patents held by German citizens may be granted for the term of the war with Germany, with the understanding that the licensee shall pay a royalty of 5 per cent. upon the gross value of the products manufactured, which shall be held by the United States Government for disposition after the war. Where licensees can prove that they have invested considerable sums in preparing to manufacture under German patents the license may be continued at the discretion of the government even after the close of the war. This measure, if enacted, would include a number of medicinal preparations.

**American Association for the Control of Syphilis.**—This association was organized at a meeting held in Cincinnati, May 23d and 24th, its object being the promulgation of knowledge of syphilis among medical men, medical institutions, boards of health, hospital boards, dispensary attendants and boards, and other organizations having the care and treatment of syphilis. Plans are being made to collect standardized statistics from the various institutions now treating syphilis, to further the establishment of free clinics and dispensaries for the diagnosis and treatment of syphilis, and to encourage the more comprehensive teaching of syphilis in medical schools. The association will operate through a national body and local branches in various cities, probably in close cooperation with the American Social Hygiene Association. The following officers were elected: Dr. M. F. Engman, president; Dr. J. F. Schamberg, vice president, and Dr. H. E. Kleinschmidt, secretary and treasurer.

**Changes in Stations and Duties of Medical Officers.**—First Lieutenant Harry B. Schmidt, Medical Officers' Reserve Corps, now at the Army Medical School, this city, is relieved from active duty in the Medical Officers' Reserve Corps and is authorized to proceed to his home without expense to the government.

Major Percy M. Ashburn, Medical Corps, is relieved from further duty at the Walter Reed General Hospital, Takoma Park, D. C., and is assigned to station at Fort Benjamin Harrison, Ind.

Major Frederick F. Russell, Medical Corps, is relieved from further duty with the Panama Canal and will repair to Washington, D. C., and report in person to the Surgeon General of the Army for instructions.

First Lieutenant Charles A. Waters, Medical Reserve Corps, is relieved from duty at Fortress Monroe, Va., and will proceed to his home, and upon arrival there will report by telegraph to the Adjutant General of the Army. Lieutenant Waters is relieved from active duty in the Medical Reserve Corps, to take effect upon the expiration of the leave of absence granted him.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

BY LOUIS T. DE M. SAJOUS, B. S., M. D.,  
Philadelphia.

(Continued from page 1045.)

Among the substitutes for digitalis, adonis and apocynum are now obtainable in their crude form at prices fifty to 100 per cent. less, pound for pound, than digitalis. The doses required for therapeutic action being, however, many times larger than those of digitalis, they are actually far more expensive in practical use, and are, moreover, disadvantageous from the standpoint of certainty of absorption and action. Soluble barium salts, e. g., the chloride, would be about four times less costly than digitalis, but the margin of safety between the therapeutic and toxic actions is, in the case of this remedy, considered too slight to permit of any extensive practical use. Sparteine sulphate, which has undergone a price advance of at least 600 per cent. since 1914, is at present about ten times as expensive, dose for dose, as digitalis leaves and does not enjoy, in this country at least, the complete confidence of the profession as a cardiac remedy. According to Sollmann it is certainly devoid of the cardiotonic action of digitalis.

Turning to the drugs more generally termed stimulants of the cardiovascular system, we may note first that strychnine remains one of the least expensive agents of the group. It is one half less costly, dose for dose, than even the crude digitalis leaves, which in turn are about eight times less costly than equivalent amounts of digitalis tincture. As for caffeine, which has increased in price by over 250 per cent. since 1914, and like most other alkaloids shows a tendency to rise still further in the immediate future, it is over twenty-five times as expensive, dose for dose, as digitalis leaves, and hence at least three times as expensive as tincture of digitalis. In the case of citrated caffeine, an unstable compound of caffeine and citric acid, which, containing but forty-eight per cent. of the pure alkaloid, is used in a dose twice as large, the cost corresponds practically to the contained amount of caffeine, and the preparation is therefore, dose for dose, but little more expensive than pure caffeine. In the more satisfactorily soluble caffeine and sodiobenzoate, however—now the favorite preparation where caffeine is to be subcutaneously administered—the relative cost of the caffeine has been greatly augmented by the excessively high price now demanded for sodium benzoate, which is almost as expensive, weight for weight, as pure caffeine itself. In fact, the price of caffeine sodiobenzoate is at present considerably higher than the separate costs of its constituents would suggest, the preparation being fifty per cent. more, weight for weight, than pure caffeine, and nearly three times as costly, dose for dose, as either pure or citrated caffeine. Sub-

stitution for it of the caffeine sodiosalicylate recognized in the National Formulary would be of little advantage, salicylates now being almost as expensive as benzoates. An effectual way, on the other hand, of avoiding the increased expense of caffeine sodiobenzoate, while preserving the high solubility of this preparation, would be to mix with the caffeine an equal part of sodium citrate, which is relatively inexpensive. This would supply a preparation no more costly than the ordinary citrated caffeine but superior to it in solubility. Whereas pure caffeine dissolves only in forty-six parts of water, caffeine sodiobenzoate is soluble in 1.1 parts, and, according to a well known reference work, a mixture in equal parts of caffeine and sodium citrate will dissolve in two parts of water—which is sufficient for all practical purposes. Probably a similar mixture of caffeine and of sodium acetate—of Pharmacopoeial purity—which is even less expensive than sodium citrate, would likewise prove a good, yet cheap, substitute for caffeine sodiobenzoate. In connection herewith it is to be noted that the Pharmacopoeia defines the latter preparation as “a mixture of caffeine and sodium benzoate”—not as a compound of these two constituents. It should be borne in mind, too, that sodium acetate, in the crystals in which it is generally supplied, contains not less than forty per cent. of water, whereas, according to C. E. Smith (1913), sodium benzoate of good quality loses not more than five per cent. in weight when heated to a constant weight, i. e., to complete dryness. In mixing sodium acetate with caffeine, therefore, allowance may properly be made for the waters of crystallization the former contains, about 1.66 parts of the salt, instead of one part, being mixed with one part of the alkaloid. Similarly, a slight allowance for water may be made in the case of sodium citrate, which in its official crystalline form embodies about twelve per cent. by weight of water. While these mixtures might prove, under certain conditions, less permanent than the official caffeine sodiobenzoate—sodium acetate, e. g., being efflorescent in warm, dry air—a considerable lessening in expense would be effected by their use. That the availability of the mixtures for hypodermic administration would not be reduced by the substitution of sodium acetate or citrate for the benzoate is indicated by Sollmann's statement that while the salts of the ordinary organic acids, e. g., potassium acetate and sodium citrate, act like alkalies on the general system, they do not exert the local action of alkalies. Solutions of sodium citrate are officially stated to be slightly alkaline to litmus and solutions of both sodium acetate and the benzoate either neutral or slightly alkaline to litmus. Considering, moreover, the great rapidity of absorption of all these freely soluble salts, little in the way of local irritation from any of them is, manifestly, to be apprehended.

(To be continued.)



**Immediate Aftertreatment of the Guillotine Amputation Stump.**—H. F. Woolfenden and J. Campbell (*Lancet*, April 14, 1917) call attention to the tendency of the skin flaps to retract in such cases so that they cannot be made to cover the stump. This may be prevented by the proper measures taken at the time of the operation. Immediately after the amputation each of the quadrants of skin should be perforated with a knife in two places about one inch apart and one and a half inches above the free margin. Through these two openings a piece of sterilized tape should be passed and attached to the end of the usual Thomas splint by means of rubber tubing, tied so as to give fairly firm traction. The dressing should have been applied to the stump before the tying down of the rubbers. After the second to the fourth day the tapes should be removed and the extension continued by gluing strips of crinoline bandage to the skin with collodion and attaching metal hooks to their free ends. Rubber is applied as before, but through the medium of these hooks. This dressing will have to be changed every two or three days. By elevation of the head of the bed in leg or thigh amputations it is possible to make every stump face slightly downward and thus prevent tracking upward of pus along the sheaths of the muscles and vessels.

**Simplified Surgical Tonsillectomy.**—Austin A. Hayden (*Chicago Medical Recorder*, April, 1917) states that he uses ether for general anesthesia in children, and it is given by the drop method until the jaw is relaxed, after which it is discontinued. At once a suction apparatus is inserted into the mouth to a point opposite the tonsil to be removed. For local anesthesia in cases in children above eight years of age, and in adults, instillations are made into the tonsil and faucial pillars of a solution of novocaine, one per cent., or cocaine, 0.1 per cent. plus one drop of one to 1,000 adrenaline solution to each thirty mils. All patients are given a small hypodermic injection of atropine half an hour before the injection, and adults receive a dose of morphine at the same time. The right tonsil is removed first. The procedure is to grasp it near its upper and lower poles with a volsellum forceps and draw it forward and up toward the middle line. The anterior pillar knife is then inserted behind the pillar near the upper pole and carried downward toward the lower pole, but the lower attachment of the tonsil is left intact. The posterior pillar knife is then passed down the back of the tonsil in a similar manner. The upper pole is then tilted inward and toward the base of the tongue and blunt dissection separates the gland from its bed as far as its lower pole, which is then cut through by means of a cold wire snare. Not over five minutes is required for each tonsil, the left is removed in the same way as the right. The tonsillar fossæ should then be dried and searched for bleeding points, which should be controlled by clamps. If this fails to check the bleeding the pillars should be sutured together with a strand of iron dyed silkworm gut which should be removed after twenty-four hours, allowing the pillars to be separated by a pair of blunt pointed scissors.

**Toxic Symptoms from Bismuth Paste.**—F. A. Hepworth (*Lancet*, April 14, 1917) reports five cases in which the use of a bismuth paste in the treatment of severely infected compound fractures resulted in poisoning, with the appearance of a marked "blue line" on the gums and in two of the cases on the buccal mucosa also. Few other symptoms were directly attributable to the bismuth in these cases. The author regrets that the sample of bismuth from which the paste was made was not examined, for he thinks it possible that it might have contained some lead and that the intoxication might have resulted from that metal. No granules were found in the blood cells, however, and the general symptoms did not correspond to those produced by lead.

**Tricresol and Chloroform in Antimeningitis Serum.**—Josephine B. Neal and Harry L. Abramson (*Journal A. M. A.*, April 7, 1917) conducted a series of comparative tests to determine which of these two drugs was the more suitable as a preservative for antimeningitis serum, both from the point of view of bactericidal action and of irritant effects after injection of the serum. They found that tricresol was far superior to chloroform in bactericidal action on possible contaminating organisms; that its bactericidal action on the meningococcus *in vitro* was so marked as to make it of probable value *in vivo*; and that the presence of tricresol greatly diminished the pain of the intraspinal injections of the serum, while chloroform caused very marked increase in the pain, which was so great as to interfere with the injection or to prevent its repetition.

**Treatment of Pulmonary Embolism.**—M. Péraire and A. Baumann (*Bulletins et mémoires de la Société de médecine de Paris*, December 22, 1916) report a case of pulmonary embolism occurring in a woman of fifty-two years, six days after abdominal panhysterectomy for degenerating uterine fibroid, in which vibratory massage of the back appeared to have a most salutary effect. The symptoms, sudden in onset, consisted of intense dyspnea, deep cyanosis of the face and limbs, and pulselessness, persisting all night in spite of vigorous medication, with bloody expectoration and fine subcrepitant râles at the lung bases, especially on the right. A fatal issue seemed extremely likely when the electric vibratory treatment, in this case based on the diaphragmatic reflex previously applied with success by the authors in emphysema, was instituted. The instrument was brought in contact in the angle formed by the spinal column and the tenth rib, near the latter, the result being a strong reflex contraction of the diaphragm. As soon as this treatment was begun the inspirations grew deeper and the dyspnea less. When it was interrupted the dyspnea grew worse again. After twenty minutes' treatment the patient was able to breathe with almost complete comfort. The procedure was repeated several times a day for three days. Bloody expectoration and subcrepitant râles persisted during this time, but then disappeared, together with all other respiratory and circulatory disturbances resulting from the embolism. X ray views show the marked extent to which diaphragmatic contractions can be increased through the reflex vibratory excitation.

**Treatment of Wounds and Contusions.**—Fredrick Hill Thompson (*Medical Sentinel*, April 1917) gives this advice: Always thoroughly cleanse, using benzine or other oil solvent on the surrounding skin, and removing any foreign body from the wound. Early suture is desirable if the wound is clean, using interrupted and fairly loose stitches. Do not rely upon antiseptics applied to the wound. Open and cauterize punctures. Vaccines are useful in selected cases and act chiefly as an aid to other methods. Carrell's method is preferable in extensive infected wounds. Use heat, immobilization, and rest for contusions, coupled with late massage if indicated. Do not forget the healing property of the sun's rays. In all finger and hand injuries be vigilant to detect an ascending infection.

**Prophylaxis of Infection in Wounds.**—H. Vincent (*Presse médicale*, March 29, 1917) points out that beneath a simple aseptic dressing applied promptly over a wound, bacteria, aerobic as well as anaerobic, often penetrate freely between the time of injury and that of treatment by the ambulance surgeon. The bacteria are given time to infiltrate tissues previously uninjured, and amputation for gas gangrene is at times the result. To obviate this difficulty Vincent recommends that all wounds except penetrating wounds of the chest or abdomen be promptly filled with a disinfecting mixture of one part of calcium hypochlorite with nine parts of boric acid. Owing to the fact that the infection has thus been early checked or slowed down, the subsequent surgical treatment is often facilitated and reduced in extent, with less loss of tissue. The measure is especially necessary in times of extensive military engagements, when the wounded are very numerous and cannot be removed to the surgical stations within a reasonable time. Where a long period elapses before treatment, the dry hypochlorite and boric dressing may with advantage be renewed in twelve or twenty-four hours.

**Skin Grafting.**—D. G. Greenfield (*British Medical Journal*, April 14, 1917) reports excellent results from the following simple method of skin grafting. The skin for the grafts is cleaned with ether soap, and taken preferably from the outer side of the thigh. The granulations are then swabbed with salt solution and dried with sterile gauze. General anesthesia is employed for the cutting of the grafts, which should be of uniform thickness, about the size of two or three postage stamps, and cut just deep enough to leave a few small bleeding points. The graft is slipped directly from the razor to the wound and slightly stretched on its surface to insure its lying flat. It is well to make a button hole slit in the centres of grafts of this size to prevent blistering. About one eighth of an inch is left between grafts. No dressing is applied over the grafted surface, but the patient is placed in such a position that he can lie comfortably under a cradle to prevent the contact of the bed clothes. The grafted surface should not be touched for a week, when the discharge can then be removed by gentle bathing and hot fomentations. The area from which the grafts were removed should be covered with a layer of dry sterile gauze which should be left in place until it loosens spontaneously.

**Retroversion of the Uterus: Its Etiology and Rational Treatment.**—John T. Williams (*Boston Medical and Surgical Journal*, April 19, 1917) divides retroversions of the uterus into three classes: 1, inflammatory, in which the uterus is displaced by a pus mass and the fundus afterward drawn backward by adhesions; 2, congenital, in which the retroversion may be said to be the normal position of the uterus for that individual; 3, acquired, as the result of injury or relaxation consequent upon childbirth, in which the retroversion is but a part of the general process of prolapse. In retroversion of the first class treatment is directed primarily to the inflammatory process and the displacement is corrected only incidentally. Congenital retroversions are usually symptomless and require no treatment. Retroversions acquired as the result of parturition should be considered as a step in prolapse of the uterus and the downward as well as the backward displacement corrected. Retroversion is an infrequent cause of sterility in itself. It may cause miscarriage if the uterus becomes incarcerated, but most retroversions are corrected spontaneously during the early months of pregnancy. A retroverted uterus discovered on post partum examination needs no treatment if it is obviously congenital in type, but if it is of the acquired type the malposition should be corrected and treatment by pessary instituted, deferring operation if possible until the patient has passed the child bearing period.

**Mouth Washes in Health and Disease.**—Helen Pixell Goodrich (*British Medical Journal*, April 14, 1917) points out that a white material composed of salivary corpuscles, epithelial cells, bacteria, and large numbers of leptothrix, which latter grow rapidly, lead to the deposit of the so called tartar. Oral hygiene aims to prevent this formation and should include the use of the tongue to clean the teeth by simple friction, a soft tooth brush, and a suitable mouth wash, together with the polishing of the teeth once daily with some of the dentifrices. The mouth wash should be used as often as possible to destroy the leptothrix and prevent its multiplication. Experiments by the author show that the most satisfactory agent for their destruction is thymol, which makes a very suitable mouth wash in the form of its saturated aqueous solution. This is simply made by anyone at home by placing a lump of the thymol in a bottle and filling it with clean water. After a little shaking the solution will have become saturated, and as it is used more water can be added as long as thymol remains. This solution contains about 0.05 per cent. of thymol and is strongly active against the leptothrix. It is pleasant to the taste and does not irritate the mucous membrane or affect either the teeth or their fillings. Various other agents were tested, including saturated solution of boric acid, emetine hydrochloride, harmine hydrochloride, iodine, hypochlorite solutions, peroxide of hydrogen, and zinc sulphocarbolate. Iodine alone was found to be an effective mouth wash, but its destructive and staining properties excluded it for general use. The hypochlorites were too unstable for use and too unpleasant to the taste. Emetine had little or no germicidal action and the others were similarly ineffective.

**New Treatment of Skin Affections.**—Danysz (*Presse médicale*, April 2, 1917) viewing the pathogenesis of certain skin lesions as a fixation and transformation of antigens at certain points in the skin, and suspecting that the resulting local intoxications are of intestinal origin, conceived the plan of treating skin affections with autogenous vaccines prepared from the intestinal flora of the patients. The vaccine thus obtained was administered subcutaneously in two series of daily injections. This strictly biological method of treating skin disorders had already brought about a prompt cure in three cases of simple or eczematized psoriasis.

**Infusion by Means of the Duodenal Tube.**—Golder L. McWhorter (*Journal A. M. A.*, May 12, 1917) calls attention to the simplicity of passing a duodenal tube, either through an ordinary gastric tube which is then withdrawn, or directly, prior to or immediately after operation. The passage of such a tube permits the frequent lavage of the stomach, if such be desired, but especially provides an excellent means for continuous infusion and immediate administration of nourishment without increasing the risks of the operation. The practice of such measures has proved of great value in preventing dehydration and in cases with acidosis, ileus or persistent vomiting after gastrointestinal operations. Infusion of sterile six per cent. glucose solution, which can be made with 0.4 per cent. saline and to which sodium bicarbonate can be added, can be carried out with assurance of good absorption. Nutrient can be added in the form of cream and egg albumin if desired.

**Abscesses Due to Quinine Injections.**—Prat-Flottes and H. Violle (*Bulletin de l'Académie de médecine*, April 10, 1917) note that, as a rule, quinine abscesses occur only after the subject has received a number—averaging ten—of injections of quinine hydrochloride, generally in the gluteal region. In about two weeks there is observed a small, painless induration. Three or four days later swelling, tension of the skin, and tenderness appear, but the skin does not redden. Incision of the mass at about this time reveals a pure, aseptic necrosis, affecting chiefly the cellular tissue. The induration then softens and spreads, oily pus collecting between the skin and fascia. Only later are the muscles involved, portions of them becoming necrotic and forming mummified, clay colored masses which separate easily from the sound muscle fibres and finally also melt down to a yellowish or greenish pus. Often without any apparent constitutional reaction, extensive bacterial suppuration is then superadded. In the tissues devitalized by the quinine some organism, in a few cases apparently endogenous, actively develops. The colon bacillus, streptococcus, staphylococcus, and proteus were all detected by the authors in such abscesses. The latter may occur in any tissue of the body and from any salt of quinine, in any solvent. The system reacts very variously in different cases. The necrosis may become so extensive as to require operative work under general anesthesia, consisting of free incisions passing beyond the margins of the lesion, with excision of the dead tissues and opening up of all diverticula. Forty-six operations of this type gave uniformly good results.

**Vaccine Treatment of Rheumatism.**—Frank M. Wood (*Chicago Medical Recorder*, April, 1917) advises the use of an autogenous vaccine made from *Diplococcus rheumaticus*, obtained from the oral cavity. The initial doses should be very small until the patient's resistance has been determined; it is usually best to begin with from twenty-five to fifty million organisms. The dose can then be doubled at the next injection and increased up to the point of producing a mild reaction. At this point it should be kept stationary for a short while and then again raised. If it is impossible to secure an autogenous culture one should begin with a stock vaccine and try to secure the culture later. In the various forms of chronic rheumatism, or arthritis, while the cause may not be primarily bacterial, there is often a secondary infection and much good will come from the use of a stock vaccine made from mouth organisms or from those secured from any focus of infection discoverable. If the first vaccine used does not succeed, another should be tried and this experimentation continued until a satisfactory one is found, or the possibilities have been exhausted. In addition to the use of vaccines in acute rheumatism one should give alkalies to overcome the tendency to acid production and calcium lactate in doses of 0.3 gram every three hours to bind the acid bodies which tend to neutralize the normal calcium of the blood and tissues.

**The Significance of the Blood Platelets.**—Roger I. Lee and George R. Minot (*Cleveland Medical Journal*, February, 1917) present a discussion of this subject, in the course of which they point out some useful therapeutical measures in purpura hemorrhagica and hemophilia. Locally applied, tissue extracts, either in crude form or in the form of Howell's purified kephalin, often prove of value in checking the bleeding. Occasionally they are of some transient value when injected subcutaneously, but such use is not without danger and does not compare in results with the introduction of unaltered blood platelets by transfusion. It has not yet been possible to secure normal, unaltered, isolated blood platelets for therapeutical purposes, but these can be supplied in sufficient quantity to be of value in the form of whole blood. The latter has the added advantage of restoring some of the blood lost through the hemorrhages at the same time that the attempt is being made to control the bleeding. Within a few minutes following a transfusion in cases of purpura hemorrhagica the bleeding time will be found to be normal. It then begins to lengthen again until by the end of four or five days it has returned to its original. Serum or defibrinated whole blood may also be used, but their effects are at best only very temporary and they are best considered as emergency measures only. The immediate therapeutical indications in hemophilia are similar to those in purpura, namely, the supply of normal platelets. The local use of tissue extracts or kephalin serves to control external hemorrhages and the transfusion of normal whole blood temporarily restores the coagulation and bleeding times to normal. The use of calcium, gelatin, and other substances so widely recommended does not seem to be followed by any appreciable effect in true hemophilia.



# Miscellany from Home and Foreign Journals

**Relation of Structure to Function in the Venous System.**—F. Wood Jones (*Lancet*, April 14, 1917) discusses the subject of the mechanism by which venous blood is made to flow back to the heart, calling attention to the fact that it has lost most if not all of its forward movement during its passage through the capillaries. He says that a simple study of the anatomy of the venous system gives the explanation of the mechanism. There are two venous systems, the one superficial, the other deep in the muscles. The latter system is made up of two segments. The first of these comprises a large number of small, unnamed veins, all provided with valves to prevent return flow. These veins join into a single large trunk wherever they pass from amid the muscles, as at the joint flexures. The contraction of the muscles acts upon the multiple vein system as the squeezing of a sponge and the blood is forced onward into the large trunks, thence it passes into another intramuscular system, and so on to the heart. To provide for the conditions created by prolonged contraction of the muscles of a part without frequent periods of relaxation each of the extramuscular large trunks is connected with its neighbors by valveless superficial veins, thus offering an alternative course for the blood when it cannot pass on from one muscular plexus into the next on account of the contraction of the muscles of the second.

**Pleuritis and Tuberculosis in Military Practice.**—Morichau-Beuchant (*Paris médical*, April 7, 1917) reports on a special form of tuberculous disease met with frequently among soldiers. The subjects were for the most part between twenty and thirty years of age. Some had histories of bronchitis, hemoptysis, or pleurisy before the war, but in the majority the disorder had appeared since the beginning of hostilities, always insidiously and preceded by several weeks at least their admission to the hospital. The early symptoms had been gradual loss of strength and appetite, breathlessness, soon followed by cough and a pain in the side. On admission the men were pale and presented a continuous cough, with paroxysms especially at night, with scanty mucous expectoration, at times blood streaked but always free of tubercle bacilli. Dyspnea was experienced even during rest, often with a distressing sensation of thoracic oppression. Pain was uniformly present but varied in location, occurring at the lung bases as often as at the apices. Palpation and percussion were negative, but auscultation revealed a delicate, inconspicuous friction rub, widely distributed, generally present at the seat of pain, and varying in intensity from day to day. On admission only râles were heard over the large bronchi. In the interscapulovertebral space manifest signs of lymph gland hypertrophy were noted, such as bronchial breathing, bronchophony, and whispering pectoriloquy, together with slight palpable enlargement and induration of the axillary and cervical lymphatics. X ray examination revealed only occasionally a slight pulmonary shadow in the area of the friction sound, but often a distinct enlargement of the

mediastinal lymphatics. As accessory symptoms were observed dyspeptic disturbances, diarrhea and colic independent of food ingestion, and a tendency to palpitations and tachycardia, with a low blood pressure and, as a rule, a small heart. Fever was present in three fourths of the cases and moderately copious night sweats occurred in an even larger ratio. Especially marked was an incapacity for exertion out of proportion with the condition as a whole. In a majority of instances the condition cleared up in three to six weeks under rest in warm quarters, cough sedatives, derivatives, and general tonics. Smaller groups of cases recovered more rapidly or more slowly. As the condition passed into frank pulmonary tuberculosis in but one doubtful case, and since true tuberculosis runs an extremely rapid course in the army, Beauchant does not consider the condition a preliminary stage of common phthisis, but merely a special benign form of tuberculosis, purely inflammatory and not resulting in tubercle formation. These subjects need not be relieved of active military duties, but may be ordered back to the front when their bodily strength has returned after a period of surveillance and convalescence.

**Usefulness of Serums and Vaccines under War Conditions.**—G. W. McCoy (*Journal A. M. A.*, May 12, 1917) points out the fact that the development of these products has been so rapid and extensive that confusion exists as to the value of some of them. There is no doubt as to the value of vaccine virus and it makes little or no difference in what form it is applied. But for the retention of its potency it is essential to store it at a low temperature. Simple linear incision is probably the most satisfactory method for its administration. Antidiphtheritic serum has demonstrated its value, both as a prophylactic and as a curative agent. Antitetanic serum has also been proved of great prophylactic value, for which not less than 500 American units should be given, preferably at weekly intervals until the wound has healed or become healthy. For curative purposes its value is less well established, but it would seem advisable to employ it in large doses—3,000 units intrathecally and 10,000 intravenously, the former repeated daily and the latter supplemented by frequent similar doses given subcutaneously. Antimeningococcic serum should be made from several different strains so as to be polyvalent, but even then it will largely fail in some epidemics owing to difference of strain. Prophylactic vaccination against typhoid fever is established, but the duration of its influence has not been determined. Both paratyphoids should be combined with it. Antidysentery serum and antipneumococcic serum are still of rather doubtful value, except that for pneumococci of Group I, but they deserve further trial. Dysentery vaccine has not been proved of value and has the disadvantage of producing very severe reactions. There is some evidence in favor of the usefulness as a prophylactic of cholera vaccine, while meningococcus vaccine has given but inconclusive results. The same is true of prophylactic vaccines against wound infections.

**The Crossed Leg Test for Arterial Hypertension.**—Molle (*Journal de médecine de Paris*, March, 1917) calls attention to the diagnostic value, where sphygmomanometry is impracticable, of careful observation of the oscillations of the leg when crossed over the other limb. Under normal conditions these oscillations, synchronous with the pulse beats in the femoral artery, are so slight as to be only with difficulty perceived. Where a systolic pressure of 160 or 170 mm. Hg exists, however, the oscillations become very distinct, and still more so when the pressure exceeds 170 mm. Hg. The movements are best observed from a lateral position, as they take place in a vertical plane. They are rendered still more apparent by placing a large piece of paper over the distal part of the limb.

**Keratosis Blennorrhagica.**—Marcus Hasse (*Journal of Cutaneous Diseases*, December, 1916) describes an instance of this dermatosis which is found in association with gonorrheal arthritis. The lesions on the arm are soft papules, red, noninflammatory; they become covered with a waxy yellow adherent crust. On the lower extremity there appear flat flaccid blebs, which in time form crusts, grayish yellow in color and having an arrangement like an oyster shell. The face and scalp have an erythematous squamous eruption which on the scalp later becomes covered with thick crusts and on the forehead horny protuberances become visible. The nails exfoliate and the toes lose their contour owing to the presence of horny plugs. It has been up to date impossible to discover the gonococcus in the cutaneous lesions.

**Calamine Liniment.**—William Allen Pusey (*Journal of Cutaneous Diseases*, December, 1916) proposes a substitute for the well known calamine lotion in the shape of a liniment. The cooling effect of lotions is not denied, but it is to overcome the drying of these lotions that the liniment finds a distinct place. The formula is as follows:

R	Powdered tragacanth, .....	3i;
	Phenol and glycerin mixed, .....	āā ℥x;
	Zinc oxide, }	āā 3i;
	Calamine, }	
	Olive oil, .....	5iv;
	Oil of bergamot, .....	℥xx-1;
	Water, .....	q. s. ad. 3i.

A few drops of phenol keep the liniment sweet indefinitely.

The technic of preparation of the emulsion is as follows: A wide mouth bottle should be used, one large enough to allow a free shaking of the quantity of emulsion to be made. The bottle should be clean and dry. The phenol, glycerin, and oil of bergamot are first added to olive oil. Shake until the entire surface of bottle is covered with film of oil. The tragacanth, which should be powdered, is added little by little and shaken, when a yellowish opaque mixture is formed. Four ounces of water are added and shaken. The calamine and zinc oxide mixed dry, are stirred up with the remaining eight ounces of water in a separate container. The mixture of the powders is now added to the oily mixture, an ounce at a time and vigorously shaken until emulsion is made. It is a smooth pink emulsion. Various ingredients can be added to it such as sulphur, ichthyol, etc.

**Metastatic Gas Gangrene.**—J. N. J. Hartley (*British Medical Journal*, April 14, 1917) reports five cases in which foci of gas gangrene developed in portions of the body entirely removed from the original sites of injury and infection. In four of the patients the metastatic gas infection occurred in the buttocks, suggesting that the more or less prolonged pressure from confinement in bed had caused a point of reduced resistance in these parts. In the fifth case the metastasis occurred over the deltoid muscle, the original infection having been abdominal. Two of the patients died and three recovered.

**Infection of Simple Closed Fractures.**—John Bapst Blake (*Boston Medical and Surgical Journal*, May 3, 1917) says that infection involving closed simple fractures is an infrequent but serious complication which is most apt to occur in the presence of severe trauma, and in cases in which the skin is unusually dirty, and the general resistance of the patient unusually low. The infection may be blood borne, or it may enter through abrasions, minute scratches, or blisters, or occasionally through a hair follicle. Preventive treatment consists in a very thorough cleansing of the skin, and an aseptic treatment of superficial scratches and of blebs. Once infection is established thorough drainage and the Carrel method are indicated. Prognosis is usually good, though the duration is apt to be long.

**Variations in Pulmonary Voice Sounds.**—William Duncan Reid (*Boston Medical and Surgical Journal*, April 26, 1917) gives the following suggestions as the result of a study of the variations in pulmonary voice sounds in comparison with the variations in pulmonary resonance. The spoken and whispered voice, though most often louder at the right apex, are not necessarily so in chests that are clinically negative. The left base may transmit the spoken voice more loudly in a surprising number of cases. The variations in pulmonary sounds do not follow with any degree of accuracy those in pulmonary resonance, save over the right apex. The transmission of the spoken and whispered voice over normal chests presents considerable variation, and this should be clearly appreciated in drawing conclusions as to the presence of pathological conditions.

**Metabolism in Gout.**—William Bain (*Lancet*, March 31, 1917) points out that calcium is a constant constituent in gouty deposits and reports a study of the metabolism of calcium in this disease. He finds that the excretion of calcium in the urine in gout is less than the normal and that the urinary calcium is a very small proportion of the total excreted, just as in normal persons. The administration of calcium chloride causes slight nitrogen retention in gout, but has no effect upon the phosphorus metabolism. Administration of calcium does not have any constant effect upon the total calcium metabolism in gout. Calcium chloride causes a fall in the uric acid excretion which is marked but unexplained. This fact suggests the advisability of restricting the use of food rich in calcium in cases of gout. Such foods include spinach, celery, rhubarb, endive, pork, cheese, and oatmeal—especially, however, the first four articles.

**Septic Sore Throat.**—E. C. Rosenow and C. L. A. Hess (*Journal A. M. A.*, May 5, 1917) state that they studied a sudden outbreak of this highly infectious disease which occurred in a small rural community. They were able to isolate typical hemolytic streptococci from the throats of infected persons and from samples of milk derived from cows having mastitis and from which the milk supplies of the village were largely derived. They were also able to prove the identity and pathogenicity of both strains of streptococci by a series of animal inoculations into rabbits, mice, and a monkey. Inoculation of some of these animals through feeding or by swabbing the throat with infected milk also produced the typical disease in them. The complications noted in the animals were similar to those common in the human cases under observation.

**Epidemic of Septic Sore Throat.**—G. W. Henika and I. F. Thompson (*Journal A. M. A.*, May 5, 1917) discuss the epidemiological features of a sudden and explosive outbreak of septic sore throat occurring in a small village. The clinical manifestations were typical, but the epidemic was of great virulence. Of a total of 325 cases, only two could be traced to contact infection, the remainder all being traceable to the consumption of milk from an infected herd. The severity of the individual attack and the length of the incubation period stood in close relation to the amount of such milk consumed by each person. Whether taken raw, in coffee, as cream, in egg nog, or any other uncooked form, the milk seemed equally infectious. The source of infection was traced to six cows in a single herd, of which three had mastitis. The immediate issuance of orders to the entire village population to boil all milk, together with instructions as to the disinfection of dejecta, etc., of the patients, cut the epidemic short by the end of the incubation period of the disease.

**Dehydration of the Blood and Viscera in Diabetic Coma.**—Chauffard, Le Conte, and Dorie (*Presse médicale*, April 2, 1917) refer to an acute dehydration of the organism occurring in the majority of cases of diabetic coma and manifested in a hollow type of facies with eyes sunken, drawn features, rapid, easily compressible pulse, marked lowering of blood pressure, flabby tissues, occasionally hicough and muscular cramps, and in particular a marked diminution of intraocular tension, giving to the eyeballs a withered, half empty appearance. This condition occurs usually after coma has already existed for a period, and has been ascribed, among other causes, to vomiting, diarrhea, polyuria in the absence of free ingestion of fluids, and excessive loss of water vapor through the lungs in Kussmaul's dyspnea. The authors investigated the condition more closely and report two typical cases. In both the blood serum was found distinctly acid in reaction. The density and viscosity of the blood were abnormally high and the red cell count rose in one case to nearly eight and a half millions per cubic millimetre; in the other it rose to 5,700,000 but was lowered to 2,910,000 by gastric, rectal, and intravenous administration of sodium bicarbonate solution. Both cases showed an excess of nitrogenous wastes in the blood. Examination of the internal organs

showed dehydration in all, in both cases especially marked in the pancreas and kidneys. Because of the abnormal blood concentration in these cases the authors warn against the use of strongly hypertonic bicarbonate solutions, e. g., thirty to fifty in 1,000, in these cases. Such solutions by further dehydrating the already concentrated blood, seem readily to induce clotting and obstruction in veins into which the alkaline injection is being made. Solutions practically isotonic, e. g., fifteen or twenty grams of sodium bicarbonate to the litre, should be used instead.

**Infectious Jaundice.**—C. J. Martin (*British Medical Journal*, April 7, 1917) states that he encountered a large number of cases of an epidemic infectious jaundice among the troops at the Dardanelles, differing somewhat from the type commonly seen. The onset was marked by lassitude, anorexia, headache, pain in the upper abdomen, slight enlargement and tenderness of the liver, and fever up to 102° F. for a few days. The symptoms continued for three to five days after the fever had returned to normal, when jaundice made its appearance with bile stained urine, weakness, rapid pulse, slight albuminuria, and a tendency to cardiac dilatation. Convalescence was slow. Both milder and severer types occurred. The cause of this disease was sought by blood cultures, bacteriological examinations of the duodenal contents, and efforts to discover the parasites of Weil's disease. All attempts were negative. Post mortem examination of the livers in some fatal cases showed hepatitis and necrosis of the liver cells. It was, therefore, the belief of the author that the condition was a primary systemic infection with a special tendency to attack the liver parenchyma.

**The Value of Eye Manifestations Complicating Fractured Skull.**—Martin Cohen (*Archives of Ophthalmology*, May, 1917) comes to the following conclusions from a study of seventy-five cases of fractured skull, the diagnosis confirmed by x ray pictures and by autopsy in the twenty-four fatal cases. Inequality of the pupils combined with bilateral absence of the light reflex is very common in fatal cases of fractured skull, while comparatively rare in the cases that recover. Where there is inequality of the pupils associated with a unilateral marked amblyopia or amaurosis in the eye in which the pupil is dilated, one must recognize the subsequent possibility in this eye of a resulting descending primary optic atrophy. Lesions of the fundus are relatively infrequent, especially in the patients who recover. Papillitis usually indicates the presence of a meningitis, an increase in the cerebral pressure, or a hemorrhage into the sheath of the optic nerve or its immediate vicinity. Contrary to the usual observations, choked disc was not observed in any of his cases. The presence of a unilateral optic atrophy should lead to the investigation of a possible previous head injury, if all other causes are excluded. In the cases which terminated fatally the pupil was generally dilated on the same side as the corresponding cerebral hemorrhage. Fundus examination immediately following skull injuries may be helpful from the medicolegal point of view, as it may give evidence of the preexistence of contributory factors, or conditions.



## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Cancer: Its Cause and Treatment.* By L. DUNCAN BULKLEY, A. M., M. D., Senior Physician to the New York Skin and Cancer Hospital, etc. Volume II. New York: Paul B. Hoeber, 1917. Pp. 282. (Price \$1.50.)

Dr. L. Duncan Bulkley, in his recent work on cancer, has contributed nothing new to the information in our possession. He has attempted to revive the idea of a constitutional origin based on faulty metabolism. Alcohol, tea, coffee, and animal protein incite the tissue cells to the perverted action that results in the formation of tumors indued with malignancy. The true cancer problem in his opinion is the correction of this fundamental error. This he would accomplish by excluding from the diet of civilized man the constituents above mentioned. In this way cancer not only may be avoided but may actually be cured after it has gained a foothold. Under the surgical management of the disease cancer has steadily increased its toll of death. This he considers perfectly in accordance with the pathology: for the knife cannot cut out a condition inherent in all the cells of the individual. The essential factor in this malignant evolution is the alteration of diet effected by the march of progress. The simple vegetarianism of the aborigines gives place to the carnivorous of their more advanced successors. *Hinc illa lacrimae.* The greater the meat consumption the higher the mortality. The per capita consumption in various countries is cited in juxtaposition to the prevalence of cancer. It is only fair to say that there are certain notable contradictions in the figures which are naively included in his compilation with apparent disregard of their damaging character. Italy, with a very low percentage of meat consumption, has almost as high a death rate as New Zealand with nearly five times its meat consumption. Argentine shows the highest death rate with the third lowest meat consumption. These figures indicate that meat eating has nothing to do with the prevalence of cancer. Again the figures given for the United States furnish food for reflection although the inferences drawn from them are various. It is curious that three New England States with small populations, and those mainly rural, should give the biggest percentage of cancer, and those States are not noted for excessive meat eating either. Indeed, all New England is known to be abstemious in this regard. But the most remarkable item in the list is Utah. It presents only half the death rate of New York, and yet it is certain that in a new western State like that meat is plentiful. Can it be that the Mormon religion has anything to do with the fifty per cent. advantage enjoyed by Utah? There is much taken for granted in Doctor Bulkley's argument which might be more amply corroborated. In attempting to inaugurate such a grave departure from the accepted opinion of the day there should be no defects in the logic and no gaps in the evidence. His proofs are often assumption, faulty deduction, and incomplete induction. Cases are quoted without authentication. Diagnoses are made without verification. Conclusions are drawn without demonstration. It is a piece of special pleading to establish a predetermined hypothesis. The commonest disturbances of assimilation and elimination are adduced as evidences of a precancerous condition. If Doctor Bulkley's book means anything it means that the surgical treatment of cancer is useless and by implication dangerous. He speaks with toleration here and there of operation, but the whole fabric of his dream is its inefficacy and the need of other measures. He points with glee to the "fact" that during the period of greatest surgical activity the mortality from cancer rose 0.2 per cent. He quotes a celebrated surgeon dead some twenty-five years to the effect that he doubted if he had ever been justified in an operation on cancer. The real objection to a book of this kind is its tendency to encourage the popular dislike for operation and to delay the necessary interference until it is hopeless. There is one feature of it, however, which deserves unstinted

approbation, and happier to praise than to blame, we gladly accord it the fullest publicity. We quote verbatim, feeling that we could not add anything to the impressive-ness of the author's able presentation of the case.

"The New York Board of Health has recently inaugurated a service for the examination of specimens excised from suspected cancer, in order to establish the diagnosis microscopically, before surgical operation. There could hardly be devised a more effective plan to increase the mortality from cancer and to render many more cases really inoperable than this one would surely be; for by thus cutting into cancerous tissue and opening lymphatic channels and bloodvessels, with the opportunity for absorption of cancerous elements during the necessary delay, metastases would certainly be induced which would render a surgical removal or a dietary or medicinal treatment immeasurably less effective. It is to be hoped that this scheme will be immediately abandoned." This extract would justify the sale of the book. Doctor Bulkley's peculiar opinions on etiology and treatment are far less objectionable than the vicious recommendation of the Health Department to thousands of unsuspecting and confiding physicians influenced by the putative wisdom of that imposing body.

*The Twenty-Third Annual Report of the Manager and Officers of the Craig Colony for Epileptics.* [State of New York.] Sonyea, Livingston County, N. Y. Transmitted to the Legislature, January 2, 1917. Albany: J. B. Lyon Company, Printers, 1917. Pp. 128 [6].

This report resembles the usual institution report. There are the customary pleas for more money and more buildings. The part of the report entitled "Research" is disappointing. The following statement may be taken as typical: "The epilepsies are seemingly due to so many underlying factors that one would feel almost convinced that there are multiple causes in action to produce the symptoms of this disorder." Surely it does not require a year's work on 1,500 patients by ten physicians to arrive at such a conclusion! Judging by this report, no attempt has been made to investigate the epilepsies along the lines now being worked out by L. Pierce Clark.

## After Office Hours

The *New Era* calls itself an outlaw magazine and the June issue shows at least one good reason for it. Under the head of "Disease in Army Camps" are three short paragraphs stating: First, that soldiers should be protected from disease; second, that the Council of National Defense is taking steps looking to that end; and third, that there was medical inefficiency at Montauk and Chickamauga. If a lay magazine is going to touch upon such subjects at all, why doesn't it inform itself a little?

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The papers lately have been full of the charges made by the sailors on the hospital ship *Solace*. The following is the most picturesque complaint of all: "The dishes used by men sick with measles were washed in a lavatory where vessels were standing around with germs of scarlet fever and mumps, which said germs were thrown in same receptacle used by men with measles." One can almost see the germs being picked up by their tails, wiggleing and kicking, and pitched willfully into the receptacle—especially the germs of scarlet fever, which these erudite sailors speak of with such easy familiarity.

\* \* \*

"Yarb doctorin' in Kaintucky" is the way the practice of medicine at home in the State of thoroughbreds is described by a writer in the *St. Louis Post-Dispatch*. Shingles are cured by the blood from the tail of an all black cat. (See the *Hoosier Schoolmaster*.) Frostitben feet are wrapped in the recently removed skin of a rabbit. Cobweb pills cure hemorrhage and polecat oil, applied externally and also imbibed, cures croup, possibly by causing an amnesia of it. Pine resin plasters for backache, pinpitch pills for kidney trouble, and "yallerroot" for sore throat are some of the sovereign remedies in use. Many other weird, but fascinating treatments are in vogue and, if the original article is not accessible, it may be found described in the *Literary Digest* for May 12th.

## Meetings of Local Medical Societies

MONDAY, June 11th.—Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society.

TUESDAY, June 12th.—New York Academy of Medicine (Section in Neurology and Psychiatry); Medical Society of the County of Schenectady; Medical Society of the County of Chautauqua.

WEDNESDAY, June 13th.—Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Rochester Academy of Medicine; Medical Society of the County of Montgomery; Brooklyn Medical Association.

THURSDAY, June 14th.—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Blackwell Medical Society of Rochester; Jamestown Medical Society (annual); Society of Physicians of Village of Canandaigua.

FRIDAY, June 15th.—New York Academy of Medicine (Section in Orthopedic Surgery).

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending May 30, 1917:*

CAKTER, H. R., Assistant Surgeon General. Ordered to proceed to New York, N. Y., via Washington, D. C., and Baltimore, Md., to attend meetings of the Society of Tropical Medicine and the National Malaria Committee, June 4-7, 1917.

COLLINS, G. L., Surgeon. Granted three days' additional leave of absence from May 27, 1917.

FOSTER, M. H., Surgeon. Continued as member of a board of examiners of which Surgeon General W. G. Stimpson is chairman.

FROST, W. H., Surgeon. Granted seven days' leave of absence from May 25, 1917.

HOMMON, H. B., Sanitary Chemist. Ordered to present a paper on the sanitary disposal of tannery wastes at the meeting of the American Leather Chemists' Association at Atlantic City, June 7, 1917.

HUGHES, T. E., Assistant Surgeon. Granted twenty-three days' leave of absence from May 25, 1917.

IRWIN, FAIRFAX, Senior Surgeon. Ordered to report at the Bureau, Washington, D. C., May 24, 1917, for consultation relative to quarantine matters on the Delaware River.

KOLB, L., Passed Assistant Surgeon. Designated as Service representative on Medical Section, Council of National Defense, Kings County, N. Y.

LUMSDEN, L. L., Surgeon. Ordered to proceed to Greenville, S. C., Maysville, Ky., Hillsboro, Texas, and Okmulgee, Okla., to inspect work of rural sanitation.

MATHEWSON, H. S., Surgeon. Granted ten days' leave of absence to be taken when convenient during the months of May and June.

PIERCE, C. C., Senior Surgeon. Ordered to proceed to Galveston, Texas, to deliver an address on public health matters to the graduating class of the University of Texas Medical School, May 31, 1917.

RUCKER, W. C., Assistant Surgeon General. Ordered to represent the Service on the Section of Preventive Medicine and Public Health at the meeting of the American Medical Association, New York, N. Y., June 4-8, 1917; ordered to proceed to Baltimore, Md., May 29, 1917, to deliver an address on the subject of Social Hygiene Program for the Present War before the Maryland Society of Social Hygiene.

SAYERS, R. R., Assistant Surgeon. Ordered to proceed to New Orleans, La., for duty in plague eradication measures; granted fourteen days' leave of absence on account of sickness from May 2, 1917.

SCHERFESCHESKY, J. W., Surgeon. Ordered to proceed to Columbus, O., about May 10, 1917, in connection with studies of industrial hygiene.

SCOTT, E. W., Assistant Surgeon. Relieved from duty at New Orleans Quarantine; ordered to proceed to Marine Hospital, Baltimore, Md.

SIMPSON, F., Passed Assistant Surgeon. Ordered to proceed to Columbus, Ga., to inspect a public building with regard to rat infestation.

STOUT, J. D., Assistant Surgeon. Relieved from duty at Marine Hospital, Baltimore, Md., and ordered to report at Custom House for duty in medical inspection of arriving aliens.

TARBETT, R. E., Sanitary Engineer. Ordered to proceed to such places as may be necessary for the investigation of intern camp sites.

TRIFADWAY, W. L., Assistant Surgeon. Granted seven days' leave of absence from May 21, 1917.

### Resignation.

Resignation of Assistant Surgeon Thomas E. Hughes accepted by the President, to take effect June 16, 1917.

### Boards Convened.

Board of commissioned medical officers convened at the Marine Hospital, Chelsea, Mass., June 4, 1917, for the purpose of making physical examinations and conducting the mental examination of candidates for appointment as assistant surgeon. Detail for the board: Surgeon H. S. Mathewson, chairman; Passed Assistant Surgeon W. M. Bryan, recorder.

## Births, Marriages, and Deaths

### Married.

BEHRMAN-WHEELER.—In Wollaston, Mass., on Saturday, May 26th, Dr. Roland A. Behrman, of Waltham, and Miss Edna Irene Wheeler.

WAINSHIEL-GLEN.—In Dorchester, Mass., on Tuesday, May 22nd, Dr. Perez W. Wainshiel and Miss Rose E. Glen.

WHEATLEY-MCGUANE.—In Ayer, Mass., on Wednesday, May 24th, Dr. Frank G. Wheatley, Jr., of Abington, and Miss Nora Elizabeth McGuane.

### Died.

DUNDAS.—In Elmira, N. Y., on Sunday, May 27th, Dr. Thomas A. Dundas, aged sixty-one years.

HAVILAND.—In Keene, N. H., on Sunday, May 27th, Dr. Everel C. Haviland, aged thirty-nine years.

HINMAN.—In Grand Rapids, Mich., on Tuesday, May 22nd, Dr. Spencer D. Hinman, aged sixty-nine years.

JERNEGAN.—In Boston, Mass., on Wednesday, May 30th, Dr. Holmes M. Jernegan, aged seventy years.

KANE.—In Paterson, N. J., on Sunday, May 27th, Dr. Thomas J. Kane, aged seventy-two years.

MATHIOTT.—In Mars, Pa., on Tuesday, May 29th, Dr. George H. Mathiott, aged sixty-four years.

MAYO.—In Orono, Me., on Sunday, May 27th, Dr. Edward N. Mayo, aged eighty years.

MILLER.—In Braddock, Pa., on Sunday, May 27th, Dr. James Augustine Miller, aged forty-six years.

NOLAN.—In Snyder, Neb., on Wednesday, May 23rd, Dr. Thomas J. Nolan, aged forty-two years.

O'BRIEN.—In Greenfield, Mass., on Wednesday, May 23rd, Dr. John C. O'Brien, Jr., aged twenty-six years.

PEARCE.—In Union City, Tenn., on Tuesday, May 22nd, Dr. David M. Pearce, aged sixty-one years.

REEDER.—In Chicago, Ill., on Saturday, May 19th, Dr. William DeHart Reeder, aged seventy-seven years.

ROHU.—In Chicago, Ill., on Saturday, May 19th, Dr. William C. Rohu, aged sixty-four years.

SCOTT.—In Parish, N. Y., on Thursday, May 24th, Dr. Will O. Scott, aged fifty years.

SMITH.—In Detroit, Mich., on Tuesday, May 22nd, Dr. Francis L. Smith, aged thirty-six years.

SNYDER.—In Dunmore, Pa., on Sunday, May 27th, Dr. Marion D. Snyder, aged forty-seven years.

TUCKER.—In Carnesville, Ga., on Saturday, May 26th, Dr. J. R. Tucker, aged seventy-seven years.

# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 24.

NEW YORK, SATURDAY, JUNE 16, 1917.

WHOLE No. 2011.

## Original Communications

### CLINICAL ASPECTS OF THE DISEASES OF THE DUCTLESS GLANDS.\*

BY JOSEPH SAILER, M. D.,  
Philadelphia.

The most interesting question concerning diseases of the glands of internal secretion is the causation. At the present time a considerable number of these diseases are fairly well known, and to these additions are constantly being made. The symptomatology is, in the majority of instances, so definite that the diagnosis is usually among the easiest tasks of clinical medicine; indeed, one may recognize many cases in what the French call "*la clinique des rues*." The understanding of the morbid processes keeps pace with the broadening of our knowledge of the physiology of these organs, to which knowledge, clinical medicine has made many and important contributions. Treatment has introduced into therapeutics the principle of substitution and the correction of morbid physiology by excision or implantation, but our knowledge of the cause is in many cases obscure or disputed.

If an attempt is made to classify the known diseases it is found that they fall easily but not very accurately into two classes, the congenital and the acquired, but in some instances the division is not sharp. It is altogether possible that not infrequently the same etiological factor may cause either antenatal or postnatal conditions. It is, therefore, obvious that the classification of causes on this basis would not be mutually exclusive. The following grouping has many defects, but seems to involve as few omissions as any other: infectious causes including hereditary infections; toxemia; doubtful conditions that may be due to one or the other; disturbances of nutrition; traumatism, including surgery; nervous influence; tumors, benign or malignant; hereditary and familiar types; the morbid activity of other glands of internal secretion; atavism.

The infections are probably numerous, but of only a few can it be said that they are well known. Of these tuberculosis and syphilis are the most important. The former is the commonest cause of Addison's disease and is destructive. McCarthy has shown cases resembling Graves's disease in advanced cases of tuberculosis of the lungs, apparently a stimulation of the gland due to the presence of military tuberculosis. Syphilis apparently is more apt to

involve the pituitary gland and usually this occurs in the hereditary forms. I have observed two patients who resembled each other enough to be brother and sister. The first was a man in the ward of the Philadelphia General Hospital, thirty-two years of age, exhibiting the adult Froelich type, with Hutchinson's teeth and a four plus Wassermann. The second was a woman of forty years, whose father has some form of paraplegia. She was the first born of a large family and differed in appearance from the younger children and was strongly of the endocrine type. The Wassermann was also four plus, with no suggestion of a possible infection. The man died suddenly in the ward and an autopsy was not obtained. The woman died of a rapid renal condition that completely prevented the passage of phenolsulphonethalein in several tests, although albumin and casts were rarely present. The blood nitrogen was seventy-three. The evidence of the involvement of the pituitary in these two cases is of course not proved. I have not been able to detect syphilis in my cases of status thymicus.

Acute ductless glandular infections are comparatively rare. Two cases may be presented that although incompletely studied may be regarded as suggestive. Each was seen only once in consultation and for the subsequent data I am indebted to the kindness of the physicians in charge, who were, however, I regret to say, unable to make the tests that might have been of value. Both were women in the early forties. The attack commenced suddenly with a chill followed by fever and extreme prostration. When seen shortly after the onset there was fever of about 103° F., rapid pulse of about 120, extreme prostration, dyspnea, sweating, and distinctly enlarged thyroid. In neither case had this enlargement existed before the attack. The leucocyte counts were between 15,000 and 20,000, the fever lasted three weeks, subsiding slowly, and the return to strength was very gradual. At no time was there evidence of sore throat. I have seen each patient once since the attack. There was no visible enlargement of the glands in both cases; reduction of the swelling occurred during the defervescence. There were at the time I saw them no von Graefe's sign, and only a slight tremor of the extremities. I ventured to call them cases of acute thyroiditis and suggested rest, observation, and some calcium. The nature of the infection was not determined. Klose has produced an acute febrile thyroiditis in ferrets. The symptoms of hyper-

\*Read before the New York Academy of Medicine, December 27, 1916.



thyroidism in typhoid and in other acute fevers may also be due to local infection (Osler). The literature on this subject is extensive, but in many respects inconclusive. It includes the endemic and vocational occurrence of tetany (Frankl-Hochwart) and the endemic occurrences of goitre (Taussig, McCarrison, Bircher, Wilms, and others). Both of these may belong properly to the second group, for it is impossible to assert that they may not be toxemias instead of infections, indeed, they are the only reason that a third grouping is necessary.

Of the second group the most typical example is the alteration that certainly occurs in the thyroid gland of women during pregnancy and probably also in the pituitary, although this is less easily determined. Barker has observed evidence of hyperthyroidism in chronic nephritis, and it also occurs in pernicious anemia.

The fourth group, the nutritional disturbances, are less easy to determine. One can easily imagine that the manifestations of rachitis and achondroplasia are the result of disturbances in the pituitary glands caused by defects in feeding or assimilation. The variations in the size of the thymus corresponding to the state of nutrition of the individual are suggestive, if indeed much reliance can be placed upon thymus weights. It may even be considered that the extraordinary variation in the development of the sexual glands in bees and ants produced by alterations in the diet are evidence in this direction. A case of extreme rachitis in a boy of six years was exhibited at the Philadelphia Pediatric Society a few years ago that resembled in all respects the condition called progeria by Gilford. This child had been given large amounts of coffee as an infant and the subsequent diet was also remarkable for its in-

parathyroids had its beginning in the observation of the dire results of the earlier thyroidectomies for goitre. The reports of results of extirpation experiments comprise the largest contributions to modern physiology. Much of this is recorded and analyzed by Biedl and Swale Vincent, and it is abstracted fairly thoroughly as it appears, in the *Zentralblatt für die gesamte Physiologie*. It is not within the purpose of this paper to refer to this mass of material, were it possible to do so within reasonable



FIG. 4.—Case of Neanderthal type of skull.

limits, which obviously it is not. It is at least a pleasure to record that from the surgical standpoint, after Kocher, the chief contributions have been made by American surgeons, particularly Halsted, Cushing, Charles Mayo, and Crile.

A case that has been under observation for many years has presented such a variety of symptoms that it may be briefly narrated. A benign goitre was removed for esthetic reasons at the age of thirty-eight. Immediately thereafter there was a considerable gain in weight associated with anemia and nervousness, that manifested itself in restlessness and tremors. The administration of thyroid substance caused a slow reduction in weight, but increased the nervousness; several rest cures reduced this, but it returned when the patient manifested glycosuria. On two days' starvation this disappeared and has remained absent on a liberal diet, and at the same time all the other symptoms have also disappeared, so that for a year the patient has been in apparently perfect health. Classical tetany was never present, but the improvement in the signs of myxedema with the symptomatic cure of the diabetes indicated to me a relation between the removal of the thyroid and some of the other glands of internal secretion, perhaps the pancreas or the pituitary.

That emotional shock can cause the sudden appearance of the symptoms of Graves' disease is apparently well established; that it is more than a contributing cause is unlikely. Two such patients with well developed symptoms have come under my care, one of whom I have been able to follow to complete recovery. Both were due to disappointed affections. A third was remarkable for the cause—a telegram placed in the patient's hand by mistake, which she feared to open, dreading bad news.

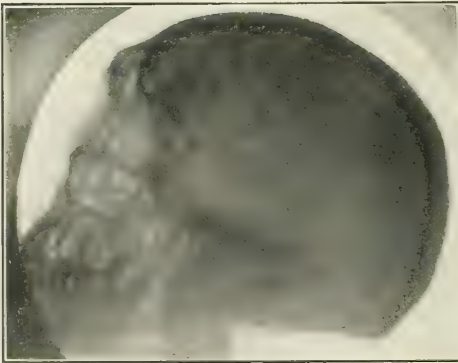


FIG. 1. X ray of Neanderthal type of skull.

appropriateness. Whether, as Keith has suggested, in this condition the pituitary was involved, and if so, whether the involvement could be ascribed to the faulty nutrition, are of course undetermined.

Much of our knowledge of the functions of the glands of internal secretion has been the result of extirpation experiments upon the lower animals and of surgery upon human beings. It is probably fair to say that the knowledge of the physiology of the

Immediately she experienced violent palpitations and faintness, and two years later, when I saw her, had distinct signs of hyperthyroidism.

The relation of the so called vegetative nervous system, to use Langley's term, to the glands of internal secretion is very close.



FIG. 3.—Case with mixed secondary sexual characteristics. Well developed mammary gland of the feminine type.

Cannon has shown that intermittent stimulation of the sympathetic by the rhythmic impulses transmitted by the phrenic nerve produces in the cat signs of hyperthyroidism. It has long been supposed that Graves's disease had its primary seat in the cervical sympathetic ganglia and resection has been practised for the purpose of curing it, with contradictory reports of results. It seems established that hormones, secreted by the adrenal and pituitary glands, and the chroma-

phile tissues generally stimulate the sympathetic nervous system, and much less well established that a hormone secreted by the pancreas stimulates the autonomic system.

Tumors, malignant and benign, are morbid processes of unknown etiology, producing disease of the glands of internal secretion, sometimes mechanically, sometimes by destruction, sometimes by stimulation, or by a combination of these processes.

It is sometimes difficult to understand the exact rôle of heredity. Goitre may occur in successive generations and be due to environment. So many of the diseases included in this group affect the sexual organs with diminution of potency, that manifestly in them heredity can play but little part. Thus in all the cases of status thymicus that I have examined, only one admitted fatherhood and he had had but one child, separating from his wife at the end of two years of married life. I have also been impressed by the frequency with which this condition is observed in bachelors, of three in particular, all wealthy men: two certainly and one probably never had sexual relations. Certain forms of disease of the adrenals, of the pituitary, and possibly of the pineal gland are associated with precocious sexual development. Of these only the early forms of giantism occur sufficiently late to render procreation likely, but there is no certain data that this pathological giantism has been transmitted, although mere abnormal size is distinctly hereditary, whether above or below the average. In a case of Froehlich's syndrome, the child who might have been the twin

brother of the patient pictured in Biedl's book, also resembled his father very closely, but the latter is an exceptionally vigorous man, the family is large, and no trace of the disease except a tendency to adiposity—both father and mother are stout—can be detected in the brothers or sisters. The remarkable improvement in the patient during the administration of pituitary substance was, next to the appearance, the most important factor in confirming the diagnosis.

That disease of one gland of internal secretion is associated with changes in the size of the others has been known for a long time. Whether this enlargement is due to the action of the same cause or to the removal of some restraining influence, or whether it is compensatory, is difficult to determine. The enlargement of the pituitary in pregnancy may probably be regarded as coincident with the enlargement of the thyroid. The enlargement of the thymus in exophthalmic goitre is more difficult to explain. It is conceivable that it is caused by some stimulating or irritating substance produced by the diseased thyroid, to some disturbance of the nervous control, to the cause, sympathetic or other, of Graves's disease, to an effort at compensation, or to disturbed circulation, the last most unlikely. It may even be primary, as Sauerbruch suggests, and in support of his belief he has removed the thymus instead of the thyroid with asserted good results. The evidence of overaction of the adrenals in the same disease, found in the excess of adrenaline in the blood (Fraenkel), might suggest, in connection with Cannon's experiment, that the adrenals were primarily concerned in the causation of the disease, and that the benefit of thyroidectomy lay wholly in the elimination of the source of toxic materials, but it can be as well supposed that an inhibitory action upon the thyroids is removed or that their secretions stimulate the adrenals.

The effect upon the growth of the sexual organs might be regarded as one of the general manifestations of the effect of the internal secretions upon growth and development were it not for the fact that in some instances other changes take place in the body that are commonly regarded as the results of the internal secretions of the sexual glands, development of the secondary sexual characteristics, and changes that can be prevented by removing these glands as in the castration of boys (Tandler and Grosz), and nevertheless in the lower animals may take place in spite of castration if the testicles are implanted in other parts of the body. It therefore seems evident that disease of the adrenals, pineal, and pituitary glands in young boys may stimulate the interstitial tissue



FIG. 2. Froehlich's syndrome in child.

of the testicles and cause precocious puberty, but it is by no means certain that this is an increase of functional activity rather than a morbid condition.

In all species of highly organized life there are from time to time deviations from the normal, or "sports," as they are technically called in botany. In many instances these are in the direction of excess, such as supernumerary digits, and may be regarded as excessive division of some of the germ cells, but in the domesticated animals and man it is often possible to recognize a distinct reversion to some ancestral type. Indeed, in the minor features, such as the color of the eyes or the shape of an organ, this reversion is by no means uncommon, and the skipping of a generation seems scarcely less frequent than direct transmission. It is supposed that the frequency of the appearance of ancestral traits



FIG. 3. Case of feminine type.

occurs inversely as the remoteness of the ancestors. If there should persist a sufficient number of descendants of any primitive type, it is possible that there might appear an individual resembling that type, even although in the meantime a considerable change from the primitive type had occurred. Keith was the first to suggest that the structure of the primitive man was in part at least due to the different physiology of his glands of internal secretion, and therefore that perversions of these glands in the ascendant direction might account for some of the phenomena supposed to be merely the result of disease. It was particularly with reference to the resemblances between the acromegalic and the Neanderthal skull that this view was expressed. Madison Grant states that he has seen a perfect Neanderthal skull upon the shoulders of a professor teaching in London. Very recently a sporting writer, Edgren, has called attention to the existence of this primitive form of skull among the more brutal type of prize fighters. The total amount of material from which to reconstruct the characteristics of the prehistoric races is very little and quite fragmentary and there is no reason to suppose that individual variation in those times was not considerable. The essential features must have been the small sloping forehead, rather prominent brows, marked dolicocephaly, and small brain capacity. I recently had under my care at the Presbyterian Hospital a man remarkable for these features, although his face bears little resemblance to the reconstructions of Charles R. Knight. This man is of very low intelligence, but able to earn his modest living as a street laborer. He is

long and loose jointed, has the physical characteristics of status thymicus, and, apparently, a large thymus and a greatly distorted sella turcica can be demonstrated by the x ray. Concerning his parents nothing could be discovered. I should be loath to assert that he is a Neanderthaloid atavist, for he may be merely the product of some morbid process. Indeed, one can almost say that both the pattern and the copy are defective and that the resemblances are no more than suggestive. As for the other examples, I know of none unless they are to be found in the Mongolian type of idiocy.

The modifications of growth and formation that may be produced by disorders of the internal secretions are numerous. Gilford's work is most important. Of the dwarfs the most important varieties are the cretins due to aplasia of the thyroid, atelins, and the achondroplastics due to pituitary disease. That in some of the recorded cases injury followed by changes of the sella turcica has been recorded indicates the essential part taken by the pituitary gland. Giantism is also due to pituitary disease. It is remarkable in all these cases how closely the individuals of different races or countries resemble each other. The patients pictured by Cushing and by Buday and Jansco might easily be mistaken for brothers. Neither, by the way, achieved paternity. In cases of status thymicus, the scanty beard, the rounded limbs, and the mild expression and small features produce a characteristically effeminate appearance. The resemblance that patients presenting Froehlich's syndrome have to one another has already been mentioned. There is, of course, less featural change in the various types of adiposity. In myxedema, however, similarity of expression occurs. Changes in the features are the clinical signs of acromegaly, hypopituitarism, and exophthalmic goitre.

Combination of the sexual characteristics are more difficult to explain. In feminism the figure resembles in contour that of the female—beardless, with rounded limbs, rather full breasts, and usually hypoplastic external genitals. One case of this nature coming under my observation was of mediocre intelligence, gentle in his behavior, and he assured me that he had never had any sexual inclination whatever. Sometimes only certain organs are involved, as in the case of a man distinctly masculine in type with fairly well developed beard, the transverse upper line of pubic hair, and well developed breasts of the female type with large nipples. He was married and the father of two children. The external genitals were apparently normal. The confusion of sexual characteristics may also occur in women. I have often seen the pubic hair in women arranged as in the male with an apex pointing toward the umbilicus. In nearly all cases there was a distinct trace of beard, but the breasts were well developed and menstruation was normal. In one instance, however, the chest was flat and the nipples of the masculine type, that is, rudimentary. This woman had been married twice but had never been pregnant. In all these cases I endeavored to determine an enlargement of the thymus or evidence of disease of the pituitary but could not convince myself that such evidence existed. There are on record cases in which it has been possible to prove the



presence of both types of sexual glands, or of testicular tissue in supposed females.

The studies of the effects produced upon metabolism by derangements of the internal secretions has been presented in a voluminous literature the analysis of which is entirely beyond the scope of the present paper. It involves the salts, nitrogenous substances, carbohydrates, and fats of the body and in consequence the general nutrition of the body. The disturbance of the carbohydrate metabolism is useful as a clinical sign of hypopituitarism. In the man with the supposed Neanderthal skull 300 grams of glucose failed to produce alimentary glycosuria. In the case of a dime museum fat lady it was possible to administer 600 grams without the appearance of sugar in the urine. In neither case was it possible, to my regret, to obtain estimations of the blood sugar.

Sedwick, in a recent communication before the Interurban Clinical Club at Rochester, Minn., presented a case of pseudohypertrophic muscular dystrophy, in which, as a result of careful study of the metabolism he reached the conclusion that there was deficient pituitary activity. Accordingly he fed the child upon pituitary substance with marked improvement. This observation, if confirmed, is of the utmost importance and opens a large field for the investigation of the various degenerative diseases.

The economic factors involved are considerable. Aside from the incapacity and death produced by these conditions, which are common to all diseases, there are distinct alterations in the character that tend to render the individuals less useful members of society. These have been observed particularly in cases of status thymicus. That this condition is compatible with the highest type of intellectual activity may be inferred from the fact that one case that I observed was a distinguished professor, who was not only a recognized leader in his subject but also a financier of extraordinary ability. That he was not entirely normal may also be inferred from his miserly disposition and his aversion to human fellowship. The majority of these persons are not workers, although occasionally of high intelligence, and usually they are addicted to alcoholism and are loafers or vagabonds. Stoerk has observed that many cases of gastric ulcer in men show the thymic type. Bartel has examined 123 suicides and Miloslavich 110 and found among them a great preponderance, more than eighty per cent., of the thymic type.

It would be interesting to study the after history of a few of the patients upon whom thymectomy had been performed. The operation according to Klose and Chevalier Jackson is neither difficult nor dangerous and in adult life the thymus apparently serves no useful purpose.

The changes in character and intelligence that ensue in cases of cretinism and myxedema after the administration of thyroid are obvious. In one instance a man who had been incapacitated by a moderate form of myxedema with persistent sleepiness was restored to usefulness by the administration of thyroid substances. The change for the better, more initiative, better work at school, and increased cheerfulness in the patient with Froehlich's syndrome

treated with pituitary extract was very striking. Tandler and Grosz have studied the effects of castration.

Treatment may be briefly dismissed. In diminished functional activity of the pituitary and thyroid glands substitution therapy is most effective. This is accomplished by the administration of the gland substance or various materials derived from it. Implantation has rarely been tried. In cases of diminished suprarenal activity substitution seems to be only of the most transient effect. I have had opportunity to observe a single case of ovarian implantation in a woman suffering from profound nervous depression following the removal of the ovaries years before for painful menstruation. While the implant in the wall of the abdomen persisted her symptoms, intense headaches, vaginismus, and depression, were entirely relieved. As it atrophied the symptoms returned, perhaps less severely, and she is eager to have another implantation. No physical evidence of its efficiency could be discovered.

The effort to find an antitoxic or detoxicating substance has only been attempted in connection with Graves's disease. In this condition the theory chiefly urged by Moebius, that the symptoms are due to hyperthyroidism, has led to various efforts with the milk of thyroidectomized goats or the flesh of thyroidectomized sheep. The reports have been contradictory and in general unfavorable. With Beebe's serum I have carefully treated three patients, consulting with Doctor Beebe from time to time, and the results in all three were distinctly unfavorable.

Drugs, aside from calcium in tetany parathyropriva, appear to have but little effect, even the sodium phosphate for Graves's disease suggested by Kocher.

Surgery has been used extensively on the thyroid, slightly on the pituitary, and scarcely at all on the thymus. Upon the first the results have been satisfactory, upon the second much less so, and upon the third too few to enable any valuable conclusions to be drawn, although both Klose and Chevalier Jackson insist that symptoms of tracheal stenosis can be relieved by thymectomy.

1718 SPRUCE STREET.

## GENITOURINARY DISEASES AND LIFE ASSURANCE.\*

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The importance of disease of the genitourinary system in its relationship to life assurance stands preeminent in comparison with other systems of the human organism. This fact is recognized by insurance companies the world over and urinalysis constitutes a fundamental criterion of the applicant's examination. Syphilis, by virtue of its prevalence and morbidity, demands serious consideration on the part of insurance companies, and in consequence of the fact that it is primarily a genital affection, ex-

\*Read before the Philadelphia Medical Examiners' Association, February 26, 1917.

cluding the *insontium* and *hereditaria* forms, must be classed with genitourinary diseases.

A discussion of this subject, therefore, resolves itself into three parts: 1, malformations, injuries, inflammations, calculi, and tumors; 2, gonorrhea and its complications, and 3, syphilis.

#### MALFORMATIONS, INJURIES, INFLAMMATIONS, CALCULI, AND TUMORS.

The affections comprising the first group are subdivided clinically into medical and surgical. This differentiation, however, is of no account as far as straight life insurance is concerned, although in the case of certain accident, casualty, and health policies, the nature of the disease, particularly if surgical and operation be necessary, is a matter of prime importance. Generally speaking, it is a well recognized fact and foregone conclusion that no company will consider the issuance of a policy, even with special rating and short endowment, to an applicant known to be a victim of active disease of the urogenital tract, irrespective of its medical or surgical nature. Obviously certain congenital malformations, as single, supernumerary, horseshoe, displaced, movable, lobulated, and hypoplastic kidneys, and double, bifurcated, kinked, and strictured ureters, not yet productive of symptoms or pathological signs but nevertheless potential factors in the causation of disease, which may at any time prove to be serious, grave or fatal, always escape the attention of the medical examiner. Fortunately, these congenital anomalies are so rare, that failure in their detection means no great burden in the event of morbidity or mortality to the insuring companies.

Among other pathological affections of the kidney and ureter easier of detection but occasionally overlooked may be mentioned early hydronephrosis, hydronephrosis, tumors, and especially calculus. One can readily surmise how a hydronephrosis may be a potential pyelitis, hydronephritis, or pyonephrosis, and that the presence of a few leucocytes or pus cells in the urine may be circumvented for a special uranalysis by copious draughts of water and urinary antiseptics. Even renal tumors may not be detected by the examiner, in view of the fact that the hematuria, pain, and palpable mass are determinable respectively in only sixty-five, eighty and seventy-five per cent. of cases, even until the time of operation or death. In other words, approximately twenty per cent. of patients with kidney tumors present no definite history or sign, including a negative uranalysis, of a lesion of the urogenital tract. This is important from the insurance standpoint, in view of the high immediate operative mortality, over ten per cent. dying in a hospital, and only ten per cent. surviving five or more years after operation. Without nephrectomy duration of life is seldom more than a year.

Calculus of the kidney or ureter in a deceitful applicant may readily fail to be demonstrated by simple examination of the urine. Particularly is this true if the uranalysis be done hurriedly, carelessly, or incompetently. Many calculus patients present only microscopic hematuria; that is, often not more than two or three to a half dozen erythrocytes to the 1/6 objective microscopical field, after centrifugation of the freshly voided urine. I do not recall a

single failure to find red cells in the urine of a patient the subject of an aseptic calculus, and firmly believe that in every case at one time or another proper uranalysis will reveal the presence of at least a few erythrocytes. Yet how often are the general practitioners' and routine hospital laboratory reports erroneous and misleading! Assuredly, if the calculus is associated with infection, pus will be present unless the ureter is completely closed even to the extent of complete obscurity of erythrocytes. The best and most reliable diagnostic aid to determine the presence or absence of renal or ureteral calculus is the x ray taken by an expert röntgenologist. In consideration of the possibility of error, based on objective evidence dependent solely upon uranalysis, the thought has arisen would it not be advisable with certain applicants, suspected of fraud and desiring unusually large indemnities, for the company to require radiographic examination. These skiagrams would also serve in exceptional instances to establish urological disease other than calculus. Renal calculus deceptive as to diagnosis is likewise treacherous as regards prognosis and treatment. A calculus may remain quiescent for many years, but is ever a menace to the health and life of its possessor, on account of the supervention of anuria, hydronephrosis, infection, and atrophy. The prognosis is directly proportional to the effect on the kidney. There are not a few individuals who from time to time pass a small calculus without apparent harm to the kidney. On the other hand, a stone weighing one and a half grains has caused death. It is obvious, therefore, in view of the high mortality due to calculus, anuria—seventy-five per cent. without operation and thirty per cent. in operated cases—infection, and uremia, notwithstanding the customary low mortality in aseptic cases—two to five per cent.—that an applicant with the history of calculus is never a first class life insurance risk, realizing the predisposition to calculi to recur. If the previous attack is a matter of remote history and the examinations prove negative, including skiagrams, such an applicant may be considered under special rating. It should be borne in mind by the examiner that there is such a thing as a crossed renal reflex, that is, the lesion on one side and all subjective symptoms on the other. I have observed and prescribed treatment in three such cases.

Infection and inflammation of the kidney, recognized variously as Bright's disease, pyelitis, pyelonephritis, pyonephrosis—pyogenic or tuberculous—are almost invariably betrayed by the urinary findings, in conjunction with the clinical condition of the patient. I have seen, however, a few cases of closed tuberculous pyonephrosis, in which normal urine, impalpable kidneys, afebrile temperatures, and normal bladders, save for functionless or atrophic ureteral orifices on the affected side were demonstrated. Such cases are puzzling, but fortunately not common, and exact diagnosis is impossible without cystoscopy, chromoureteroscropy or ureteral catheterization. Catheterization of the normal side in the presence of a tuberculous cystitis is a distinctly reprehensible, nefarious, and unnecessary routine procedure and increases the risk of subsequent infection on that side with fatal result by ten per



cent. Salvation for the victim of renal tuberculosis lies in early nephrectomy, the operative mortality for which in recent years has decreased from thirty to less than three per cent. Although the danger lies in the possibility of involvement of the other side, early bilateral disease is rare and not to be expected with proper care. Over eighty per cent. of persons with this condition are cured or improved by nephrectomy and seventy-five per cent. permanently. Tuberculosis, with or without abscess, of the suprarenal gland is not uncommonly associated with renal tuberculosis, and may be completely removed at the time of nephrectomy. The additional risk to life is not material.

The mere history of a pyelitis in childhood, in an adult applicant, or in a woman formerly afflicted with pyelitis of pregnancy whose health and urinalysis at the time are absolutely normal, should not constitute a barrier to the issuance of an unconditional life insurance policy. Likewise a proposer, who exhibits the scar of a perinephritic or paranephritic abscess, and enjoys perfect health and a normal urine years afterward, may be a desirable candidate for insurance, either straight life or short endowment with extra rating. It is conceivable that special policies may also be granted to applicants who years before have been nephrectomized for pyelonephritis, pyonephrosis, and even tuberculosis, provided their general health is excellent, their residence and occupation proper, and their remaining kidney normal and functionally efficient. Injuries to the lumbar region involving the kidney, of the nature of contusions, ruptures, and gunshot, or weapon wounds, undoubtedly play a rôle relative to the risk of life insurance. I refer here not to major wounds necessitating nephrectomy, but rather to minor accidents where the renal tissue undergoes repair, or indeed to injuries so trivial that they are little noticed at the time, but nevertheless capable of producing a *locus minoris resistentia*, predisposing the patient to renal infections later, leading to nephrectomy and total disability or to painful states partially disabling and rendering the individual a chronic invalid. I recall a nephrectomy for tuberculosis about a year ago in a patient who eighteen months before sustained a severe contusion in the lumbar region on the affected side, during a football game. A few years ago I saw a patient disabled from work on account of lumbar pains incident to a perinephritis attributable to an incomplete rupture of the kidney years before.

Turning to a consideration of acute, chronic parenchymatous, and chronic interstitial nephritis: Medical men have spent much time discussing the insurability of patients exhibiting a persistent trace of albumin and occasional casts in the urine, but have reached no conclusion as far as life assurance is concerned. Companies have definitely concluded from experience that they cannot afford to insure an applicant with renal albuminuria, even though it is trivial and intermittent; their statements on this point are deadly. Intermittent, functional, psychic, and static albuminuria are of interest scientifically, but their discussion relative to life insurance is useless. Undoubtedly, mistakes are committed by inexperienced examiners in this respect and applicants should be entitled to a reexamination, but such errors

are rare as compared with accepted risks whose nephritic state escaped detection. Too much importance cannot be attached to the value of blood pressure in these cases, and it is questionable whether sufficient attention is paid to functional kidney tests. Some companies in a particularly favorable case of albuminuria, with no casts, a relatively normal blood pressure, good habits and history, and an otherwise sound physique, will write an endowment policy with a ten year addition, terminating at the age of fifty. Many of these cases are undoubtedly due to syphilis. Merely a history of nephritis in childhood with complete recovery and a normal urine does not constitute a barrier to insurance. The same is true of albuminuria and pyelitis due to acute infections. Reports of a nephritic condition are often based on a highly colored urine, phosphates, oxalates or urates, and erroneous diagnosis. Patients with acute nephritis may live indefinitely for a month to a year and recover, or the acute attack may lapse into the chronic parenchymatous form of the disease in which death may be expected from six to eighteen months, or the chronic interstitial type in which the victim rarely lives more than two years after the break in his usual health. The significance and relationship to nephritis of "asthma," vertigo, headache, edema, dyspepsia, indigestion, fainting attacks, lumbago, etc., is too well known to warrant further consideration.

Pregnant women are accepted in some companies under a special premium clause. Primiparae, especially if under twenty years of age, should be rated as greater risks than multiparae, unless the latter have borne many children and their confinements have been complicated by excessive hemorrhage, eclampsia, malformed pelves, abortions, miscarriages, etc., when, as a rule, rejection is imperative.

Diabetes invariably means the rejection of the applicant for ordinary forms of life insurance.

Hematuria and pyuria due to surgical affections need not necessarily or permanently jeopardize a proposer's chance for life insurance even as a first class risk. Their presence, especially if macroscopic, as a rule signifies a grave condition, unless known to originate from the urethra, and should be so regarded until proved to be otherwise. This means a thorough if not an elaborate investigation, best conducted with the cystoscope, aided if need be by ureteral catheterization, functional kidney diagnosis, or ureterorenal radiography.

Just as in the kidney and ureter, so also in the bladder, active disease, even of minor import, is sufficient to warrant rejection of the candidate. There are, however, certain vesical conditions, as cystitis, calculus, and benign tumors, where, after cure has been effected by medical or surgical means, and the selected applicant has been free of any signs of recurrence for a definite number of years, that should not prohibit enrollment, even as a first rate risk. This refers particularly to cases of acute transient cystitis, aseptic calculi, and small, single papillomata, certain cysts, and hemangiomas. It has been only since the advent of the cystoscope, rendering possible the destruction by so called fulguration certain of these vesical growths, that the victim of such a condition could qualify at all for any form of life insurance. Incisional treatment heretofore was fol-



lowed by such bad results that many surgeons refused to operate for any type of bladder tumor. Today we are in a position, in the case of benign neoplasms, to apply a form of treatment more curative than the aseptic scalpel, and even should recurrence occur—a matter of far less likelihood—the patient is amenable to a repetition of similar treatment, with greater assurance of permanent cure than he could possibly expect from a secondary cystotomy or partial resection. Subtotal cystectomy for carcinoma of the bladder is attended by such a high immediate operative mortality, coupled with a very high percentage of recurrence and metastases, that life insurance considerations are distinctly out of order.

The mortality of litholapaxy and suprapubic lithotomy varies from two to four per cent. Watson in 902 cases of litholapaxy found recurrence in nineteen per cent., but more than two thirds of these were in patients over fifty years of age. Uric acid and calcium oxalate calculi rarely recur, irrespective of their association with prostatic hypertrophy or obstruction at the neck of the bladder. Phosphatic calculi, on the other hand, not infrequently recur.

Prostatic enlargement due either to simple hypertrophy or adenomatosis or carcinoma is a disease of advanced years and does not require special consideration from the standpoint of life insurance. It is estimated that approximately one third of all males past the age of sixty years have enlargement of the prostate gland, but that only sixteen to seventeen per cent. of these have symptoms requiring treatment. The operative mortality averages close to five per cent., due almost invariably to renal insufficiency and infection. This should be and is considerably lower among specialists exercising the utmost discretion in the selection of cases and discrimination as to the best operative technic. Inquiry reveals that about sixty per cent. of patients are alive and enjoying excellent health. Of those who have died, one third had carcinoma and one fourth died of other intercurrent disease. A review of operated cases shows that only two per cent. of prostatectomies occurred in patients under fifty years of age. The danger from catheter life owing to the likelihood of infection, even in those cases where it is practicable, is far greater than from a skillfully performed prostatectomy. Therefore, it is apparent that insurance companies need entertain little concern respecting the risk entailed on account of this disease, particularly if the case is treated surgically.

Cysts of the prostate are occasionally seen, and by virtue of their comparatively sudden obstructive manifestations, may endanger life. It was my fortune to see such a case recently. They are prone to occur at an earlier age than hypertrophy and operative intervention is attended by brilliant results, adding little to the life insurance risk.

The well known penile and urethral malformations, also varicocele, spermatocele, hydrocele, and hematocele, demand no serious discussion from the standpoint of insurance risks.

Cases of improper descension and ectopy of the testicle on account of its greater potentiality, when so located, to undergo malignant degeneration, should never be rated as first class insurance risks, at least not until an approved operation has been

done. Teratoma testis, which constitutes the essential type of all malignant degenerations of this organ, so admirably shown by Ewing, is a most grave disease, and even though apparently successfully operated is followed by such a high percentage of metastasis, that any thought of insurance even with extra rating is practically out of the question. Fortunately testicular neoplasms occur in only 0.06 per cent. of hospital patients (Howard).

Tuberculosis of the epididymis and testicle, although commonly hematogenous in origin, is frequently secondary to similar disease of the seminal vesicles, prostate, and urological tract. It is difficult of eradication, even when the primary focus in the genitourinary tract is removed, and metastatic foci, especially on the other side, are likely to supervene. Obviously no life insurance company is foolish enough to accept a risk where the tubercle bacillus is playing or has played the star rôle.

Presumably individuals afflicted with psychopathia sexualis are tabooed as first class life insurance risks. Their detection, however, may be a matter of insurmountable difficulty.

#### GONORRHEA.

Active gonorrhea is a barrier, naturally, to the issuance of a life assurance policy, and yet if we are to believe the dictum of the gloomy Noggerath that ninety per cent. of the male population has or has had this venereal disease, it is obvious that many proposers with shreds in their urine are accepted. It is a simple matter and a common trick for many candidates for life insurance to miss catching the first portion of their urine for examination. Although there is a mortality from gonorrhea, as evidenced by such complications as cystitis, pyelitis, pyelonephritis, stricture, pleurisy, endocarditis, and myocarditis, the morbidity is the more important consideration in view of other complications, as prostatitis, spermatozystitis, epididymitis, conjunctivitis, iritis, cystitis, synovitis, arthritis, "rheumatism," neuralgic pains, and mental disorders, as neurasthenia, melancholia, etc.

Space forbids a detailed discussion of each of these affections as related to the risk of life, or more properly health, insurance. Suffice it to say that the risk is not momentous, judged from the prosperous condition of most of our insurance companies. Certainly the premium rate need not be increased on this score. Stricture is probably the commonest serious sequel of gonorrhea, and like all other manifestations of the disease must be cured before a straight life insurance policy can be granted. In connection with this attention must be directed to spermatozystitis, the commonest complication and the most frequently overlooked urogenital focus of sepsis, capable of elucidating a retinue of remote symptoms too little appreciated by the average practitioner of medicine.

#### SYPHILIS.

The importance of syphilis to life insurance risks has demanded in recent years additional consideration. This has arisen by virtue of the discovery of *Treponema pallidum* and the advent of the Wassermann reaction, whereby further evidence substantiates the recognition of syphilis as the chief cause of paresis, tabes, and aneurysm, and one of the chief

factors in other types of arterial and cardiac disease, particularly in patients under fifty years of age. The studies of parasyphilis and the so called luetic sequelæ have clearly shown that these are misnomers, and that in truth we have to deal with a definite syphilitic process in the lesions of which living treponemata can be demonstrated. Except in the early stages of syphilis, there is no assurance that treatment affects an absolute cure; it may simply render the disease latent. Clinical and serological cures may not be cures at all, as shown by Warthin and others in demonstrating the treponemata at autopsy in the heart and vascular walls of supposedly cured syphilitics.

The fate of the syphilitic is directly dependent upon the earliness of diagnosis and the intensity of treatment during the first few weeks or months of the infection. This is a matter of vastly more importance as far as life insurance is concerned than the mere determination of the fact whether or not the applicant may have acquired the disease, or the arbitrary symptomless probationary period of three to five years since its acquisition. It should be apparent that desultory and ill advised treatment extending over a year or two is far less efficient in the prevention of recrudescence than two or three months of energetic intensive modern therapy. If medical examiners of life insurance companies consulted directly with the physician who treated the applicant and learned the nature and extent of anti-syphilitic treatment employed they would confer a greater service respecting the insurability of the applicant.

Our conception of syphilis in relation to insurance risk is twofold: the morbidity and mortality incident to deep seated visceral disease speedily threatening the life of the individual, and the influence on vital resistance predisposing the victim to the acquisition of all other diseases, notably tuberculosis. In thousands of deaths among insured lives, the minimum death rate due to syphilis is 5.2 per cent.; the maximum fifteen per cent. (Tiselius, Salomonsen, Blaschko, Kleinschmidt, Runeberg, Weber, Bramwell, Audry). Thus syphilis ranks higher than pneumonia as a cause of death and stands second only to tuberculosis. Kleinschmidt finds the average age at death of syphilitic policy holders to be forty-five years, the average duration of insurance to be 10.5 years, and the average length of time between infection and death to be 21.5 years. This compared with nonsyphilitic policy holders shows a decrease in longevity of 3.5 years, and in duration of insurance of approximately 1.5 years. Gollmer estimates that the average extra mortality among syphilitics is sixty-eight per cent. over other insured men at all ages. This series was made up almost exclusively of diseases of the central nervous system, the heart, the vessels, and the kidneys. Five thousand three hundred and eighty-five policy holders in American insurance companies, admitting syphilitics, showed a death rate of 33.3 per cent. above the expectation. It will be borne in mind that the mortality is, furthermore, powerfully influenced by age, climate, race, alcohol, and most of all by treatment.

It is a fact that almost all syphilitic proposers for life insurance undergo examination during the latent

stage of their infection, when the customary physical examination may fail to detect a trace of disease. History, moreover, is not to be relied upon, since all such individuals can be classified into three groups: 1, the ignorant, 2, the forgetters, and 3, the deceivers. Insurance companies and examiners should remember that a positive Wassermann is the only symptom of latent hereditary lues for years, and then other manifestations appear in the patient or his brothers and sisters. At present we can predict nothing of the future of these persons with no sign other than a persistent Wassermann, unless they be victimized for paresis or tabes, manifesting an incubation period of thirty or forty years in some instances. We do know that both Colles' and Profeta's laws are false. Jeans states that the first sign of syphilis in a girl aged twenty years was an interstitial keratitis. He also declares that ten per cent. of children in his research demonstrated latent syphilis. Clark observed acute visceral hereditary syphilis in a woman twenty-four years of age.

A properly performed Wassermann test is unquestionably the most reliable means for the detection of syphilis in these latent forms. Indeed, it is often the sole means of diagnosis, with the best technique, a positive result is indisputable, excepting frambesia and yaws. Negative results should not be obtained in any untreated case with active manifestations of syphilis, excepting the early primary or where alcoholism is a factor. In treated cases with negative results and suspicious symptoms resort should be had to a provocative Wassermann. In special cases, particularly proposers for large policies, where the diagnosis of syphilis is at stake, examination of the spinal fluid by the Wassermann serological test, Lange's colloidal gold test, Noguchi's globulin test, and the lymphocyte count should be done. Approximately twenty-five per cent. of patients show abnormalities of the nervous system as shown by the spinal fluid.

Enough has been stated to show that a syphilitic applicant is not as good an insurance risk as a non-syphilitic, although under certain circumstances, namely, intensive treatment of the primary stage of the infection, he may be classed with the near first raters; otherwise the policy should consist of a short endowment in favorable cases with special rating, the policy not extending beyond the age of fifty or fifty-five years. Degenerative changes are prone to occur and risks and results are unqualifiedly bad.

The idea that slight initial signs and mild early symptoms betoken severe tertiary manifestations, and vice versa, is probably erroneous. Credence, however, is growing that there are different strains of *Treponemata pallidæ* exhibiting selective tissue affinity. For instance, it is conjectured that one strain has a selective affinity for involvement of the central nervous system, another for the cardiovascular system, another for the viscera, bones, or skin, and so on.

#### CONCLUSIONS.

1. A syphilitic proposer never constitutes as safe a risk as a nonsyphilitic.
2. No applicant should be considered for insurance who exhibits active manifestations of syphilis or is known to have a positive Wassermann blood



test. Any sign of arteriosclerosis, aneurysm, incipient tabes, or paresis is sufficient cause for rejection.

3. If the policy desired is unusually large and there is cause for suspicion of syphilis, the proposer should be required to have not only his blood but also his spinal fluid examined for evidence of disease.

4. Active syphilis in an individual of strong constitution, excellent habits, and proper mode of life may mean simply temporary rejection until clinical and serological signs shall have been negative for a sufficient time.

5. An arbitrary symptomless time limit of three to five years as to insurability is not nearly so important a criterion as an accurate knowledge of the nature and extent of early treatment.

6. No proposer acquiring syphilis after the age of forty should be accepted.

7. Insurance companies rarely have to consider applicants with congenital syphilis. If so, and the applicant is young, he should be debarred; in adults stigmata of the disease in an otherwise excellent life need not necessarily forbid the issuance of a policy.

8. Careful discrimination on the part of the insuring companies is always imperative. Two courses are open: the admittance of all syphilitics with extra rating and short endowment terminating at the age of fifty, or acceptance of all proposers at ordinary rates, provided at the time they are free from all symptoms and signs, including a negative Wassermann, and that they possess an otherwise good constitution, good habits, and satisfactory environment and mode of life.

## SOME MISLEADING MEDICAL FADS OF THE TIME.

By BEVERLEY ROBINSON, M. D.,  
New York.

Not many years ago, we were overridden by specialists who extirpated ovaries and tonsils. Dr. William M. Polk, of New York, stopped the former operation in a measure, and Dr. John N. Mackenzie, of Baltimore, ended the latter. Operative attacks on appendices still prevail, however, and will do so, no doubt, as long as doctors ignore inflammation of the cecum and continue present methods of medical treatment. To my mind these are frequently very bad compared to former procedure. Opiates and warm poultices with high enemata, rest, and liquid diet brought many patients around who are now daily sacrificed to the ready knife. If they survive the unnecessary operation, as of course they will usually, they suffer from adhesions, recurrent pains, and attacks of intestinal dyspepsia which they would not have if the appendix were still present to carry on its physiological rôle, which is surely important, although only acknowledged by a few.

Hardened arteries and high blood pressure with the daily use of sphygmomanometer and the misinterpretations of its adepts are a source of great anxiety to many. Why not allow the old man or woman to grow old gracefully and kindly and not be tormented by one of the latter day evidences of contracted mental vision? The heightened blood pres-

sure and the arterial condition are interdependent and preservative in many instances and should not be interfered with by foolish theories and practices.

The old time practitioner knew well that to empty the bowels regularly and sufficiently by suitable purgatives or laxatives was rational and desirable, and he usually insisted upon it in his daily rounds. He did not fill up the belly of the sufferer with mineral oils or find it necessary to recur to most ill advised laparotomies to get rid of kinks and ptoses. Carminatives and a simple diet, with an occasional day of relative starving, would cure many, many dyspeptics. It was not essential to cause further distress by ordering large doses of insoluble bismuth to be swallowed for diagnosis, which not seldom caused conditions afterward interpreted by the x ray to be pathological when they were merely the result of unwise, wrong interference. Teeth which cannot be filled and cause continuous trouble or pain should be extracted, but every ailment of the human body, from headache to gallstones, cannot be explained by the teeth, and these should not be taken out because erroneously they are considered the *fons et origo* of morbid symptoms. The science which makes and continues a Rockefeller Institute is great and good with proper limitations, but because a man can experiment knowingly upon a dog, a monkey, or a guineapig, does not prove to my mind that he is the man I want when I am ill. Give me, I beg, the old fashioned general practitioner with much experience in human ailments, a modicum of common sense, and a genial sympathetic heart and mind, and every time, when possible, I will get the better of my bodily or mental ailments. *Verbum sat sapienti.*

42 WEST THIRTY-SEVENTH STREET.

## MASSAGE, KINESITHERAPY, AND BANDING IN THE TREATMENT OF DISPLACED SEMILUNAR CARTILAGES ON THE KNEE JOINT.

By DOUGLAS GRAHAM, M. D.,  
Boston.

"The whole body fitly joined together and compacted by that which every joint supplieth, according to the effectual working in the measure of every part, making increase of the body unto the edifying of itself."—Ephesians iv, 16.

"So I prophesied as I was commanded and as I prophesied there was a noise and behold a shaking, and the bones came together, bone to his bone."—Ezekiel xxxvii, 7.

It would seem as if Nature had been somewhat negligent of her work in placing in each knee joint a couple of buffers that are so easily displaced as the semilunar cartilages seem to be in some people. Many of us have doubtless supposed that these cartilages are firmly attached by their under surfaces to the head of the tibia, and this has but deepened the mystery of their displacement. It may be worth while to review briefly their anatomy and physiology, which must have become exceedingly rusty to many of us since our student days.

Situated on the head of the tibia and covering the outer two thirds of the corresponding articular surfaces, held in place by their attachments in front and behind the spine of the tibia, and further forti-



fied by the coronary ligaments in front, the internal lateral ligament on the inside, and by the popliteus muscle on the outside, it would seem almost impossible for the semilunar cartilages ever to slip out of place. Concave on their upper surfaces for adaptation to the condyles of the femur so as to facilitate flexion and extension, and lined by synovial membrane, not only above, but, as some recent writers seem to have forgotten with the rest of us, also on their under surfaces as well, in order to permit rotation between them and the head of the tibia, the complexity of this joint strikes us as something wonderful, even though we have been used to it all our lives. Morris gives us by far the best description of these cartilages that I have yet been able to find: "They lessen the shock and jar of walking, running, and jumping; they fill in the intervals between the articular surfaces of the femur and tibia, which during extension are slight, but during flexion are considerable; they deepen the facets of the tibia for the condyles, and for this purpose they are less fixed at their fore part than behind, so as to be able to close in upon the spherical portions of the condyles in flexion and to slide forward and be squeezed out *into large circles* by the anterior, nearly flat portions of the condyles in extension. This adjustment of the fibrocartilages to the condyles of the femur in the varying positions of the joint is due partly to their own tendency to shift, partly to their connections, and partly to the pressure and pull of surrounding parts. In flexion and extension the cartilages move with the tibia upon the femur. In supination and pronation the tibia moves upon them while they remain unaltered in their position to the femur; the outer cartilage is steadied chiefly by the pressure of the popliteus, the muscle chiefly concerned in rotating the tibia inward or pronating the leg, against the outer margin of the cartilage while it is acting upon the tibia" (1).

I fear that it requires a more brilliant imagination and delicate touch than most of us are possessed of to appreciate "the large circles" that the semilunar cartilages are squeezed into by extension, as well as to realize the statement of Dr. Scott Lang, that "in a perfectly sound knee the internal semilunar cartilage can be distinctly felt to recede when the knee is flexed and to come forward in extension on the anterointernal aspect of the joint." Even when all the indications point to displacement of semilunar cartilages, oftener than not these cartilages cannot be felt, as in the three following cases, which were evidently due to dislocation of the internal semilunar cartilage:

CASE I.—On April 12, 1886, Mr. C. came to me. He was twenty years old, thin, wiry, and muscular, but somewhat loosely jointed. Two years before this, when jumping, he said, he put his right knee out of joint, but kept walking about upon it, though it pained him much for several weeks. Twice afterwards he sustained the same injury to it, though less severely, and he had had several "kinks" besides. Three days before he came to me he had twisted it as badly as at first, and he was obliged to walk on tiptoe with knee semiflexed. The day after the accident he went to one of our large hospitals, where he was told that a cartilage was out, and he was worked over for a while with a view to getting it back, but without avail. He came away from the hospital with the knee enveloped in cotton batting and a bandage over this, and continued to hobble as before. The pain was referred to the inner

aspect of the knee, which was tender on pressure, and any attempt to extend the leg increased the pain. The tissues around the knee seemed relaxed, but there was no effusion or swelling, and undue projection of the internal semilunar cartilage could not be made out, though the symptoms all pointed to such an injury. Flexion caused no pain, and while the leg was flexed I pressed firmly with my thumb over the painful spot and extended the leg quickly, and repeated this a few times, with the result of getting the leg extended. This procedure was somewhat painful, but by allowing him to rest a few minutes while using massage and then repeating the same movements of extension the pain decreased. Then I pushed strongly with the heels of my hands over the natural depressions in front of the knee joint while the leg was flexed, and told him to extend it vigorously. After this, free and gentle passive motion was used and well tolerated. Placing a pad formed by a few folds of bandage over the inner aspect of the knee, I applied a bandage firmly over this and around the knee, and the patient walked off almost naturally with but a slight limp half an hour after he came to me. In standing he could not fully extend the leg, but it was as straight as a leg is required to be for walking. He returned the following day and I gave the knee massage and gentle passive motion, while exerting pressure over the inner aspect of the joint. I applied a splint to the back of the leg and thigh, but he soon returned without it, saying that the bandage and pad alone were much more comfortable and supporting. I have not seen him since, but I have been told by his friends that he has not had any return of the mishap. No doubt he was a little lame after I saw him.

CASE II.—Miss A. was nineteen years old and weighed one hundred and thirty pounds when she came to me in June, 1894. Ten months before this she had been running down hill where the ground was rough, and suddenly she felt something slip on the inside of her right knee. The pain was momentary and she managed to walk home with difficulty—a mile and a half. Two weeks after this it slipped again; the leg was semiflexed and her physician did not succeed in getting it extended. He kept it in a splint for a fortnight and gradually straightened it. After this it seemed well for several days, but soon slipped again going down stairs, and she did not step with it for four weeks. She then went to New York and consulted an orthopedic surgeon, who put it in plaster of Paris for three weeks and after this in a metallic brace, which did not seem to fit very well, for she wore it only for two days. After this another slip, followed by effusion, laid her up for ten days. The swelling soon disappeared. She has had several more slips since, some of them on slight provocation, as when sitting with the lame leg partly crossed over the other below the knee and allowing it to roll outward by its own weight, which would cause the disturbance to reappear. She has always distinctly felt something slipping out at the inner aspect of the knee when she has made a misstep or done anything to twist the leg out. Recently, by keeping quiet for five minutes or so she could sometimes feel it slip back; at other times she could only infer that it had gone into place because she felt that she could use it, though it was a little lame and sore for a day or two afterwards. Five weeks before she came to me she stubbed her toe and had a more severe relapse than usual. She had worn a plaster cast almost continuously for seven or eight months, removing it occasionally indoors. She was much discouraged and in despair of ever being able to lay aside entirely the plaster cast.

On examination I found slight periarticular thickening on each side of the ligamentum patellæ, but no effusion in the joint. Passively rotating the leg outward caused discomfort on the inside of the knee, but inward rotation did not. Extension was normal; flexion but one fourth normal, and on attempting to bend it further pain was produced at the anterior aspect of the internal condyle. No undue projection of the internal semilunar cartilage could be made out. Though this patient and her relatives were of the highest intelligence, yet none of the physicians who had seen the case vouchsafed to tell them what they thought was the matter with the knee, which must have been sufficiently evident from the history alone. The whole leg was smaller than the other. Restrained muscular action, disuse, and the pressure of the cast accounted in great part for the smaller size of the right leg, though it might

always have been somewhat smaller than the other. Extra use of the left leg probably made it larger. But notwithstanding the apparent atrophy of the quadriceps extensor she could hold the leg extended for twenty-five seconds, and this was immediately seized upon as an exercise to strengthen these muscles; and with this object in view she was advised to extend the leg six times, thrice daily, and to increase this once daily. The whole limb was massaged daily, and more especially the muscles of the thigh; faradism was applied to the quadriceps extensor, flexion was gradually increased, while firm pressure was made over the inner aspect of the knee, and after these a bandage was firmly applied around the knee and over a pad on the inside. Even after the first sitting of this kind the knee and whole limb felt much invigorated, and after the second the plaster cast was laid aside entirely, as the knee felt much better supported by the pad and bandage, which had never been applied by anyone else before, and which gave greater feeling of security and allowed more freedom of motion than anything that had been applied. In four days the feeling of stiffness had disappeared and the leg could be bent to a right angle. The knee continued to gain in strength, move easier, and feel more comfortable. In eleven days she could hold the leg extended one minute and a half; in thirteen days, two minutes and ten seconds; and later she could hold it for four minutes, with corresponding improvements in other respects. In order to improve flexion she was told to hold on to the mantel shelf and get into a squatting position three or four times a day. To prevent a repetition of her accident she was advised to walk with the knee extended and toes turned out, so that the muscles would not be caught off guard, and very soon after she began walking in this way a clumsy man stumbled against the inside of the great toe of the leg in question, but without doing any harm to the knee. With the hope of further strengthening the tissues on the inside of the knee and thigh we tried resisting adduction of the thigh with the knee semiflexed; but the sensations produced quickly made us aware that we were on the wrong track, even though my hand pressed firmly over the inner aspect of the knee as she moved it inward. This is the motion that throws the internal semilunar cartilage out.

More recently I have discovered that by standing on the side of the patient opposite to that of the offending internal semilunar cartilage, and by pressing with the heel of the hand on the inner aspect of the knee, the patient can do adduction with safety and advantage.

Under daily treatment for four weeks the knee improved and felt strong all the time, and she was encouraged to walk toes out indoors without the bandage. She then went to the seashore, and visited me two or three times a week for the next five weeks. I allowed her to go bathing and swimming with a rubber bandage on as a precaution. At the seashore she had to go up and down two flights of stairs on foot, and this seemed to improve the bending of the knee, so that it bent past a right angle, and soon she was able to run on the beach, to dance, and to go down stairs naturally, though not easily, which is the most difficult exercise for weak, lame knees. Ten days before she passed from my care we feared that our labors had been brought to naught, for while she was sitting on a trunk the lid suddenly slipped closer. In her alarm she jerked the leg violently and the old feeling returned, as if something were out of place. She pressed firmly over the inside of the knee and extended it, as I had previously shown her how to do in the event of a relapse, but without improvement. She could not fully extend it. She applied the pad and bandage tightly and this gave relief. It was lame and uncomfortable for only a day after, and this might be interpreted as evidence of more rapid recuperative power. Three days afterwards it could be flexed farther and easier than before the accident on the trunk, and it also allowed full extension. This was probably due to rupture of adhesions which we had been more slowly and safely trying to accomplish. A week later, under massage, bandaging, and electricity, she had more than regained what she had lost by the last mishap, so that flexion was almost natural, but descending stairs was still a little irksome.

Two months later she wrote me that she was walking three miles a day and riding horseback with a side saddle, a position that would seem unfavorable for the

right knee. She had not worn the bandage for a month, and the knee felt strong without it. She could run down stairs and the stiffness had all disappeared. Three months after this I heard from her again, that she could walk, dance, and ride a bicycle without any trouble, and wanted to know if she might skate, which I permitted.

CASE III.—Mr. C. E., fifty-two years old; weighs one hundred and ninety pounds; is strong and athletic, and has no surplus fat. Three weeks before he came to me, on September 12, 1894, his right foot caught in a croquet wicket and he hurt his knee. It was semiflexed and painful, and attempts to straighten it were not successful. His physician did it up in plaster of Paris for three or four days, and after that he hobbled about with it partly flexed. Slight, unexpected eversion of his foot had often thrown something out at the inside of his right knee, and this had frequently occurred in bed. But he had always been able to twist and extend the leg himself in such a way that he could feel it slip back again, until this last time. The knee had bothered him in this way for ten years.

On examination there were found slight effusion and heat and some periarticular thickening, and the muscles on the front of the thigh were soft and flabby, as compared with the same muscles of the other thigh. No projecting cartilage could be felt. Massage and snug bandaging were given with a pad over the inside of the knee, passive motion with firm pressure over the seat of the internal semilunar cartilage every day for a few days, and later every other day, with home exercises of extension and flexion. In two weeks he had good use of the knee and could go up and down stairs, and in two weeks more he had resumed riding his bicycle.

These patients were delightfully surprised at the comfort and support of a bandage with a pad under it, in comparison with the discomfort and lack of support of splints and plaster casts. I do not know whether the following case was one of displacement of the external semilunar cartilage or not. The manner in which the accident occurred and the previous history would lead one to think that it might have been.

CASE IV.—Miss H., eighty-one years of age, a well preserved lady, of medium stature, who looked not more than sixty, had never been sick a day in her life. Ten days before I was called to her, while she was ringing her doorbell, which was on the left of the door and pulled hard, she lost her balance and swayed around to the left. Her left knee had since been swollen and motion was difficult. The knee was weak and stiff, bowed outward, and foot turned inward, and she walked with the aid of a crutch, sliding the foot along the floor. She could not go up or down stairs. No effusion could be made out in the cavity of the knee joint itself, but there was much effusion above the joint, bulging out on each side of the tendon of the rectus femoris. Evidently the synovial bursa beneath the quadriceps extensor was shut off from the cavity of the joint, as is sometimes the case. On placing a thumb and finger on each side of the ligamentum patellæ while moving the leg there was a feeling and sound as of dry, creaking leather, not perceptible in the other knee. In the previous twelve or fifteen years her left leg had been gradually changing its outline, so that it bowed out at the knee and in at the foot, but without any discomfort. There was great relaxation of the attachments of the knee both on the inside and outside, as shown by the ease with which the leg could be bent externally and internally. When the ankle was pulled externally and the knee pushed in, the space between the inner condyle of the femur and the internal tuberosity of the tibia was much greater than that of the other leg, evidently due to absorption of the articular surface of the inner condyle; and, confirmatory of this, the leg when extended was straight anteroposteriorly, whereas in the natural condition it ought to have deviated slightly in at the knee and out at the foot. When the foot was pulled inward and the knee pushed outward it was astonishing to what extent the outward bending went, and this produced discomfort at the inner aspect of the joint and was



attended by a noise and feeling as if the spine of the tibia were slipping in and out of place. Altogether it was a curious and interesting knee.

The effusion in the synovial sac under the quadriceps extensor rapidly disappeared under massage every other day and a bandage worn in the intervals. After the first massage it was three eighths of an inch less in circumference around the seat of the swelling, and in two weeks it was all gone. Moderate efforts at rectifying the position of the leg were of no avail. After the effusion had disappeared the problem seemed to be that of strengthening the limb, and for this purpose resistive movements of pushing and pulling while the patient was lying down were alternated with the massage. She exhibited unusual vigor in pushing and pulling the leg against the resistance, which increased our wonder at her inability to use it better when in the perpendicular position. After three weeks of this there was no improvement in walking, notwithstanding increase of strength in flexing and extending the leg and thigh against resistance while lying. Thinking that perhaps she might be able to walk better if the quadriceps extensor could be strengthened, we found at the first trial that she could hold the leg extended for one minute, an unusually long time to begin with. After five minutes of massage to the quadriceps extensor she held the leg out for one and a half minutes; two days later, two minutes before massage and three minutes after. But still no improvement in walking. A well padded ham-splint was faithfully tried, afforded neither support, ease, nor comfort.

A year or two later I called to see this patient, and learned from a relative that she had died of pneumonia, and that several months after I last saw her the knee had rectified itself so that she could go up and down stairs naturally.

CASE V.—Dr. S., when a boy was brought up on a farm, and when milking, one of his legs would frequently get painfully flexed under the other with the foot turned in. It hurt severely to extend it, but when once extended it seemed well again. On one occasion when he was swimming the accident occurred and was followed by an attack of acute synovitis, after which the whole condition disappeared and had no return. In all probability the effusion allowed the displaced cartilage to get back into its natural position, and the accompanying inflammation caused it to adhere there, an event that would not have been likely to have taken place if the leg had been put in a splint or plaster of Paris dressing.

The following case is narrated by Dr. W. H. Bennett:

CASE VI.—A soldier had a displacement of the internal semilunar cartilage which was replaced by his doctor soon after the injury. The ordinary exercises of the gymnasium were at once prescribed. At the end of a week the displacement recurred, pain was intense, and complete extension impossible. Reduction was attempted, but without success. The exercises were continued and as much walking as possible allowed. Six weeks later the leg was still flexed and could not be extended by manipulation, the knee was distended and pain on walking acute. Rest for a fortnight and massage without exercise removed the fluid, and reduction occurred spontaneously while turning in bed; but recurrent attacks followed until he was operated upon and a piece of the semilunar cartilage removed.

Textbooks on surgery are woefully deficient in information concerning displacement of semilunar cartilages. The best monographs on the subject are by Dr. Scott Lang and Dr. Herbert W. Allingham, and from these we learn that the semilunar cartilages may slip forward, backward, inward, or outward. The internal semilunar cartilage is the one most often at fault. As to the symptoms in general, the knee is usually semiflexed and can not be extended; but flexion is usually free in recent cases. The foot is turned outward when the internal semilunar cartilage is displaced; inward when it is the external

semilunar cartilage. In most cases little or nothing abnormal can be seen or felt about the joint, except the semiflexion and a little tenderness at the head of the tibia. Rarely can the cartilage be felt projecting, and even when it does synovitis may supervene in a few hours and mask the symptoms.

*Etiology*.—Though any violent accident may produce internal derangement of the knee joint, most cases would probably coincide with Doctor Knott's instructive description of his own case: "It has always been the result of a very slight, and in every instance an indirect violence. This violence has always been applied so as to produce a twist at the knee, either of the leg outward or of the femur inward. The most common cause has been striking the inside of the great toe against something when the knee has been slightly flexed, the parts about the joint as relaxed as possible, and the muscles thrown off their guard. I never suffered any derangement when the limb was in a decided state of active motion" (2).

The whole subject has been still further elucidated by Dr. Scott Lang (3), who points out that the internal semilunar cartilage is displaced in rotation of the leg outward combined with flexion, and external semilunar cartilage in rotation of the leg inward combined with flexion, and that the injury is caused by some sudden and almost involuntary movement when the muscles governing the joint are off their guard or fail to act in concert with one another. A lax condition of the ligaments and muscles of the knee joint from general debility or previous synovitis would predispose to these accidents.

*Treatment*.—Laying aside cases that require surgical interference by cutting into the joint, the indications for treatment must be very clear. Restore the cartilage to its natural position if possible. Retain it there. Strengthen the joint and muscles so that they will be less likely to be caught off guard. Various suggestions are made as to the methods to be pursued to replace the semilunar cartilage. When one fails another is tried. The method that seems to be most reliable is as follows: Flex the leg as much as possible upon the thigh, then rotate the tibia inward if the inner cartilage is displaced, outward if the external, and extend the leg quickly upon the thigh while pressing with the thumb where the cartilage is supposed to be out of place. The opposite procedure—extension, then flexion with pressure—sometimes succeeds. As it may be very difficult to ascertain whether a cartilage has slipped out of place or not, Dr. Samuel J. Mixter has made the very shrewd suggestion that in every case of sprain or twist of the knee, movements of replacing a dislocated meniscus should be ordered, but if a semilunar cartilage is not displaced, it is very evident that such a procedure would hurt the patient unnecessarily and be very likely to aggravate a sprain of this joint, and if a semilunar cartilage were not displaced, such movements might put it out in a sprained knee.

Concerning this point Dr. William H. Bennett says that repeated futile attempts at replacing the structure which is supposed to be displaced have been the cause of some of the worst cases of trau-



matic arthritis of the knee joint with which he has had to deal, and in two led to the development of tuberculous disease. Temporary fixation and massage he considers of the utmost importance for the removal of the fluid from the joint and to allow the loose portion of the cartilage to fall back and adhere in its normal situation, which with the help of the surrounding inflammation often follows to some extent. Massage of the muscles and of the joint without motion can not be begun too soon, for it prevents the wasting of the muscles and the flaccidity of the capsule. Passive motion without rotation should soon follow, as it prevents adhesions; but passive or active motion involving rotation should not be encouraged in the early stages.

It does not seem to me that a hamsplint or a plaster cast is so direct and effectual in retaining a semilunar cartilage and supporting and comforting the knee as a pad with a snug bandage over the offending region. Moreover, there would seem, in some cases, at least, to be a tendency of these cartilages to slip back into place even when attempts to readjust them had failed, but if the joint is immovably fixed by a hamsplint or plaster cast, its power to adapt itself to a return of the cartilage by gentle instinctive change of motion is prevented, which is not the case with a pad and bandage. For the relief of the heat, pain, and swelling that result from a sprain, wrench, or twist, massage properly applied is most satisfactory. For the preservation of the circulation and nutrition of the muscles and the prevention of atrophy, massage applied early has proved to be quite effectual.

As displacements of the semilunar cartilages are most likely to occur when the muscles are off guard, so to speak, our endeavors should be to strengthen these muscles so that they will not be "caught napping." I imagine that the behavior of muscles in this manner is due in great measure to a loss of "muscular sense," the restoration of which is promoted in an astonishingly agreeable manner by means of massage, which at the same time helps to bring back the automatic action of the will and spinal cord in presiding over these lazy sentinels. And this will be still further aided by alternating massage with carefully graduated movements of pushing and pulling, and of voluntary efforts of holding the leg extended. A few minutes' application of the faradic current to the quadriceps extensors immediately after the massage sometimes seems to have a more invigorating effect than either alone, and, moreover, the contractions caused by the faradic current are but another and useful form of motion—semiactive, semipassive.

Walking with the foot turned inward is considered to be a good precautionary measure when the internal semilunar cartilage is liable to slip out of place, with the foot turned out when the external cartilage is likely to slip, according to Scott Lang; but as either of these positions allows all the more latitude for rotation in the opposite direction when the knee is semiflexed, it can only be safe so long as the patient receives no violence to throw the leg in the opposite direction; whereas, if the patient walks with the foot turned out and knee extended, where it is a question of preventing dislocation of

the internal semilunar cartilage, then, as it is already in the position where the cartilage is liable to be displaced, but with the muscles on guard, unexpected violence is resisted, and the range of motion that would be dangerous is reduced to a minimum, as was the case with the second patient reported previously.

In cases that have required operation for the removal of the semilunar cartilages or for stitching them in place the joint is generally stiff for some time afterwards. As soon as two or three weeks after the operation Doctor Allingham recommends daily massage and passive motion, and later that the patient should try to sit on his heels. A much safer plan than the latter is for the patient to hold on to something, such as the mantel shelf or foot of a bed, so as to graduate and control the weight upon the knee.

Full of significance are the following words of Dr. A. Logan Turner (4): "In order to gain some idea as to how soon after operation a man may return to his work, one must take into consideration the nature of the operation, the length of time during which splints have been worn, and the amount of care which the patient gives to massage and movement."

It is important to learn that some good surgeons like Dr. A. N. McGregor, of Glasgow, consider that the passive motion and massage in these cases may be commenced on the removal of the sutures at the sixth to the tenth day, or, if much swelling of the joint has occurred, they may be delayed to the fourteenth day. In three weeks the patient should be able to walk about with the aid of a stick, and some of his patients have been able to work in six weeks from the date of the operation (5).

From the foregoing the following conclusions would seem to be justifiable:

1. That neither in their natural nor unnatural position can semilunar cartilages often be distinguished from the surrounding tissues. They seem to form an inseparable part of the head of the tibia.

2. That the position of the leg affords the best means of inferring whether one or the other semilunar cartilage may have been dislocated when it cannot be felt, the leg being usually flexed and the foot turned out when the internal meniscus is dislocated, the leg flexed and the foot turned in when it is the external.

3. To attempt to replace a dislocated semilunar cartilage it is wise to flex the leg, then extend suddenly, rotating the leg inward if it be the internal cartilage, outward if it be the external, while exerting pressure over the offending region.

4. That there is a natural tendency in some cases of dislocated semilunar cartilages to slip back into place when the leg is not artificially restrained.

5. That if the knee be immovably fixed by plaster or splints before the cartilage has got back into its natural situation, the joint is locked and restrained from gentle instinctive movements that might favor its return.

6. That cases of displaced cartilage are attended by voluntary and involuntary restraint of motion on account of pain and mechanical impediment, and in some cases by synovitis and the formation of

adhesions. Forcible passive motion might then have the double purpose of breaking the adhesions and rectifying the displacement, as possibly occurred in the second patient referred to in this article.

7. That even after a meniscus has been restored to its natural situation it is not so securely and comfortably held by plaster and splints as by a pad of a few folds of bandage and a figure of eight bandage applied over this, which affords support and comfort and a safe limit of motion.

8. That it is possible by carefully applied massage, resistive movements, home exercises, and electricity so to strengthen the muscles on the front of the thigh, the fascia, ligaments, and attachments of the knee joint, that they will safely hold a previously dislocated semilunar cartilage without artificial support.

9. These remarks do not apply to cases requiring surgical operation, though the above mentioned combination of treatment might be safely tried in some cases before cutting into a knee joint, but more especially after operation for restoring motion and strength. The symptoms, diagnosis, and treatment of displacements of other interarticular fibro-cartilages have not yet been properly studied by anyone that I know of.

Closely allied in symptoms to unstable semilunar cartilages of the knee joint are thickened fringes, hypertrophied synovial villi. In a few patients who have recently come to me for treatment and were patiently and hopefully waiting for operation as a last resort, the kinks, the catches, and the synovitis have rapidly disappeared under massage and tight bandaging, and the joints have resumed their normal shape and function. This might be explained by the squeezing of the exudation out of these fringes and pushing them up into the intracondyloid notch where they would not be liable to be pinched between the condyles of the femur and the head of the tibia.

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#### DIGITALIS.

##### *Its Proper Place in Medicine.*

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*Digitalis purpurea*, known for centuries for its action on the circulatory system, is associated with the name of that famous physician, William Withering of Birmingham, England, who, writing in the year 1785 under the title, "An account of the fox-glove, and some of its medicinal uses . . .," recorded the first reliable observations of its medicinal properties. He thus raised the drug to the pedestal from which it has never been displaced. From the days of Withering's publication, the writings of clinicians repeatedly refer to the action of the herb on the rhythm of the heart. Many and various have been the physiological and pharmacological theories

advanced to account for its virtue, and upon these theories has it been used with the resultant dissatisfaction.

Recent advances in the interpretation of obscure cardiac phenomena made possible by the use of the polygraph and the electrocardiograph have opened the eyes of investigators to view the heart from the standpoint of function rather than from that of mechanics or pharmacology. To James Mackenzie, Cushny, Lewis, and to the genius Einthoven, to Keith, Flack, His, Tawara, and the galaxy of recent celebrities, who share the honor of unraveling the mystery so long surrounding this plant, does the real credit belong.

Hypotheses have given way to facts, so that now knowledge of the action of the drug upon the heart and circulation begins to reveal accurate therapeutical application and to give more satisfactory results. The drug stands enthroned among all known plants today as specifically the agent of greatest virtue to the hopeful cardiopath.

The study of the drug, its applications, and its therapeutical expectations are based upon the use of standardized preparations of the leaves, the quality of which has been positively guaranteed. It is not the object of this paper to give a detailed discussion of the alkaloids, or glucosides that are a part of, and may be isolated from, the crude plant, but to draw attention to the therapeutical applications of the drug itself.

Allen's English leaves are still recognized as the quality and form of the plant to be used in the making of preparations. Several preparations may be mentioned: 1. The standardized tincture. 2. The granule of Nativelle, each granule containing 0.25 milligram (1/240 grain) of the crystalized digitalin. This is made in France. 3. Solution digipuratum—Knoll; a faintly alkaline solution isotonic with the body fluids, one c. c. representing eight frog units in pharmacological activity, equaling 1.5 grains of the digipuratum powder. 4. Digipuratum powder—Knoll; 1.5 grains being equal to 1.5 grains of potent digitalis leaves. 5. German digitalin—Merck; in doses of 1/24 grain to 1/30 grain. It may be given in larger doses to advantage. Digalen—Roche. Many excellent American preparations are also obtainable.

Digitalis should be used for its physiological effects, always keeping in mind that stomach symptoms, such as nausea or vomiting, indicate the approach of its toxic action. Its effects upon the cardiovascular system will always be shown prior to the toxic effects, or at the latest, associated with the onset of gastric irritation. Mackenzie, who uses the tincture, recommends doses of fifteen to twenty minims three or four times a day, and makes the statement that the average quantity which produces nausea in most cases is from five to eight drams when taken in doses of one dram per diem. His estimate of relative strength is that fifteen minims of the tincture equal one grain of the leaves.

Regarding the danger of digitalis, it is said authoritatively by those who use it most that they have never seen the slightest danger arise from taking digitalis in the doses given above. If the drug is stopped as soon as vomiting or nausea appears, or



when the heart's rate falls under fifty beats a minute, no apprehension need arise, even though fatal syncope has been attributed to its administration.

The effects of the drug are dependent upon the nature of the lesion for which it is given. Clinical experience for ages has proved the beneficial action upon some patients, and a strange lack of response in others. This mystery is now rapidly being unveiled, as the combined studies of clinicians and laboratory workers prove the selective action upon certain forms of cardiac disturbance and an absolute lack of action in others. The myogenic theory of cardiac function is the key to the solution of the pharmacology and the clinical application of the drug as a remedy.

Certain laws directing its clinical use are now established: 1. The reaction to digitalis is far less effective when the rhythm is normal than when auricular fibrillation is present. 2. Whenever the heart is affected by toxins or agents which increase excitability, digitalis has little effect upon the rate, whether there is auricular fibrillation or whether the rhythm is normal. Thus, in tuberculosis, typhoid, malignant endocarditis, rheumatic endocarditis, alcoholism, etc., the above holds true. 3. Experience shows that in auricular fibrillation, especially where there is a large amount of healthy heart muscle, rather than when extensively diseased, the reaction to digitalis takes place. The most marked response is found, therefore, in the youthful type of the disorder with a rheumatic history. When fibrillation occurs in the senile heart, especially in the absence of a rheumatic history, the failure to respond is very common. 4. It is important to realize that digitalis at times so affects the conducting bundle of His as to depress the same with production of partial heart block. 5. Digitalis proves of inestimable value in restoring muscle tone or, more properly speaking, the property of tonicity, in myocardial relaxation, especially when resulting from fibroid replacement occurring after the acute toxemias. The responsiveness of the heart to the drug indicates relatively the percentage of good cardiac muscle still present, for with lesions affecting its efficiency it is hopeless to expect a complete recovery of the strength exhibited by a healthy heart.

Physiologically, then, we base our expectations upon the following actions of digitalis: 1. It acts on the cardiac muscle, the intrinsic cardiac nerves, and the vagus centre in the medulla. 2. It has some contractile action over the arterioles generally, but while contracting the vessels in the splanchnic area, it seems to dilate those of the kidneys. The increased kidney secretion may result without a material rise in the blood pressure. 3. Its action on the vagus slows the pulse rate, and the diastolic period is made more complete. 4. Its specific inhibitory action over the conducting auriculoventricular bundle of His checks the discordant impulses arising in the auricle, thus slowing the ventricular rate in cases of auricular fibrillation and flutter. 5. Its selective action upon the musculature makes the contractions more powerful, its beats become more efficient, the diastolic pause becomes prolonged, and an increased volume of blood is thus delivered at each systole. 6. Through its action upon the mus-

culature it increases the nutrition of the heart itself by forcing a greater volume of blood through the coronary circulation. Dilatation is lessened by the restoration of tonicity; the muscular rings about the auriculoventricular orifices contract more strongly; the mitral and tricuspid valves close more efficiently, thus lessening regurgitation. 7. Digitalis improves the tone in the arteries and veins through the auto-massage of the vessels as a result of the slower, stronger beat. The increased suction of the muscular contractions of the heart aids the circulation in the vessels. The diminished regurgitation, combined with the increased circulation in the veins, lessens venous congestion, and because of its action over the kidneys increases the secretion of urine. 8. Branton recognizes the diuretic action of the drug in four ways. It dilates the renal vessels and increases the pressure in the glomeruli; it lessens the resistance which the pressure of distended venous radicles in the kidney opposes to secretion; it stimulates the secreting cells directly; it increases the volume of the blood and somewhat alters its composition by causing absorption from edematous tissues and serous cavities. When it causes absorption of ascitic fluid from the abdominal cavity, it may act as a diuretic also by lessening the resistance opposed to the secretion of the urine by the pressure of the ascitic fluid on the kidney itself and on the ureters.

A word should be said on the tendency of digitalis to raise blood pressure, as much undue anxiety prevails among the profession. The fear of increasing the burden of the heart already laboring against high pressure by raising the pressure by the use of the drug is unwarranted. Such a fear is wholly without foundation, for the consensus today recognizes that in the proper medicinal doses mentioned the drug does not affect the arterial walls, or, if it does, the effect is so slight as to be negligible.

A word regarding the congeners of digitalis. Those most commonly used are: *Strophanthus in-sipidus*; *Urginea scilla*; *Convallaria majalis*; *Apo-cynum cannabinum*; *Adonis vernalis*, and *Cactus grandiflorus*. Two of these preparations are worthy of special consideration: *strophanthin*—Boehringer's—for intravenous injection: Each ampoule, one c. c. or one mil, contains a standardized one per cent. solution of *strophanthin*. *Cymar*in—Bayer: Each ampoule contains one milligram (gr. 1/60) *cymar*in. *Cymar*in has a special field in obstinate dropsy.

#### THERAPEUTICS.

Digitalis acts almost specifically in that type of arrhythmia which is accompanied by a completely irregular pulse.

*Auricular fibrillation* presents the first and most important indication for the drug. The patients most benefited are those of the youthful type with a previous history of rheumatism and the evidence of mitral stenosis. As the rapid, irregular, ventricular action is the main cause of the broken compensation, digitalis, through its action over the conducting bundle, blocks many of the discordant auricular impulses and so controls the irregularity, lessens the pulse deficit, and so reduces the ventricular rate. The method should be "dose to effect" and the constant or periodic use of the drug in smaller doses to



maintain the effect. Cases of fibrillation without a true history of rheumatism show a lessened response to the drug. Senile cases, the result of degenerative changes in a large percentage of cases, fail to react to the drug entirely.

**Auricular flutter.**—W. T. Richie, Thomas Lewis, and others have proved that when the auricles are in flutter, digitalis exerts a profound influence on the heart. At first the drug lessens the rate, producing fibrillation, and then upon its continuance at times a normal rhythm is restored. Full doses to effect or till urgent symptoms are relieved should be given and continued till fibrillation; finally withdraw the drug with the hope that the normal rate may be restored.

**Chronic myocarditis.**—The warning is often given not to use digitalis in the weakening hearts of the aged without arrhythmia. My experience proves the drug to be of the greatest value to the senile, or to those in middle life who have suffered acute toxemia with its resultant fibrosis and beginning failure from exhaustion. The latter obtain prompt relief from symptoms, both subjective and objective. During middle life one grain once or twice daily gives great relief. In the aged ten minims of the tincture twice or thrice daily may prolong their comfort for years. For the aged, the following has proved of inestimable value:

R Strychnine arsenate .....	gr. 1/30
Digitalin—German—Merck .....	gr. 1/30
Quinine sulphate .....	gr. 1/2
Calcium glycerophosphate .....	gr. ii
Taken three times a day.	

Let it be remembered that a diseased heart which has once shown indications of failure should be kept under the beneficent influence of this drug as long as it keeps on beating; and also that digitalis never loses its effect by continued use. Its action is uniform and the cumulative effect negative when kept under toxic doses.

**Digitalis in cardiovascular renal disease with decompensation.**—This opens an important subject. Where the myocardium falters under the load induced by hypertension, and where the signs of decompensation appear, digitalis is necessary to restore the secondary fall in pressure. Patients may be thus carried along for a considerable period. Where, however, a condition of respiratory stasis appears as the result of the development of nonvolatile acids in the blood, and Cheyne-Stokes's respiration develops, very little or no benefit is to be obtained from the drug.

**Digitalis in pneumonia.**—Alfred E. Cohn, at the Rockefeller Institute, has recently proved that digitalis acts beneficially in the fever of pneumonia. It should be used, therefore, positively in this disease to sustain the exhausted heart.

#### CONCLUSIONS.

The following summary and conclusions can be deduced:

1. Digitalis, or one of its congeners, is the drug par excellence in the treatment of the cardiovascular system.
2. Its use should be governed by certain basic and well defined laws.

3. It should be used in doses administered for its clinical effect.

4. Its beneficial action depends upon its power over the cardiac musculature; its regulative action over the auriculoventricular bundle of His, and upon the vagus.

5. In therapeutical doses it does not cause any perceptible rise in the blood pressure.

6. The hypertension of cardiovascular kidney disease does not contraindicate its use.

7. It is specifically active in auricular fibrillation and flutter.

8. It is very valuable in chronic myocardial affections with or without recognizable dilatation.

9. It is useful in the support of the heart in the acute toxemias.

In brief, it is a drug of marvelous efficiency—but it must be used with the greatest intelligence.

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#### THYMOL TREATMENT OF TRICHINOSIS.

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The second stage of the trichinosis infection is difficult of treatment because the parasite has left the intestinal canal and has lodged itself in the muscles and other tissues of the body where it is difficult to reach by means of remedies administered by mouth. It is futile to give thymol by mouth after the parasite has wandered out of the alimentary canal. The thymol does not circulate in the blood as such after its absorption from the alimentary mucous membrane. Its antiparasitic properties are neutralized in the liver in the following manner: Thymol is metaisopropylcresol. From the intestine it is absorbed into the portal circulation, and there conjugated with sulphuric and glycuronic acids and excreted in the ester form in the urine. This process of conjugation is the means used by the body to detoxicate the aryl compound. It is obvious then in order to attack the trichinae in the muscle and tissues, another method of administration of thymol, other than administration *per os*, must be resorted to. Parenteral injections of thymol would exclude the conjugating influence of the liver. The thymol would be absorbed in the blood and would circulate as such, and thus be able to attack the parasite *in situ*. From the success that we have obtained in the treatment of trichinosis in this hospital, I would suggest the following method of procedure:

Fifty grains of thymol are dissolved in fifty c. c. of sterile olive oil which had been autoclaved for several minutes. The solution was then reesterilized and used. The patient was given from two to three c. c. of this solution subcutaneously or intramuscularly daily for seven days. The urine is examined daily for evidence of any kidney irritation, in which case the administration of thymol should be stopped or the dose reduced for a few days. After a week's treatment, the administration should be discontinued for about a week or ten days, and then a week's treatment should be again instituted.

In my experience, such a course of treatment

does not induce any toxic effects due to the thymol. In cases in which a septic temperature occurs temperature becomes normal after four or five doses. The pain in the muscles, the edema of the eyelids and face, the dull mentality of the patient, all due to the parasitic influence, become very quickly relieved. With the destruction of the parasite in the tissues it will be observed that the eosinophiles in the blood become very much increased, and the sections of the muscles will show destructive processes around and in the parasite. I have observed that after thymol administration, showers of leucocytes appear in the urine, which upon staining were proved to be mostly eosinophiles. Before the thymol treatment this was not observed in the same cases. In normal individuals, the administration of thymol does not induce an eosinophilia, nor are there present in these normal individuals and eosinophiles in the urine after thymol injections.

It may be advisable to try this method of treatment in cases of cysticercus, filaria, and echinococcus invasions of the tissues.

## RADIUM TREATMENT OF TINNITUS AND MIDDLE EAR DEAFNESS.

### *A Preliminary Report.*

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Realizing the futility of attempting to cure tinnitus of long standing or middle ear deafness by catheterizing the Eustachian tubes, the writer decided to experiment with radium. The use of radium in ear conditions, while not new, is recent. Brühl and Albrecht, in Berlin, report a series of cases in 1914, as did Hügel and Haelin. Brühl and Albrecht used massive doses of radium and considered a patient benefited only if the perception of whispered words was increased. They placed as far as possible in the ear canal a measured quantity of radium in the form of a radium bromide applicator. The radium strengths used were two milligrams, 7.75, and in a few cases twenty-three milligrams. The ear canal was protected by a thin layer of tinsel paper. The exposure could thus be made for ten to thirty minutes with a minimum of dermatitis. As a rule the radiation was repeated every eight days and was interrupted after three exposures. Their conclusions were: 1. Radium has no beneficial influence upon hearing. 2. Radium benefits and even cures tinnitus. 3. Radium disturbs the ear nerve mechanism without harming the other structures. 4. Radium relieves dizziness.

Hügel, however, using five milligrams of radium, reported twelve cases of deafness benefited out of nineteen radiated. Haelin's results seem to agree with neither of the other observers. He reports eleven cases of deafness treated, with one improved and eleven cases of tinnitus with five improved. W. S. Bryant, of New York, has reported excellent results in a number of cases treated with large doses of mesothorium.

Not having a massive quantity of radium at his

disposal, the writer used a 0.0001 gram radium sulphate applicator. This applicator consists of a small bead about the size of a buck shot, the radium being enclosed in substance within a glass capsule. A flexible wire is fused into the bead. This applicator is inserted unscreened into the ear canal, and gently pushed inwards, under eye guidance, until the capsule is in contact with the tympanum. The flexible wire allows the applicator to be inserted into the most tortuous canals. The applicator is held in place by a bit of cotton put into the meatus. The first treatment is of thirty minutes' duration, and the following sittings are gradually increased up to one hour. The patients experienced no discomfort, except in three cases, when a slight itching of the ear canal occurred. This is in contrast to the powerful applicators which often produce skin burns.

By using radium unscreened and in direct application to the tissues the rays are not filtered either by interposed metal or through distance. The entire rayage is thus utilized minus the alpha particles; none of these penetrate the glass; but the gamma rays and a considerable amount of the beta rays do penetrate. It is probable that by using the apparatus unscreened, its power was somewhat increased, because of the greater proportion of beta rays. Later the views of physicists are being modified in the direction of greater employment of the beta rays. This end one secures by close application—no distance filtration—and by leaving out interposed metal. It is even contended that the beta rays are of more importance than the gamma. According to this view the gamma rays are effective by virtue of their creating secondary beta rays on contact with the tissue.

The amount of radium used by the writer was small and could not be considered in neoplastic cases where it would be necessary to affect cell growth. In ear cases the amount of pathology is small, its character relatively simple, the aural apparatus delicate, and in a small compass. What we have to deal with are the end results in a slowly progressive, low grade, inflammatory process. In such cases the primary influence of radium we are seeking is its stimulating effect. Small doses of radium stimulate, large doses affect the cells of living organisms. A small amount of radium may procure the resorption of inflammatory products, first by stimulating phagocytosis and second by its influence on sensory nerves in the regulating of the blood supply.

The results, while not at all brilliant, are, as shown below, encouraging and interesting from the experimental point of view. The following cases were radiated at the Massachusetts Charitable Eye and Ear Infirmary. The hearing was tested before radiation was started and at the discontinuance of treatment. These tests were done by an intern who had no knowledge that the patients had received special treatment. The patients were gathered from both infirmary and private practice.

CASE I.—Girl, age twenty years, employed in a factory. Diminished hearing for past two years. Hearing test, before radiation: Right, whisper, 8 feet; voice, 25 feet; Rinné, 14-18 seconds; Low, 64 fork. Weber, > left; whisper, 6 feet; voice, 15 feet; Rinné, 4-12 seconds; Low, 128 fork.

After twenty-two radiations, left ear only: Left, whisper, 8 feet; voice, 19 feet; Rinné, 6-12 seconds; Low, 128 fork. Right, Weber, > Rinné, 11-18 seconds.

CASE II.—Housewife, aged thirty years. Diminished hearing past five years. Severe tinnitus. Hearing test before radiation: Right, whisper, 3 feet; voice, 25 feet; Rinné, 3-17 seconds; Low, 96 fork. Weber, > left, whisper, 0; voice, 0; Rinné, 0-13 seconds.

After twenty-five radiations there was no change in her hearing. The tinnitus was relieved.

CASE III.—Boy, aged eighteen years. Hearing test before radiation: Right, Weber, < whisper 0; voice, 0; Rinné test, 0.5 seconds. Left, whisper, 0; voice, 0; Rinné, 0.4 seconds.

After twenty-one radiations he could hear a shout, but could not distinguish the word. A 512 fork was heard by air conduction for one second.

CASE IV.—Housewife, aged thirty-two years. Hearing test before radiation: Right, whisper, 4 feet; voice, 25 feet; Rinné, 24-10 seconds; Low, 80 fork, and Weber, > left, whisper, 3 feet; voice, 25 feet; Rinné, 15-11 seconds; Low, 128 fork.

After forty-two radiations, left ear only: Right, whisper, 4; voice, 25; Low, 80; Weber, > Rinné, 25-12 seconds. Left, whisper, 3; voice, 25; Low, 128; Rinné, 21-15 seconds.

Total cases of chronic secretory otitis media treated for defective hearing, twenty-five. Cases of tinnitus treated, twenty five.

*Results.*—Defective hearing: cured, none; improved, five; not improved, fourteen; worse, six. Tinnitus: cured, one; improved, ten; not improved, twelve; worse, two.

636 BEACON STREET.

## UROLOGICAL DIAGNOSIS.\*

By FREDERICK J. PARMENTER, M.D., F.A.C.S.,  
Buffalo.

Successful urological diagnosis depends upon good team work between the urologist, röntgenologist, and laboratory worker—unless the urologist is fortunate enough, and has the time to do his own laboratory work well. The use of the cystoscope, x ray, and laboratory technic have become today procedures of precision which not only can be, but must be, employed in the vast majority of cases if a correct diagnosis is to be made. Equally important is the carefully taken history and a complete general physical examination of the patient, special attention being paid both in history and examination to sources of focal infection which are today playing so important a rôle in medicine, for it is now believed by many that practically all forms of chronic nephritis are due to long continued infections.

Three symptoms usually cause the patient to seek medical advice. First, disturbances of urination; second, pain; third, passage of abnormal substances such as pus or blood.

Disturbances of urination mean irritability of the vesical trigone, and frequency is nature's effort to relieve the system of toxic products; while pain signifies the distention of the organs resulting from inflammatory swelling, urinary obstruction, etc.; and the passage of blood and pus simply shows the presence of the lesion in, or communicating with, the urinary tract.

*Examination.*—The patient holds his urine for four hours if possible, then voids into three separate

receptacles, passing not more than an ounce in the first, and dividing the remainder equally between the second and third. The samples are inspected and set aside for later examination. If shreds or pus are noticed in the first specimen with the second and third clear, suspect the anterior urethra; if the second specimen also contains them look to the posterior urethra, vesicles, and prostate.

However, if all three contain pus and shreds suspect the kidney. Next the urethra is irrigated, then the bladder filled repeatedly until the fluid is passed clear. Leave the bladder full and palpate the prostate and vesicles per rectum, expressing their contents into the urethra. If abundant, the secretion may be caught in a receptacle as it drips from the urethra, or recovered when the fluid in the bladder is voided.

By these methods diseases of the lower urinary tract can be, for the most part, excluded unless these organs have become secondarily involved from descending renal lesions. If tuberculosis is suspected the entire urine for twenty-four to forty-eight hours is saved; the sediment collected and reduced by various methods until it can be smeared on half a slide, then stained, and the whole field examined. From now on the examination proceeds alike in the male and female. An x ray examination of the entire urinary tract should be made, or if the history has been one strongly suggestive of stone, this examination may be made before any other. It is unnecessary to state that before any x ray examination is undertaken the patient should be thoroughly prepared by catharsis and diet. In order that combined x ray and cystoscopic examination can be carried out whenever indicated, it is advisable to have the urological and x ray department of private offices, when such exist, and the hospital closely connected with one another for obvious reasons. The cystoscope is then passed and ureters catheterized, collecting separate samples from each side for microscopical, bacteriological, and chemical analysis.

In a few minutes after ureteral catheterization one c. c. of phenolsulphonaphthalein is given intravenously and the time of its appearance noted. The samples are then collected for fifteen minutes and the function of each kidney estimated. If, for any reason, a catheterizing cystoscope cannot be passed some idea of the appearance of the urine may be obtained by watching the urine as it leaves the ureteral orifices; and the function of the kidney can be estimated by giving five to ten c. c. of a 0.4 per cent. indigo carmine solution intravenously and observing the time of appearance and intensity of the color. Following this, if there are evidences of hydronephrosis or pyelonephrosis, or shadows in the x ray plate to be differentiated, the picture is taken showing the position of the x ray catheter; following which a ten per cent. thorium solution is allowed to flow in under hydrostatic pressure and a series of plates taken showing the outline of the pelvis and calyces. Thus, at one sitting, the urological tract is x rayed, the patient cystoscoped, separate urine collected for microscopical and bacteriological examination, the function of both kidneys determined, and a pyelography carried out if indicated. It is to be remembered that function is always diminished in

\*Read before the Seventh District Branch of the New York State Medical Society, Batavia, January 3, 1917.



the diseased kidney and not infrequently there is a reflex reduction of function of the sound kidney.

*Etiology.*—Renal infection may be due to any one of the following causes: 1. Trauma following a history of injury which may be severe or trifling; i. e., crushing injuries, or the twisting of the body in dancing. Locally there is tenderness and swelling, blood may or may not be present in the urine. Its absence means nothing. Frequently there is shock, and, if bleeding is extensive, signs of concealed hemorrhage are present. Later infection of the blood clot is common, causing the symptom of renal or perirenal abscess. 2. Pyelonephritis; the Brewer kidney represents the severest type and the so called pyelitis the mildest. 3. Avenues of infection. Cabot, in a recent article, states that renal infections are practically always hematogenous. Eisendrath, on the other hand, believes that many infections reach the kidney from the bladder through the submucosal and periureteral lymphatics and cites a convincing array of experiments to support his contention. All are agreed that infection up the lumen of the ureter is unusual because of the competency of the ureteral vesicle sphincter muscle, which must be congenitally deficient or destroyed by disease before bladder fluid can regurgitate into the ureter. However, recently, Kretschmer in a paper on cystography has demonstrated regurgitation into one or the other ureter in a large percentage of normal individuals, and in these patients the ureteral orifice and function where normal and the individuals were absolutely well. This observation has again reopened the question.

*Symptoms of pyelonephritis.*—There is a history of a septic process or trauma, with a severe or mild chill, rise of temperature, pulse rate, white blood cell count, the patient looking ill. Locally there are pain and tenderness over the affected kidney. Cabot believes that clinically, by urinary examination, the coccus group may be separated from the colon typhoid group. The coccus group lodge principally in the cortex of the kidney, with the result that little pus, blood, or albumin will be found together with the organism in the urine; and because the tubules are not involved the phthalein test will remain practically normal. Later, when abscess formation has occurred with rupture into the pelvis, naturally the quantity of pus will be greatly increased. The colon typhoid group is distinguished because these organisms involve the tubules and the pelvis; therefore, these organisms will be found early with much pus, some blood and albumin, and a phthalein test will show function much reduced. In many instances the infection soon becomes a mixed one giving the symptoms of both groups.

Pyelonephritis usually has an acute course, and, in laboratory experiments, infected animals completely recovered within eight to fourteen days. It must be remembered, however, that an acute pyelonephritis may be simply a flare up of a chronic condition which has been overlooked, and an infection with both groups of organisms at the same time may be present. The end results of pyelonephritis are extensive or moderate destruction of the kidney, or, which is perhaps more important, a development of

chronic interstitial nephritis having its origin from some focal infection.

Bilateral calculi may sufficiently depress the kidney function to cause the symptoms of mild or severe uremia. These symptoms may appear as stomach trouble, which is a well known symptom of uremia. Sudden anuria may be caused by calculi suddenly blocking both ureters. Pain is present in about seventy per cent. and absent in the remaining thirty per cent. It is increased by exertion, palpation, etc. When absent, small fixed stones, or a large stone filling the pelvis, should be suspected. Pain types include: 1. Dull ache, posteriorly, in costovertebral angle, and anteriorly at a point one and one half inch below the costal cartilage of the ninth rib. 2. Colicky pains radiating from a fixed point down the ureter to Poupart's ligament, bladder, or genitals; never up and across the abdomen. This is important. 3. Pain referred to: opposite kidney usually diseased, appendix, ovarian neuralgia, bladder, genitalia, thigh, leg, and heel. Hematuria may or may not be present. Palpation of the kidney or exercise may cause it to appear. A negative urine does not rule out stone; and urine findings are never diagnostic, but merely suggestive.

The diagnosis will be made by the x ray differentiation from other shadows cast by gallstones, calcified lymph nodes, phleboliths, and by x ray catheter and pyelography. The history and the physical and urinary examination are next of importance in the chain of evidence.

*Tuberculous symptoms.*—Frequency of urination which appears at night as well as day and becomes progressively worse. Pyuria is usually associated. Hematuria may be an initial symptom. Tuberculous lesions are found elsewhere, especially in the lungs. The finding of the tubercle bacilli in the urine or bladder washings, bullous edema of the bladder, and especially of the ureteral orifice on the involved side, are quite characteristic. The capacity of the bladder is small and the viscous exceedingly sensitive to instrumentation. Renal pain or tenderness may, or may not, be present. Hematuria may be the only initial symptom, or pain in the side simulating pyelonephrosis without any bladder changes whatsoever, with absence of frequency, etc., has been seen by the writer. However, suspect renal tuberculosis in a young person who has frequency persisting in spite of treatment. Late in the disease pyelography may show a typical picture of kidney destruction, or the ureter may be distorted and palpable through rectum or vagina. It is well known that tubercle bacilli, like other organisms, may pass through the kidney without damage, and are found in the urine in cases of acute miliary tuberculosis. This may be of diagnostic value in acute, obscure, systemic infections. The urine is collected for forty-eight hours; the sediment reduced so that it can be spread on half a slide, stained, and examined. Bacilli may appear only after pelvic trauma by the catheter.

*Hydronephrosis.*—Hydronephrosis and pyelonephrosis are symptoms of urinary obstruction with consequent complete or partial destruction of the kidney parenchyma. If the diagnosis is made early and the obstruction removed the kidney will be

saved. Locally there is pain, especially sharp, if the swelling is acute. If the obstruction is not complete the attack will be intermittent. The swollen kidney may be palpable if the distention is sufficient. When a ureteral catheter is passed fluid runs from the affected pelvis in a steady stream and the pyelogram and x ray catheter will outline the distended pelvis. At times, after an x ray picture is taken in a dorsal, and then standing, position the kidney will descend in the latter position and the catheter in the ureter appear as hanging over a cord. This type of obstruction is frequently due to abnormal vessels running from the lower pole, together with a movable kidney. In diagnosis the early history tells but little. During the attack the kidney is tender on palpation. When a ureteral catheter is passed the urine flows in a steady stream. A pyelogram outlines the kidney pelvis, while the x ray catheter taken in the dorsal and standing position may reveal the point of obstruction.

**Renal tumors.**—The most common are the hypernephromas. If the tumor does not communicate with the pelvis and cause the one urinary symptom "hematuria," the early diagnosis is nearly impossible. Pain of a dull, aching character due to stretching of the kidney capsule is usually present, and later a palpable tumor is found. The cystoscope will show the side from which the hemorrhage is occurring and if the tumor be a papilloma in the pelvis the ureteral catheter might separate some pieces which would be recovered in the urine. A pyelogram usually shows obliteration and distortion of one or more calyces. The x ray alone is negative. The development of varicocele in an adult, especially after forty years of age, should excite the suspicion of a renal tumor. Furthermore, this type of varicocele does not disappear when the patient lies down.

Essential hematuria, a misnomer, simulates early tumor very closely, and is probably caused by venous obstruction due to chronic fibrosis which first begins at the medullary cortical junction, the dilated vein slowly crowding its way into the pelvis, where rupture occurs. Like renal tumor, the cystoscope will show the side from which the bleeding comes. Palpation is negative, as is the x ray. A pyelogram would show but little deviation from normal in the pelvic outline. Only exploration would reveal the true condition, and even with the limited opening permitted in the kidney, the lesion might easily escape notice.

**Polycystic kidney.**—Polycystic kidney may be unilateral or bilateral. The cysts may be one or many. If solitary, and grown to any size, the clinical picture would be one of local swelling which might feel hard or soft. Hematuria would be absent, the x ray negative, and a pyelogram would rule out hydronephrosis, for the pelvis would not be enlarged, and unless deformed by pressure of the cyst, would be normal in outline. If the lesion were bilateral and sufficient kidney tissue destroyed, uremic symptoms would be present.

Let us now pass to a consideration of the bladder. Comparing the bladder and the stomach one is at once impressed by the similarity of symptomatic manifestations in diseases of the urinary and digestive systems respectively. Both are relatively rarely

the site of primary disease. Symptoms of bladder or stomach trouble may be the only ones present, as is shown in tuberculosis of the kidney and chronic appendicitis respectively. Therefore, it is not a correct diagnosis to classify every case of frequency of urination as cystitis, unless diseases of the kidneys, posterior urethra, prostate, and vesicles have been excluded, which is rarely done. It has been the writer's experience to find only two common and one rather rare lesion where the primary disease arose in the bladder itself.

The common ones were stone and tumor, and the rarer one diverticulum. No case of cystitis, meaning inflammation, has been encountered where the primary focus could not be found elsewhere through the history and examination; the only exception being where infection has been added to an already existing bladder lesion.

**Vesical calculus.**—If the calculus is imbedded in the bladder wall no symptoms are likely to be present, and the urine is clear. If the stone is loose discomfort upon exercise with increased frequency are common, and, unlike vesical irritation from prostatic hypertrophy, the symptoms are less at night or during rest. Blocking of the urethra during urination causes sudden stopping of the stream with marked tenesmus. If infection by *Staphylococcus albus* or the proteus bacillus is present the urine has a rather milky appearance and an extremely offensive odor. The x ray and cystoscope will make the diagnosis clear, and, if the latter does not find the stone, the former should be used.

**Tumors of the bladder,** either papilloma or carcinoma, have bleeding as their initial symptoms. A drop or two of blood at the end of urination was the only symptom in two of a series of ten cases. Free bleeding had been present at some time in the others.

**Diverticulum** may cause no symptoms unless infected, when those of cystitis will be present. Occasionally after urination the patient will suddenly desire to urinate again, and a quantity of clear or turbid urine will be passed. The cystoscope and a cystographic plate of the bladder will clear up the diagnosis.

Finally, it has been shown that infection of the prostate and vesicles usually arising from posterior urethral infections, discharge their pus again into the urethra, from where it may regurgitate into the bladder and cause cystitis. This type of cystitis is only cured when the prostatic or vesicular focus is removed and good bladder drainage reestablished by full dilatation of the urethra, as stricture, even of moderate calibre, is frequently present.

#### CONCLUSION.

It is hoped that this brief review of the ordinary lesions of the urinary tract, their method of study, the great importance of the kidney, prostate, and vesicle as sources of infection, and the relative infrequency of bladder disease, may prove of value to the general practitioner, whose time and methods of examination are necessarily limited. The writer has attempted to touch only the important points in each lesion which he has seen, not infrequently misinterpreted.

519 FRANKLIN STREET.

# Our Readers' Monthly Prize Discussions

## Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of \$25 offered for the reply deemed best by the editors to the following questions:

CLXXXII.—How do you prevent infantile diarrhea? (Closed.)

CLXXXIII.—How do you treat excessive menstruation in the unmarried? (Closed.)

CLXXXIV.—How do you correct bad spelling and forgetting in children? (Answers due not later than July 15.)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

*The prize of \$25 for the best answer to Question CLXXXI has been awarded to Dr. Caroline F. J. Rickards, of New York, whose paper is concluded below.*

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### PRIZE QUESTION CLXXXI.

#### TREATMENT OF THUMB SUCKING AND NAIL BITING.

By CAROLINE F. J. RICKARDS, M. D.,  
New York.

##### PART I. THUMB SUCKING.

(Concluded from page 1037.)

The child's means of attaining an expression of this power are necessarily limited, and therefore he utilizes those pathways which have fallen so far below cultural consideration that adult thought does not readily again accept them from the child's point of view. Certain avenues are still wide open for the child's energy to utilize. The child's growing cultural sense has already, it may be, entered enough corrective to restrain these activities under ordinary circumstances, but on the occasion of any relaxation of the as yet slenderly developed restraints there is immediate return to the exercise of the pleasure toned activity and the utilization of that as means of domination of circumstances or individuals otherwise too strong for his child will.

It is just here in the way that Pfister has suggested that we can make the only approach to an effective handling of this universal habit. Punishment, reward, and ridicule are to be considered with extreme caution. Ridicule can only be the weapon of a hostile misunderstanding, the sort of means which would drive this child impulse, at basis a normal, creative impulse, it should be remembered, merely back upon itself, to increase and intensify the blind, misdirected struggle of the energy within it and so fix the habit, strengthening its compulsion because it strengthens the force of thwarted, wounded feeling which has failed to make its successful contact with the world.

Punishment will do the same thing unless the ordinary conception of punishment is largely modified in the light of this sympathetic understanding. If it too makes that disharmony between what the child consciously is compelled to do because the forces of punishment are too strong for it and the equally strong compulsion from within, there will be passionate rebellion and rousing of a strong though inexplicable sense of injury with which the wounded unconscious pleasure sources will with-

draw to themselves for future strengthening of a feeling of helplessness, inferiority, and the pathological reactions which arise from these.

No less judiciously should the question of rewards be considered. Here too it is quite possible so to cover and conceal the way to a real harmony and freedom of unconscious impulse in conjunction with conscious demands that no sufficient preparation is made for the child's future. Rewards that pamper the egoistic wish of the infant for the easy obtaining of pleasure, for this form of power expression, will not help him from the servitude to such low grade pleasures on the escape from which his development, his health, and efficiency depend. Punishment and reward then, at the best, can be but slightly supportive measures in the service of something higher and more complete.

Natural development brings its own corrections in time, but probably never with so complete a release from the infantile pleasure bondage if this bondage has persisted for a long time. There should be assistance through the judicious guidance of the parents, at whose aid and for whose instruction the physician must stand. Other remedies fail, limited measures which reckon only with our conscious methods of thought and appreciation of these vital expressive phenomena, do no more than to crowd the struggling childish power further into the emotional background, there to create further reaching disturbance. Sympathy then knows the world struggle from the child's point of view and thus most materially aids the child to swing right about with its powers enlisted in the common stream of development and progress, never blocking its energy, only swaying and guiding it to wiser and freer and more open channels.

Practically for thumb sucking this means the watchful, appreciative attitude on the part of mother, teacher, caretaker, whoever he may be, to assist the child in discovering activities for busy little fingers and thumbs. There must be in it a stimulating interest which will absorb the creative desire which is the driving impulse and grant a pleasure in doing and achieving which is an ever higher form of pleasure. This substitutes, very simply at first and by the slow degrees which are suitable to earliest childhood, a progressive pleasure for a form of gratification which tends more and more to cen-



tre upon self as it is permitted to indulge itself, or is forced back upon itself by the imposing of those corrective measures which in reality only have a regressive, reactionary result. This early education leads to a selfcontrol which is really gaining mastery over the impulses hidden already to the child, and so harnessing them willing servants in the whole purpose of life, which has its beginnings no later than the beginning of conscious life. There is no greater equipment for the child than this. Having acquired this attitude toward life at the start he is ready to acquire all the rest.

The treatment of thumb sucking may then be stated very simply, and yet it is all embracing and far reaching. Enter into the child's psychical life. This means to open one's eyes to an affective life which already stretches behind his own conscious thinking and trying. Learn to know its dynamic force. Then in the light of that recognize the thumbs as ready means for easy and regressive gratification, for a despotic manifestation of unreasoning power over the small child's world. See them also, however, as carriers of a pleasure in the exercise of the same power in a more real form as through thumbs and fingers he learns to master the world and control it through serving it by these same agents of a constructive, creative, progressive power. Train and guide and use these active, pleasure giving and pleasure receiving thumbs, and then the child will gradually come into his own, which is to lead the world.

#### PART II. NAIL BITING.

The summary statements of our textbooks make a large inclusion of the minor habits of children similar to that of thumb sucking. They offer, however, no enlightenment or suggestions of therapy, and yet these habits are equally in need of correction. Emphasis is apparently laid upon thumb sucking because it is probably the earliest manifested and the most universal of these practices. The same causative factors, however, can be found upon analysis to be operative in other manifestations such as nail biting, lip biting, cheek biting, hair twirling, finger picking, head scratching, etc., and the same therapeutical principles will be found to apply.

Chief among these manifestations may be mentioned the practice of nail biting. Attention might also be called to a variety of phenomena which are peculiar now to this individual, now to that. Lip biting is perhaps the most frequent and most often carried into adult years. The analysis of these phenomena has led to comparative racial psychology where a dynamic impulse reveals itself underneath similar practices. The magic value ascribed to a dead man's teeth, his ears, the life giving power supposed to reside in the finger sacrificed by one to attain life for another, reveal an inherent lack of differentiation between the different parts of the body in infantile and primitive thought. Not only may one part stand for another, but each of these parts contains that innate life power associated with reproduction and its pleasure instinct.

Thus as the thumb has been to the small child the expression and the object of his autoerotic pleasure seeking, there is a return to such an object

in later life; it may be only a very little later. Meanwhile his masturbatory impulse has been developed. The earliest beginning of canalization in the genital zone has followed upon the use of the thumb as a pleasure object, or perhaps accompanied it. Later progress toward culture demands correction of this masturbation. Yet the impulse is strong and asserts itself unconsciously in face of an absolute renunciation of masturbation on the part of the conscious or even a conscious ignorance of any masturbatory desire. Unconscious want of gratification, however, or unrest occasioned by an unconscious sense of guilt urges toward some form of substitute gratification. Lips, ears, nose, teeth, tongue, any or all of these become objects to which an autoerotic indulgence is at least partially socially permitted. The fingers are by their activity particularly suited to become the objects of that compromise between unconscious impulse and cultural correction which so often hides a double determinant of any symptomatic practice. They find the forbidden pleasure in disguised form in the manipulation with the teeth and mouth which are concerned in nail biting.

Dynamic impulse feeling its way along the difficult path of adjustment is therefore again at the bottom of this and kindred practices. The same form of understanding and interpretation is on this account the only effective one for the child or for his instructor and helper. A therapy of redirected and socially applied energy through finger tips is the one that most rationally recommends itself.

*Dr. Samuel Rabinovitz, of Brooklyn, N. Y., writes:*

Nail biting may be practised either by children or adults, and it usually indicates a condition of extreme nervousness on the part of the individual. This being the case, it is essential that one should get at the root of the trouble causing the nervousness, instead of treating the condition of nail biting, which may in reality be considered as merely a symptom of nervousness. Having succeeded in relieving the underlying cause of the trouble, and having prescribed bromide and sedative remedies, and this condition still persisting, it may be a good procedure to cut the nails very short and, especially in children, to tie up their hands with a bandage or with a one fingered glove whenever the desire to do this becomes so intense as to be beyond control. In addition to this, children should be reproached or frequently reprimanded, and told that it is a bad habit, etc., and be discouraged to such an extent as to cause them to drop this habit.

Thumb sucking is not as much a nervous symptom as the former condition is, but may be called more a habit than anything else. The treatment for this is almost just as unsatisfactory as for the former condition. Tying up the thumb or entire hand may be tried; especially is this applicable to the cases of children and babies. A good procedure to resort to occasionally is to paint the child's fingers and thumb with the tincture of aloe or tincture cinchona compound. Then, as soon as the thumb or finger is taken into the mouth, the bitter taste of these drugs will discourage the child from continuing this practice. Of course, any other condition or hypersensitiveness connected with the nervous system should be ameliorated as far as possible.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal  
and The Medical News

*A Weekly Review of Medicine*

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Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JUNE 16, 1917.

### AN INLOOK AND AN OUTLOOK IN THE PROBLEM OF SYPHILIS.

"In the matter of health you may trust the people." This is the dictum with which Sir William Osler (*The Campaign Against Syphilis, Lancet*, May 26, 1917) characterizes the rising hopefulness of the outlook in the antisymphilitic campaign. He finds the changed attitude of a public which welcomes knowledge of the disease the chief sign that something effective is to be done. The public demands an educational campaign, and it alone will realize the efforts of the State to establish effectual measures to combat this menace. This is only, however, the glimmering of the dawn that at the same time grants that depressing realization of the actual conditions which make the darkest hour before the bright day. It is only the pressing of the campaign which the public is demanding that grants any right to hope and expect relief. The first emphasis, therefore, is laid upon the darkness of the hour. It is still astounding how soundly the medical world has preferred to sleep through the darkness rather than bring the facts of syphilis and gonorrhea into the clear light of scientific recognition and control. They have all too long left the "enemy entrenched behind the strongest of human passions and the

deepest of social prejudices." Osler has devoted this address to dragging from this pseudo safe security certain most important facts, the seriousness of which cries out against a strange neglect. He can claim no complete statistical accuracy simply because it is statistical reports which are so prudishly silent, but he has fortified himself by cautious underestimates rather than overestimates.

It seems scarcely believable that *A Review of the Vital Statistics for the Year 1915* should list and specially discuss eighteen causes of death, mostly infectious, and leave syphilis entirely out of consideration. In another portion of the report syphilis is given tenth place among the "best killers," with about one per cent. of the total deaths by these diseases laid to its charge. In the light, therefore, of such curtailment of actual conditions Osler proceeds to examine the evidence of widely existent facts. He admits in regard to gonorrhea that the gonococcus is not a great destroyer of life, but points emphatically to the returns from gynecological clinics and hospitals for women to show its responsibility for congenital blindness, pelvic disease, unhappiness of sterile marriages, and many minor ailments. As a preventer of life and producer of misery he places the gonococcus as the king of germs.

The precedence, moreover, of the spirochete of syphilis over every other infectious germ is overwhelmingly demonstrated. First in importance to the national health is its transmissibility and congenital significance. Accurate, decisive examination provides sufficient data for the condemnation of the spirochete among germs. To it must be laid the greatest number of intrauterine deaths and of an enormously large proportion in the first year of life. Furthermore this germ not only resides in its host for many years, but is by no means inactive during these years. Its predilection is for the cardiovascular and nervous systems.

Locomotor ataxia and general paresis have come to be known as syphilis, but it is not yet admitted to what an extent other lesions are due to the syphilis spirochete. Osler makes as a conservative estimate 10,000 cardiovascular deaths as due to syphilis, and the same number in diseases of the nervous system. To this may be added a comparatively small number of deaths due to lesions of other organs. Post mortem evidence is being most carefully collected in regard to the presence of the germ. Lesions are discovered in the heart, aorta, testicles, liver, and adrenals, with the actual presence of the spirochete in a goodly number of the

cases. In many of the cases it was not known that syphilis had been present. Wassermann figures, where known to be quite reliable, confirm such findings. Three conclusions result unquestionably from modern research: "1, there is an immense body of latent syphilis in the community; 2, a very large number of persons have not been thoroughly treated; and 3, to the enormous groups of cerebrospinal and cardiovascular deaths syphilis is an all important contributor."

The acceptance and weighing of such definite knowledge is the only sure basis for an actual scientifically and socially directed campaign against this venereal disease. Only intelligent effort thus directed can gain control of this first rather than last of the "ten best killers" and remove it from its pinnacle of infamous distinction. Accurate investigation and legislative action, instigated and supported by the force of public opinion, are now tending definitely that way. Establishment of venereal clinics is calling for the cooperation of the laboratory student, the statistician, the social worker, and the clinician, both the man and the woman physician. There should be, besides, a publicity bureau and a library. Education must be disseminated fearlessly, nor should moral influence be abated, although this does not always yield encouraging results. The changed attitude of the public to the problem will soon bring about an enforcement of notification and compulsory treatment. This study and these practical recommendations are peculiarly timely because of the inevitable increase of venereal diseases during war.

#### THE TRANSPORTATION OF THE SICK AND WOUNDED FROM THE FRONT.

One of the many distinctions which set military surgery apart from civil practice is the transportation question. The practitioner in civil life is concerned only or chiefly with treating patients to the best of his ability. The resident surgeon in a large hospital may cover in the course of a year's practice almost the same variety of cases received in a field hospital, although not so many of each, but the patients are delivered at his door. In the vicissitudes of battle by far the most important problem may be said to be the transportation of the wounded from the front to the rear.

Colonel Goodwin, who has served at the Western front since the war began and hence speaks with authority, has dwelt upon this problem in a recent article (Col. T. H. Goodwin, C. M. G., D. S. O.: The Collection and Evacuation of Sick and Wounded from the Front to Base, *Military Surgeon*,

June, 1917). Before a war the expected ratio of sick men is 0.3 per cent. a day, that is, an average of three men in every thousand were counted on as being sent to the rear. During the first year of war seventy per cent. of an army became incapacitated. However, during this war, this proportion has not been attained. In the British Army the average loss from sickness has been very low. One interesting aspect of the psychology of the soldier is that when the men are actually fighting at the front the sick record is low, but when they are retired to the reserve it rises immediately. Goodwin accounts for this by saying that the men do not like to appear to be trying to shirk the fighting, so minor ailments are not mentioned until action is over for the time being.

In the British Army a routine has been devised by which the daily handling of the sick is expedited. A sick parade is held daily, or twice daily. Minor maladies which do not necessitate absence from duty are prescribed for and marked "Medicine and Duty," the others "Medicine—excused from Duty." Cases of more serious nature are marked "Hospital" and transferred to the field ambulance for further treatment. The most serious ones then go on to the "Casualty Clearing Station"; the others are treated at the "Corps Main Dressing Station." As these latter patients get better they are transferred to the "Corps Rest Station" for convalescence. This system seems complicated, but in reality it avoids waste in that it prevents cases of slight illness from going all the way back to the base hospital.

When a battle is in progress each battalion medical officer establishes a "Regimental Aid Post" in the rear of his battalion, in some sheltered situation, with sixteen stretchers in attendance, each with two bearers. If the battalion moves forward in an attack, the medical officer keeps near the commanding officer and moves forward with him. Assuming that a new trench is taken, there will be a number of wounded on the ground between the two trenches; the officer directs such of these as are able to walk to go back, taking shelter as far as possible, until they meet the stretcher bearers. Wounded who cannot walk are placed in any shelter which may be available, shell holes, etc., first aid administered, and left for the stretcher bearers. The medical officer is not to tarry with these men, for he is needed in the newly won trench for the moral effect, and here he should at once set about organizing a regimental aid post. All this time he keeps in touch, as best he can, with the field ambulance bearer division by telephone, messenger, etc. Short messages may be sent by the wounded who are able to walk back.

Goodwin lays down four principles for the medical officers in this active field of work: 1. Keep



near the commanding officer. 2. Keep in touch with the battalion. 3. Keep in touch with the ambulance. 4. Keep cheerful for the effect on the men. Many other details are given by this British physician which we cannot give here. He praises the conduct of the young medical officers whom he has seen go so coolly and cheerfully into conditions which he terms "unmitigated hell." In the fierce fighting which has been the rule on the Western front, Goodwin says, the number of wounded has been appalling and the battalion officer cannot expect to do more than administer first aid. He says, "He can as a rule place wounded men in fairly good shelter, and if he can do that with every man, he can congratulate himself." Above all, he should keep moving forward with his battalion, not going backward with the wounded, or even tarrying too long with them. He says, "You must remember that the bearer division of the field ambulance is coming up, and in five minutes probably will be on the spot."

This is but one of the many problems which will confront the American surgeon when, to the strains of Yankee Doodle, the Stars and Stripes go into action on the fields of France. A pointer here and there from those who have been before us and we will prove that in surgery, as in other things, America leads the world.

#### THE PHYSICIAN AND THE NEW EDUCATION.

President Wilson has entered his protest against the new experiment in education. Nor is he alone among leaders in thought and action in condemning the narrow utilitarianism which has lost sight of the value and the need of the classics. Should not the doctors of medicine view the matter in the same broad light and with the same appreciation of the importance of the issue at stake? Will they be blind to that which is seen by railroad men, engineers, statesmen, and practical men of affairs?

For this matter is not even of so great everyday concern to the Classical Conference at Princeton as to the doctor preparing for his work and at work among his patients. Not less but more culture, a widening and deepening understanding of things human is demanded in medical practice to-day. A new conception of health and disease insists that the physician understand his patient in a genetic and comprehensive way, which leads out and around and into the past to know all the possibilities of human life. It counts man as a being with energy to be applied successfully, adaptations in mind and body to be made effectively, or failing these he becomes sick. More and more the public as

well as the doctor himself are coming to conceive of sickness as a thing of mind as well as of body, and both as but varying manifestations of the same thing. Both have therefore to be touched for healing at any of the many contacts which man makes with his physical and cultural environment.

Contact with environment and the supreme effort of man directed there cannot be understood from the superficial point of view which knows only the present or looks out into the future of dollars and cents, even if in terms of technical skill and efficiency. True efficiency lies only in knowledge of the complete man with a past as well as a present and future. So long as the past crowds upon us in feeling and tendency, in power and inspiration, no less than in older patterns and reactions which prove distracting and ungovernable, so long its reality and its value must be acknowledged. Just so long also shall it need to be searched into, constantly, untiringly, that we may know and learn what is actually there as potent factors to be reckoned with and whose control must be learned.

It is not for the mental discipline which they afford that the classics can ill afford to be spared. Perhaps modern life, in the medical school at any rate, can furnish sufficient disciplinary experience. Far beyond this value is the acquaintance with the past itself. For thousands of years man has been working on this problem of how to live and live best. He has been striving, usually blindly, groping toward the light, but pushing on to bore with his creative power into the world of opportunity before him. It is in this alone that he can express his innate force, which finds health only in thus living and is sick in just so far as psychically or physically it is turned aside, thwarted, or follows the wrong path.

Sickness is in this broader light not a matter of a symptom or two, however severe and destructive these may appear. They are only manifestations of the current gone wrong. Today more than ever before it is the physician's duty to enter that current of the patient's life. He must know whether even the broken limb and the acute infection are dependent upon the attitude of the whole man toward his environment, and how that attitude may be altered both to make the right appropriation of the means of treatment and to provide for future care and prevention. The growing number of mental disturbances points in the same way but even more obviously toward a most comprehensive education on the part of the physician.

The spirit of limitation, which is pervading our schools and educational boards, must react both directly and indirectly upon the physician's training. And yet this wider training is becoming a cry-

ing need as never before. All of humanity must be comprehended. The narrow ambitions which the physician may direct are too restricted to be of therapeutical aid. Their ineffectualness before the foibles, the failures, the inefficiencies, the weaknesses of body and mind which are brought to the physician every day prove that there is much more of our patients which we have got to know. The hold that these have, indeed the reason for their persistence, is found in the past. Therefore past humanity, written in classics, in historical languages, in everything which is a record of human striving, must be preserved and put at the disposal of the physician.

As physicians shall we not fight for it? Only through a true valuation of the past can the physician be prepared for his increasing task. More than this, however, it gives him the strongest and most efficient weapon to put directly into the hands of the patient for his own health. "There is no sanity," writes the President, "comparable with that which is schooled in the thoughts that will keep."

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#### THE ALBANY IDEA IN MILITARY INSTRUCTION.

The Clinical Club of Albany, New York, is to be congratulated upon having evolved a plan of medical military instruction which, if carried out by the physicians of every community, would prove of inestimable value to the military authorities. The club was, we believe, the first to submit a report on the sanitary resources of Albany and the surrounding territory. This plan, we are assured by Surgeon General Gorgas, if carried out universally, would be of infinite value to a division surgeon or chief surgeon of an army operating in the area covered.

It is to be hoped that groups of physicians throughout the United States will look into the merits of the Albany idea, prepare reports on the sanitary resources of their respective sections, and carry out such a course of instruction in military affairs as has been carried out by the Clinical Club of Albany. A compilation of such information from every section of the United States would be of the greatest possible value to the medical department of the Army. This work can be done without the interruption of the routine practice of the physician, and without taking him away from his daily duties.

Those of our readers who feel a proper sense of obligation to aid the government in these strenuous times would do well to send to Dr. Joseph A. Cox, of Albany, chairman of the Committee on Instruction, for a copy of the plan followed by the Clinical

Club. A perusal of this pamphlet will open the eyes of the general practitioner to the great difference between military medicine and civil practice. The study of general hospital supplies required, for instance, will include a compilation of the names and addresses of local drug manufacturers and dealers and of the manufacturers elsewhere from whom a specified list of drugs and supplies can be obtained with an estimate of the quantity of supplies carried in stock locally. The same information is required regarding transportation, hospital furniture, and hospital commissary stores. A full report of the sanitary condition of the surrounding territory with notes regarding the possible sites for the encampment of large bodies of men or the erection of hospitals, also forms part of the work done by the Albany club. The Clinical Club has certainly shown most commendable foresight and industry in having compiled such valuable matter as it has for the service of the medical department. Not the least creditable feature of the Albany idea is that it was devised and inaugurated long before the United States was involved in the war. Now that we are actually at war there is urgent need of just such work in every medical centre in the United States.

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#### ACUTE MYELOGENOUS LEUCEMIA.

The earliest description of this disease is that of von Friedreich in 1857. Special attention has been directed to the pathological changes in the blood in this condition. Two different views are held, one, that all acute leucemias are lymphemias, that is, the increase is due to lymphocytes; the other view is that the increase is due to myelocytes. Ehrlich groups the white blood cells into a type showing granular protoplasm, granulocytes or leucocytes, and the other devoid of granules, lymphocytes. The leucocytes, he states, have their origin in the granular cells of the bone marrow, while the lymphocytes are considered to spring from the Keim centrum cells of the lymph glands. He regards the large mononuclear cell as a special offshoot of the bone marrow, which later becomes a polymorphonuclear cell. This is known as the dualist theory, and opposed to this theory is the unitarian theory. The unitarians maintain that both kinds of cells develop from a single stem. Clinically it is difficult to differentiate between acute myelogenous and acute lymphatic leucemia. The most characteristic point in the blood picture of acute myelogenous leucemia is the occurrence of a large number of mononuclear cells, representing all stages from the nongranular myeloblast to the fully matured myelocyte. In order to make a diagnosis of acute myelogenous leucemia, the five

following points must be proved: a leucemic or sub-leucemic stage; an acute downward course, with death usually occurring in from one to four months; the characteristic blood picture of myeloblasts and myelocytes, with the transition forms between the two, the typical gross and histological findings of the liver, spleen, bone marrow, and lymph glands; the specific proof of myeloid elements by enzyme reaction. Of great importance in differentiating lymphatic from myelogenous leucemia is the so called oxidase reaction. The principle of it depends upon the fact that when aqueous solutions of alphanaphthol and dimethylparaphenyldiamin are brought together in the presence of an oxidizing agent a blue substance known as indolphenol blue is formed. When the two solutions are applied to cells of myeloid origin the oxidizing ferment of these cells sets free the reaction, indolphenol blue is synthesized, and is deposited in the cells containing the oxidase. Lymphoid cells do not have this power of forming indolphenol blue. Graham has modified this test so that it is possible to make permanent preparations which can be mounted in balsam. The etiology of acute myelogenous leucemia is still unknown. The weight of opinion seems to favor the infectious theory. It is doubtful whether a single etiological agent can produce myelogenous leucemia, as different toxins can give the same picture.

## News Items

**Medical Units Go to France.**—The American Red Cross units from St. Louis and Philadelphia left London on Saturday, June 9th, for France, where each unit will take over a hospital of five hundred beds.

**Fordham Graduates in Khaki.**—At the graduating exercises of Fordham University on June 13th eight of the forty-nine medical graduates appeared in the uniform of a naval surgeon, having just won their appointments.

**For a Pharmaceutical Corps in the Army.**—The Philadelphia Drug Exchange has adopted resolutions and communicated them to the Secretary of War, urging the organization of a pharmaceutical corps in the Army, with commissioned rank similar to that held by dentists and veterinarians.

**Commissions in Medical Officers' Reserve Corps.**—Including the list of appointees made public on June 5th, 4,460 physicians have been commissioned in the Medical Officers' Reserve Corps of the United States Army, as follows: Majors, 233; captains, 902; first lieutenants, 3,325. Thirteen veterinarians and fifteen dentists received commissions as second lieutenants.

**An Ambulance Mobilization Camp.**—A camp has been organized at the State Fair Grounds, Allentown, Pa., for the mobilization of ambulance companies under the supervision of Major E. E. Persons, Medical Corps, U. S. A. It is planned to organize 200 additional ambulance companies. Major Persons is organizing a skeleton personnel of thirty-six for each company and training them so that they in turn can take in a sufficient number of men to increase the complement to the full war strength of 150 enlisted men for each company. Major Persons had been ordered to France in command of the Presbyterian Base Hospital Unit, but did not reach New York from his post in Panama until after the unit had sailed, and was then sent to Allentown.

**American Surgical Association.**—Dr. Thomas W. Huntington, of San Francisco, was elected president of this society at the annual meeting, held in Boston on June 1st and 2d, and other officers were elected as follows: Dr. Albert J. Ochsner, of Chicago, first vice president; Dr. John B. Deaver, of Philadelphia, second vice president; Dr. John H. Gibbon, of Philadelphia, secretary. Next year's meeting will be held in Cincinnati.

**New York Police Department to Send Ambulances to France.**—The Legion of Honor of the New York Police Department has set aside \$1,100 for the purchase of an ambulance which will be sent to France in the near future. A member of the police force will drive it. A movement has been started by civilian backers of the Legion to raise a special fund with which to send several ambulances with police drivers to France in the name of the legion.

**Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.**—Monday, June 18th, Clinical Association, Academy of Medicine and Allied Sciences, Medical Society of the Women's Hospital; Wednesday, June 20th, County Medical Society (business meeting); Thursday, June 21st, Southeast Branch of the County Medical Society; Friday, June 22d, Northern Medical Association, Southeast Branch of the County Medical Society.

**The National Surgical Dressings Committee.**—This committee received subscriptions last week amounting to \$7,821. The chairman of the committee has received a letter from the head of the Paris branch urging the prompt transmission of all kinds of dressings and dressing material, particularly of absorbent cotton. The request received from hospitals are far beyond the capacity of the committee to supply, consequently additional aid is needed.

**Chicago Base Hospital Unit Reaches England.**—The Chicago unit, the last of the six American Red Cross units ordered abroad, arrived in London on June 4th. It is commanded by Major Christopher C. Collins, Medical Corps, United States Army. The six units which are now in Europe include 144 American physicians, twelve dentists, 390 Red Cross nurses, and 900 enlisted men of the Medical Corps, the first organization of the United States Army to go abroad.

**New Officers of the Section in Preventive Medicine.**—At the sixty-eighth annual meeting of the American Medical Association, June 7th, the Section in Preventive Medicine elected the following officers for the ensuing year: Dr. W. S. Rankin, chairman; vice chairman, Dr. Haven Emerson; Dr. Donald B. Low, secretary; Dr. Otto P. Geier, delegate to the American Medical Association; Dr. C. St. Clair Drake, alternate; Dr. Otto P. Geier, Dr. W. C. Rucker, Dr. C. Hampton Jones, executive committee.

**A Medical Supply Base at Atlanta.**—Captain S. Meredith Strong, Medical Reserve Corps, U. S. A., arrived at Atlanta, Ga., June 4th. He is the first of the medical experts who will have supervision over the great medical supply depot at Atlanta which will furnish every Army base hospital in the Southeastern Department with all the paraphernalia of modern base hospital work. He will cooperate with Major John A. Murtagh, Medical Corps, U. S. A., in establishing the medical supply base.

**Medical Officers on General Pershing's Staff.**—Colonel Alfred E. Bradley, Chief Surgeon, is a New Yorker and has been an officer of the Medical Corps since 1888. Colonel M. W. Ireland, senior assistant surgeon, is from Indiana and entered the service in 1891. Major George P. Peed, second assistant surgeon, is from Virginia and was commissioned in the regular service by President McKinley in 1899. Captain Henry Beeuwkes, junior assistant surgeon, is a New Yorker and has been in the Army since 1909.

**Fordham Unit Called.**—The Fordham Ambulance Company organized at Fordham University, and known as Unit No. 6, comprising 110 men, has left for Allentown, Pa., for a course of intensive training under Major E. E. Persons, in preparation for foreign service. The majority of the unit were recruited from the freshman and sophomore classes of the arts and law schools. The unit is equipped with four White ambulances presented by Arthur and Joseph A. McAleenan. The officers are all graduates of the Fordham Medical School, as follows: Captain, Joseph Donnelly; lieutenants, Francis McDovern, Robert O'Rourke, Mark Healy, and John Hughen.



**In Memory of Mrs. Pershing.**—A fund is being raised by Mrs. Darrach, of New York, under authority of the American Ambulance Field Service for a section of ambulances for service in France which will be dedicated to the memory of Mrs. Frances Warren Pershing, wife of Major General John J. Pershing, commander of the American Expeditionary Force. Mrs. Pershing, who was a daughter of United States Senator Warren, of Wyoming, lost her life in a fire at Presidio, San Francisco, two years ago, two of her children dying with her.

**Chickamauga Training Camp.**—The training camp for medical officers at Chickamauga Park was not ready for occupancy on June 1st, although a number of the medical reserve officers assigned to camp were on hand. Of the twenty-three buildings which compose the cantonment, only one was entirely completed on June 3rd. The men who have arrived are being cared for in tents, and the camp will be officially opened on June 15th. The camp is under the command of Lieutenant Colonel Henry Page, M. C., with Captain Mahlon Ashford, adjutant, and Captain A. D. Parce, quartermaster.

**Naval Hospital at Newport to Be Enlarged.**—The Bureau of Medicine and Surgery of the Navy Department has authorized an extension to the naval hospital buildings at Newport, R. I., to cost about \$100,000. North of the present building work has already been started on six wards, each 145 feet by 25 feet; nurses' quarters and a garage, the work to be completed in sixty days. A complete new power plant on the present site is to be constructed immediately. It will be equipped with the latest coal handling machinery and mechanical stokers, and will eliminate entirely the necessity of the boys spending so much time of their limited instruction period in coaling ship. Its cost will be in the neighborhood of \$300,000.

**California State Civil Service Examination.**—The California State Civil Service Commission announces an examination for the position of Director of the Bureau of Communicable Diseases, State Board of Health, to be held June 30, 1917. The salary is \$3,600 per annum. The duties of the position include the charge of the Bureau of Communicable Diseases of the State Board of Health, which includes the Hygienic Laboratory and the Division of Epidemiology. The central laboratory and offices are located on the campus of the University of California at Berkeley. This examination will be conducted by the United States Public Health Service as a board of special examiners acting for the Civil Service Commission. Candidates for this examination must be holders of a degree in medicine and be experienced bacteriologists. They must further be prepared to devote their entire time to the performance of the duties of the position and to refrain from any other occupation.

**A Special Medical Reserve Corps of Men Over Fifty-five Years of Age.**—A meeting of the Philadelphia County Medical Society was held on the evening of June 10th at the house of Dr. Henry D. Jump, for the purpose of discussing ways and means of organizing the members of the society who are over fifty-five years of age into a special medical reserve corps of the United States army or navy.

Dr. W. Duffield Robinson was chairman. Dr. J. Madison Taylor was appointed secretary and offered the following resolutions:

*Resolved*, That it is the sense of the meeting that the Philadelphia County Medical Society shall form some sort of organization whereby those members beyond fifty-five years of age shall offer their services to the Government; and also

*Resolved*, That this organization shall formulate or outline certain plans covering their conception as to the duties of such a special reserve medical corps, all of which shall be submitted as an offer of service to the Government, and finally

*Resolved*, That a committee of three be appointed consisting of the chairman, secretary, and Dr. Alexis duPont Smith, with power to increase this number if they see fit and to arrange a meeting with Surgeon General Gorgas and to learn his pleasure as to the offer and to get instructions.

The resolutions were carried and Dr. W. W. Keen was added to the committee.

In the endeavor to come to some understanding as to what might seem to be the line of usefulness or duties for this special medical reserve corps the following points were outlined to serve as a basis for discussion: 1, to assist in the examination of recruits; 2, to assist in the repair of rejected men and make them fit for acceptance; 3, to assist in the care of injured, sick, disabled, or con-

valescent men; 4, to assist in the correction of defects in sense organs; 5, to assist in sanitation, hygiene and medical care of camps; 6, to assist as special experts within their training, experience, and facilities, and in laboratory examinations, etc.; 7, to supplement the work of the regular medical officers in any manner within their power, by means of personal or hospital facilities; 8, to give lectures, special demonstrations, teaching, etc.; 9, and in particular to endeavor to impress upon the mayor the urgency of taking action in the matter of venereal diseases.

**Personal.**—Dr. Allan J. McLaughlin, of Boston, has been appointed chairman of the subcommittee on hygiene, medicine, and sanitation of the Massachusetts Committee for Public Safety, succeeding Dr. Richard P. Strong.

Dr. George Dock, professor of medicine at Washington University, St. Louis, has received the French war cross and has been honorably mentioned for his service in moving wounded soldiers under heavy bombardment, while engaged in the American Field Ambulance Service in France.

Dr. Alfred Gordon, of Philadelphia, delivered the address to the graduating class of the College of Physicians and Surgeons, Boston, at the annual commencement held on June 12. His subject was Race Betterment Based Upon the Principles of Physical and Mental Prophylaxis.

Dr. Charles H. Dolflo, assistant superintendent of the New Hampshire State Hospital, has been appointed superintendent of the institution, to succeed Dr. Charles P. Bancroft, whose resignation takes effect on July 1st.

**Association for the Study of the Internal Secretions.**

—At the first annual meeting of this association, held in New York on Monday, June 4th, the following officers were elected for the ensuing year: President, Dr. Charles E. de M. Sajous, of Philadelphia; first vice-president, Dr. William Seaman Bainbridge, of New York; second vice-president, Dr. Harvey Cushing, of Boston. Council: Dr. George H. Hoxie, of Kansas City, chairman; Dr. Lewellys F. Barker, of Baltimore; Dr. William Seaman Bainbridge, of New York; Dr. Judson Daland, of Philadelphia; Dr. L. R. De Buys, of New Orleans; Dr. Emil Goetsch, of Baltimore; Dr. John B. Potts, of Omaha. Secretary, Dr. Henry R. Harrower, of Los Angeles. The marked interest in this modern line of thought was shown by the large attendance at the meeting, organized by a local committee composed of Dr. E. Eliot Harris, chairman; Dr. Walter Timme, secretary; Dr. H. Eichhorn, treasurer, and Dr. Charles L. Dana, Dr. William Seaman Bainbridge, Dr. Morris J. Karpas, and Dr. Eliza M. Mosher. At the dinner held at the Hotel Manhattan, a cable message was received from the distinguished endocrinologist, Dr. Eugene Hertoghe, of Antwerp. Among the formal addresses was one on the Aims and Objects of the Association by Professor Lewellys F. Barker, of Baltimore, and one on the Growing Importance of Endocrinology in all Branches of Medicine by the president-elect, Doctor Sajous.

**New York Physicians Aid British Recruiting Mission.**

—On June 6th a recruiting office was opened at 280 Broadway by the British Recruiting Mission, and in the first eight days 1,112 volunteers had applied for enlistment and been examined. Lieutenant Colonel C. A. Warren, a graduate of Toronto University, is the director of medical services for the British Mission and is being aided in the work of examination by a volunteer staff of New York physicians, the majority of whom are graduates of Canadian medical schools. This staff includes Dr. H. T. Keating, who had general supervision of the examination, made the clinical inspections, and acted as the referee. The work was divided up so that the skill of specialists was utilized, Dr. F. M. Hillyer, for instance, making examinations of the nose, throat, and ear. Dr. B. S. Beach of the eyes, Dr. S. B. Smith of the genitourinary organs, etc. During the first week the following volunteers served in addition to those named above: Dr. Ellice McDonald, Dr. T. McCall Anderson, Dr. D. McPherson, Dr. J. J. McPhee, Dr. Joseph E. Messenger, Dr. Thomas J. Tobin, Dr. McNair, Dr. F. Tiedeman, Dr. W. F. Jones, Dr. Edward Truesdell, and Dr. R. S. Fralick. In addition the entire surgical staff of the Women's Hospital has volunteered its services. Colonel Warren states that the recruits are in excellent physical condition and that a very high percentage prove acceptable. Additional recruiting stations are to be opened immediately in all the larger cities of the United States, and the assistance of the members of the medical profession will be much appreciated by the Mission.

# THE AMERICAN MEDICAL ASSOCIATION

## Sixty-Eighth Annual Meeting

Held at New York City, June 4 to 9, 1917

(Continued from page 1100.)

### SECTION IN PRACTICE OF MEDICINE.

June 7, 1917.

**Cough Dilatation and Timing of Cough Dilatation: A Functional Heart Test.**—In the absence of the author, Dr. J. BIRNEY GUTHRIE, of New Orleans, this paper was read by title.

**Studies of the Heart's Functional Capacity.**—Dr. THEODORE B. BARRINGER, JR., of New York, discussed the tests used to determine the reserve capacity of the heart. He used the term "functional capacity" to indicate the total amount of power possessed by the heart muscle. A small amount of this power was used to supply the circulatory requirements of metabolism, the larger amount, the so called reserve power, was called upon when muscular activity increased. An idea of the functional capacity of the heart was gained by measuring this reserve power. The circulatory reactions were described. It was found that the blood pressure immediately after work was increased, but rapidly subsided to normal; the greater the amount of work, the higher the blood pressure and pulse rate. As soon as the work reached a certain amount, circulatory reactions of a different type were observed. The systolic blood pressure reached its maximum height not immediately after work, but from thirty to ninety seconds later at a time when the pulse had dropped back toward normal.

This delayed rise in systolic pressure was an interesting phenomenon. In hundreds of experiments with normal people and with those having cardiac insufficiency, the following facts had been discovered: It occurred in normal people when the work reached a certain point. When this figure was ascertained, it varied slightly from day to day. It made no difference what group of muscles was employed; it was the amount of work and the time consumed that determined the delayed rise in systolic pressure. In patients suffering from varying degrees of cardiac insufficiency, smaller amounts of work were required to bring about this reaction. To persons suffering from a marked degree of cardiac insufficiency, no work could be given, however slight, that was not followed by a fall or delayed rise in pressure. Again, when the physical condition of normal people and cardiacs improved, the amounts of work they were able to do before this phenomenon transpired became greater and greater. Of all these facts, the most significant was the one which showed the reaction was not dependent on any one group of muscles doing the work, but on the amount of work and the time in which it was performed.

In closing, the speaker emphasized the simplicity of the test which put it within the reach of every physician. It made no difference what type of work was used, dumb bell movements, riding a bi-

cycle, or other form of exercising any particular set of muscles. It was hardly necessary to point out the value of the information derived from the test; it threw illumination on the amount and time of work the patient might do with safety and indicated the occupation which would be suitable.

Dr. T. STUART HART, of New York, thought there was a great need of an accurate measure of cardiac insufficiency, particularly in relation to the amount of exercise that might be allowed to school children in groups of varying degrees of lack of reserve power. However, it seemed to the speaker, that this should not be measured by the systolic pressure alone, but the energy of the heart and the resistance and volume of circulating blood should be taken into consideration. It would be necessary to establish many standards, a standard for men, for women, for children, for different occupations, for ages, etc., if this test was to become of practical value.

Dr. H. B. WILLIAMS, of New York, did not regard a test based on pressure findings alone as sufficient; this did not measure the strain going on in a man's heart in actual life, for the greatest strains had their origin in the emotions.

Dr. DUDLEY P. ST. LAWRENCE, of New York, said that cardiac children had high reserve power and boys had more than girls.

In closing, Doctor BARRINGER said that knowledge of the circulatory physiology of work was as yet incomplete. Until the obscure picture in this important domain of physiology was cleared up, any test of the heart's functional capacity was necessarily based on clinical experimentation.

**A Study of Arterial Sounds.**—Dr. STEWART R. ROBERTS, of Atlanta, Ga., said that sounds and murmurs originating at the mitral and aortic valves were transmitted throughout the arterial system and were heard easily in the carotids and subclavians, rarely in the brachials and femorals. There was little evidence of a relation between arterial sounds and blood pressure, except that the higher the pressure, the greater the pulse amplitude, the more apt were sounds to exist in the femoral arteries. Sounds in the femoral arteries were of little value clinically and were not pathognomic in aortic insufficiency. It was probable that a murmur over the brachial artery heard in taking blood pressure was due to the constriction of the arteries and the sound was due to transmission from the closure of the aortic valve. The arterial sounds in the carotids and subclavians, particularly the left, were often of additional clinical value in the study of the heart. In a case of blood pressure of 200 and above the sounds seemed to be transmitted better to the femoral artery than in those of low pressure. In regard to the transmission of murmurs in hypotension, murmurs in the arteries occurred more fre-



quently. Where faint murmurs occurred in the heart, they were apt to be faint in the vessels except in emphysema or fibrinous pericarditis, where murmurs and heart sounds could be heard in the carotids better than in the heart.

### **The Vital Capacity of the Lungs and Its Relation to the Clinical Condition in Heart Disease.**

—DR. CHARLES W. McCLURE, and DR. FRANCIS W. PEABODY, of Boston, Doctor McClure reading the paper, said that in a considerable group of cases the variations of the vital capacity of the lungs were plotted with the aid of a spirometer of eight litre capacity, and compared with changes in the clinical condition. Each observation consisted of a careful clinical examination of the patient, together with the recording of statement as to whether the examiner considered the patient's general condition to be improved, worse, or stationary, and then the vital capacity of the lungs. Judgment of the clinical condition of the patient was based upon the degree of dyspnea, edema, pleural transudate, ascites, pulmonary congestion, acute enlargement of the liver, cyanosis, and pulse rate or pulse deficit. In two cases precordial pain and cutaneous or muscular hyperesthesia were considered as symptoms of myocardial weakness. Patients whose vital capacity was less than seventy per cent. were dyspneic on slight exertion; the lower the vital capacity, the easier the patient became dyspneic, and patients down to a vital capacity of forty per cent. were usually decompensated or became so easily. Diminution of edema of the extremities resulting from rest in bed did not necessarily represent improvement in the functional condition of the myocardium; it might be explained as a static phenomenon resulting from a change from the vertical position assumed in sitting and standing, to the horizontal position in bed. On the other hand, edema, while apparently leaving the body, might merely be redistributed, as was sometimes shown by the failure of the patient to lose weight.

Two frequent complications of cardiac disease which modified the vital capacity of the lungs were hydrothorax and ascites. It was to be expected that the vital capacity would increase correspondingly to the diminution of the amount of fluid in the pleural or peritoneal cavity. The findings in the group of patients studied in whom either hydrothorax or ascites, alone or combined, were given. A continued rapid action of the heart in paroxysmal tachycardia was frequently accompanied by marked signs of myocardial insufficiency, but in one case the lowered resistance was the only indication of this. Attention was called to the importance of a decrease in vital capacity of the lungs as a factor in the production of dyspnea in heart disease. The degree to which the vital capacity was decreased below certain normal standards corresponded closely to the tendency to dyspnea. Since the tendency in dyspnea depended largely on the functional capacity of the heart, the determination of the vital capacity of the lungs might serve as an indirect measure of the cardiac condition. In a series of twenty-four cases it was found that the clinical condition of cardiac patients varied closely with the changes in the vital capacity of the lungs. An im-

provement in the functional state of the heart was associated with a rise in the vital capacity. When the condition of the heart apparently remained stationary the changes in the vital capacity were not marked; when there was evidence of increasing cardiac insufficiency the vital capacity of the lungs fell. Charted records showing the variations in the vital capacity of the lungs of patients with heart disease were frequently satisfactorily objective of the clinical cause of the disease and they might be of distinct aid in prognosis.

Dr. J. H. PRATT, of Boston, said he began four months ago to make routine observations of patients that went to the Massachusetts General Hospital and fifty patients had been carefully observed. The vital capacity invariably corresponded with the functional condition of the heart. Patients with dyspnea on slight exertion usually had a vital capacity of fifty per cent. or less. The lowest figure seen in ambulatory cases was forty per cent., but in one of the bedridden cases the figure was as low as thirty per cent. In diagnosis it was of great value to distinguish between true cardiac weakness and the cardiac neuroses; in the former the first symptom complained of was shortness of breath before the physical signs were definite; hence the great difficulty in early differentiation.

Doctor BARRINGER said that patients suffering from cardiac insufficiency showed diminished vital capacity which seemed to be proportionate to the degree of insufficiency. It had also been noted in the treatment of patients with cardiac insufficiency by graduated exercises that as the heart's reserve power increased and the general condition improved, the vital capacity also increased. Some years ago, in a small series of patients, there was an average increase of twenty-five per cent. in the vital capacity.

Dr. R. G. PEARCE, of Cleveland, regretted that Dr. Charles F. Hoover was unable to be present as his contribution to the discussion would have contained an account of a most interesting case at the Lakeside Hospital, in which the vital capacity of the lungs and cardiac output or pulmonary blood flow were measured. The man had a badly decompensated heart, output of 3,000 c. c. of blood a minute, and a vital capacity of 1,200 c. c. A course of digitalis produced the following results: in four days he had a vital capacity of 1,500 c. c. and a blood flow of four litres a minute.

### **A Comparison of the Percussion and X Ray Findings after Injection of the Pericardium.**

—To determine the shape of the cardiohepatic angle and the directions in which dullness and roentgenographic shadows increase in pericardial effusions with patients in the recumbent posture, Dr. R. S. MORRIS and Dr. E. R. BADER, of Cincinnati, Ohio, injected serous ascitic fluid into the pericardium of fresh, warm cadavers, beginning with 250 c. c. and adding this amount at each injection until 1,250 c. c. or 1,500 c. c. of fluid had been introduced. Before the first injection the lung liver border and the relative cardiac dullness were determined by percussion and marked with strips of lead and a teleröntgenogram was made. After each injection the same pro-



cedures were followed. It was found that the cardiohepatic angle did not become obtuse by percussion or by x ray at any stage of the injections. Retrosternal dullness and increase in width of the röntgenographic shadow beneath the manubrium and upper sternum were found after about 500 c. c. of fluid had been injected, in one instance only after about 750 c. c. were introduced. With the cadaver in the erect posture, there was great decrease in width of the shadow and dull area beneath the manubrium, the cardiohepatic angle remaining acute. It was suggested that retrosternal dullness and shadow which diminish markedly with change from the recumbent to the erect posture should be sought in cases of suspected pericardial effusion.

Dr. CHARLES SPENCER WILLIAMSON, of Chicago, referred to some results obtained in a series of injections of the pericardium through the central tendon of the diaphragm in thirty-three cadavers. Agar gelatin solutions of appropriate specific gravity were injected warm, allowed to harden, and the heart and pericardium removed *in toto* and frozen and casts made of the heart and pericardial exudate separately. The conclusions were in accord with those of Doctor Morris so far as the importance of the retrosternal dullness was concerned. The fluid was found to accumulate around the apex and in the sternodiaphragmatic angle first and later in small quantities on the sides, particularly the left; not, however, in sufficient quantity to be clinically demonstrable. Slightly larger effusions collected in front of the great vessel. In none of the thirty-three instances was there evidence to show any material change in the cardiohepatic angle, which sign he regarded as worthless in effusion under 700 c. c. in amount. Attention was called to the fact that in many of these cases, even with fairly good sized exudate, the front of the heart remained partially uncovered, allowing therefore of the persistence of the pericardial rub.

Dr. ALFRED MEYER, of New York, showed two slides that referred to an artificial pneumopericardium, the first apparently that had ever been done in New York city. The patient was admitted to Mt. Sinai Hospital at the end of April with a diagnosis of hemopericardium, and a history of repeated recurring pericardial effusion, for which she had been tapped twice; the first time 840 c. c. of bloody fluid were removed and the second time 700 c. c. On admission to the hospital, as the symptoms were urgent, the patient was aspirated and 1,350 c. c. were withdrawn from the pericardium. In view of the accumulation for the third time, Doctor Meyer decided to substitute nitrogen gas for the fluid withdrawn. As this was new territory, caution dictated the introduction of only 180 c. c. of nitrogen gas, so there had since been reaccumulation; the next time aspiration was done, the speaker intended to put in an amount of gas equal to one half to two thirds of the quantity of fluid withdrawn. An interesting physical sign was the production of a pericardial succussion sound which continued for four days when the patient was shaken, which could not be distinguished spontaneously with cardiac systole. The first picture showed evidence of the presence of a considerable amount of blood fluid still and the gas above

spreading the edges of the pericardium. The second radiogram was taken with the patient leaning over to the left and the fluid remaining horizontal.

**A Clinical Study of 200 Cases of Angina Pectoris.**—Dr. JAMES B. HERRICK and Dr. FRANK R. NUZUM, of Chicago, presented a statistical study of 200 cases of angina pectoris in which the records were very complete. The most frequently exciting cause of seizures was overexertion, but some had complained of symptoms after walking or eating heartily. Emotional outbursts had also their etiological place. A sense of constriction without pain occurring after the ordinarily exciting causes was always highly suggestive. Blood of poor quality going through narrowed coronaries might favor the development on slight provocation of anginal seizures; that is, if the coronary origin of the pain was accepted. A striking fact was the comparative infrequency with which these patients were unnerved by these attacks even when the true and serious nature was known to them; they were frequently unwarned by experience of the dangers of carelessness. A case of coronary thrombosis had taught the speaker that even large coronary branches might be obstructed and the patients not die immediately, but live for many hours or even days, and some recovered. Symptoms in these cases were sometimes clearly marked, so that one might venture to make a diagnosis of angina due to coronary obstruction. A large proportion of patients with embolic or thrombotic obstruction of a large branch of a coronary artery have died suddenly soon after the accident and yet at autopsy pathologists have found evidence of long standing obstruction. So it was true that occasionally a coronary obstruction might cause an anginal seizure and yet the patient would not die immediately or even soon. There were two groups with this condition: 1, in which the coronary obstruction gave rise to the first and only attack of pain, and 2, in which the patients had previously had anginal seizures.

**Electrocardiographic Changes Associated with Myocardial Involvement.**—Dr. BERNARD S. OPPENHEIMER and Dr. MARCUS A. ROTHSCHILD, of New York, recorded studies that had been undertaken because of the frequent discrepancies between electrocardiographic interpretations and pathological findings. Theoretical considerations and pathological findings pointed to the existence of a hitherto undescribed type of disturbance which was called arborization block. Records showing the anomalous electrocardiograms were obtained from cases presenting the clinical pictures of arteriosclerosis, coronary artery disease, angina pectoris, cardiovascular renal disease, syphilis, diabetes, myocardial disease; some were associated with auricular fibrillation, flutter, and various grades of heart block. The prognosis of such cases, showing prolongation of the Q-S interval, notching of R wave, and low voltage in all grades, was as a rule serious. These electrocardiographic changes were probably evidences of marked conduction disturbance in the Purkinje network beyond the termination of the chief branches of the atrioventricular bundle. In conclusion, therefore, the statement was ventured that there was a definite clinical condition to be

known as arborization block; this condition could be diagnosed by the presence of a definite and permanent type of electrocardiogram and the condition had a very serious prognosis.

Dr. E. LIBMAN, of New York, said that the most important cause of pain of cardiac origin, apart from nervous conditions, such as angina pectoris vasomotoria, was thrombosis of the coronary arteries which was the condition that most often gave the picture of the classical angina pectoris. The electrocardiographic findings described by Doctor Oppenheimer and Doctor Rothschild were present only in cases in which was suspected disease of the coronary arteries, with the exception of one case of aortic insufficiency. The cases in which there was thrombosis in the coronary system could generally be diagnosed by anyone with large pathological experience; however, there were cases in which the diagnosis was difficult and then the electrocardiographic findings were of considerable value. The studies should also be a help in cases where it was doubtful if the symptoms were due to coronary artery diseases or to hyperchlorhydria or ulcer. There were also cases of old closure of the coronary artery with or without infarction of the heart muscle which had no symptoms. In such cases electrocardiographic studies might prove of value in helping to clinch the diagnosis.

**The Blood Lipoids in Diabetes.**—Dr. ELLIOTT P. JOSLIN, Dr. W. R. BLOOR, and Dr. HORACE GRAY, of Boston, Doctor Joslin reading the paper, said that a study of the blood lipoids of the diabetic cases at the New England Deaconess' Hospital was carried out in the laboratory of biology and chemistry of the Harvard Medical School. Complete analyses of 131 specimens taken from eighty-seven cases were made for the three groups of lipoids of the blood, namely, the fatty acids, cholesterol and lecithin. Not only were these three groups of lipoids determined in the whole blood, but in each instance in the plasma and corpuscles as well. The salient points brought out in the analyses relating to the whole blood alone were mentioned. The data rendered it possible to draw deductions of therapeutical value. To the clinical student of diabetes these analyses were of interest for they represented progress along one of the two lines of investigation of diabetes which today promised the most to investigators and patients alike. This was the development of knowledge of the metabolism of fat and the explanation of the power of a diabetic patient during fasting to show the respiratory quotient above that of a normal individual under the same circumstances. It was desirable to refer to the fat in the blood as blood lipoids because the so called blood fat was present in several forms. Of these lipoids about fifty per cent. existed as combined fatty acids, mainly oleic and palmitic, thirty per cent. in the form of cholesterol, while the remaining twenty per cent. was composed of lecithin and related bodies distinguished by their content of phosphorus. Specimens of blood obtained were separated into three groups, based upon the clinical condition of the patients on the day the samples of blood were drawn. In gen-

eral, the mild diabetic showed a positive carbohydrate tolerance of fifty or more grams, the moderate cases of diabetes a tolerance of between fifty and ten grams, and the severe diabetics a tolerance below ten grams and often a minus carbohydrate balance. The presence or absence of acidosis and blood sugar values was also considered in the grouping of the patients. Occasionally the blood of patients was considered as belonging to the severe group of diabetes, whereas a later specimen belonged distinctly to that of another group. The general statement could be made that the increase in lipoids in the blood was progressive with the seriousness of the disease. The average quantity of lipoids obtained by Doctor Bloor's method in the whole blood amounted to 0.59 per cent. in nineteen normal individuals, but was increased to 0.83 per cent. in thirty-two mild diabetics, to 0.91 per cent. in thirty-seven moderately severe diabetics, and to 1.41 per cent. in fifty-five severe cases of diabetes. The increase held not alone for the lipoids obtained by this method, which amounted to approximately ninety-one per cent. of the total blood lipoids, but for each of the three groups of lipoids. Although the quantity of total fatty acids was trebled, the cholesterol was only doubled and the lecithin increased by but one third. The increase in cholesterol was significant and suggestive and seemed, indeed, pathognomonic of the prolonged diabetic hyperlipemia, since Bloor noted it lacking in the acute lipemia of overfeeding, which was characterized by an increase in the total fatty acids alone. The variation in the lipoids took place chiefly in the plasma.

Dr. FREDERICK M. ALLEN, of New York, said that they were experimenting at the Rockefeller Institute in the hope of throwing some light on the subject of the blood lipoids, which was not very well understood until Doctor Joslin had carried out these analyses.

**The Influence of the High Calory Diet on the Course of Typhoid Fever.**—Dr. WARREN COLEMAN, of New York, stated that his paper was based upon a statistical study of some 450 cases of typhoid fever, half of them on milk and half on the high calory diet. The histories were taken from the records seriatim. All patients were classified as high calory cases if the attempt had been made to feed them liberally. There was no evidence that the duration of the febrile period or the range of temperature was affected by diet. The total duration of the disease, however, was shortened through the shortening of convalescence. Nausea and vomiting occurred with about equal frequency in the two groups of cases. Tympanites occurred in seventeen per cent. of the high calory cases and in thirty-one per cent. of those on milk. Diarrhea occurred in sixteen per cent. of the high calory cases and in forty-nine per cent. of those on milk. Temporary diarrheas are included in the percentage for the high calory cases, but not in that for the milk cases. Gradually it was learned that tympanites and diarrheas are due to an excess in the diet of one or another of the foodstuffs. In the last few years it had been found possible to control tympanites and diarrheas in practically all instances by rearrangement



of the diet. Torrey found that the patients who were able to take large amounts of food possessed a flora dominated by *Bacillus acidophilus* and that the high calory diet favored the development of such a flora. Tympanites and diarrhea are not due to the specific action of the typhoid bacillus and should not be considered as essential symptoms of typhoid fever. The practically complete absence of severe nervous symptoms in patients who were able to take sufficient food and the disappearance of these symptoms with improvement in the patients' nutrition warranted the conclusion that severe nervous disturbances, including the typhoid state, occurred in typhoid fever only when patients were undernourished. The patients on the milk diet became more or less emaciated as the disease advanced. The majority of the high calory patients lost some weight, usually only a few pounds. Some of them actually gained weight during the active period of the fever. Practically all of them regained their losses in the later stages of the fever or early in convalescence. Loss of weight was not a symptom of typhoid fever, but an indication that the patient was not receiving sufficient food. The high calory diet had altered the natural history of typhoid fever as it had previously been known. Certain symptoms which hitherto had been attributed to the specific action of the typhoid bacillus had been discovered to be due to faulty methods of treatment, in particular to an inadequate or improperly balanced diet. Complications are rendered less formidable and perhaps less frequent by the maintenance of an optimal state of nutrition. The mortality was reduced by fifty to seventy-five per cent.

Dr. HENRY A. CHRISTIAN, of Boston, said it was important to realize that from year to year there was a variation in the curve of mortality of different diseases and one could not compare the typhoid or pneumonia of one year with that of another without making allowances for this fact. The statistics in Doctor Coleman's cases had represented comparisons between different cases in the same year which made them of much more value. The typhoid fever described in the textbooks used by students could not be illustrated by the cases seen in the wards of hospitals, for the disease had changed very much in the last five or six years. Whether that was due to the fact that with decrease in frequency, which was striking in many cities, there had been a change in the virulence of the organism, or whether it was due to the treatment, was important. Doctor Coleman's treatment gave satisfactory results, it was true, but how much of these results was due to the treatment and how much to the Providence that determined the pathogenicity of the organism were still in doubt.

Doctor JOSLIN thought there might be danger of diabetes following this high calory diet.

Dr. A. E. ROUSSEL, of Philadelphia, thought that in regard to diet patients should be individualized.

Doctor COLEMAN, in closing the discussion, said that in regard to diabetes in typhoid in the series of these cases sugar was present in the urine only once. The urine was not examined every day in all the 250 cases, but serious diabetes could not have been present without being discovered. None of the patients acquired diabetes after the typhoid was over, neither

during convalescence nor subsequently. The speaker agreed with Doctor Roussel that the more experience he had with these cases, the more it seemed to him to be necessary to individualize the feeding. All could not be given the same kinds of food, nor all the same quantity. If the patient's intestinal flora was of the putrefactive type at the beginning, it would take longer to raise the tolerance to carbohydrates; with some, it would be a week or ten days. It was a question of giving the patients all one could without causing distress.

**Gastric Crises of Cerebrospinal Syphilis.**—Dr. B. B. VINCENT LYON, of Philadelphia, stated that the gastric crises of cerebrospinal syphilis were comparatively common. One out of every three or four cases of tabes would present this complication. They occurred usually in the preataxic stage. They were characterized by the sudden onset, the usual severity of symptoms, and the abrupt termination and speedy restoration to a state of good health. The three commonest symptoms were abdominal—usually epigastric—pain, vomiting, and disturbances of gastric secretion. These symptoms might vary as to their presence and to their severity. In addition he called attention to the frequency with which simultaneous cardiospasm and pylorospasm occurred, raising intragastric pressure and resulting in gastric dilatation. With the latter gastric tetany might appear, as in one of his cases. Other visceral crises might be associated, laryngeal, cardiac, and intestinal crises being manifest in his cases.

He emphasized the need of differentiating gastric crises, originating in spirochetal invasion of the posterior dorsal nerve roots from similar involvement of the medullary nucleus or along the course of the tenth cranial nerve. Both types might be present in the same case. The pain was usually due to irritation of the large myelonic sensory fibres of the posterior thoracic roots, although other sources of pain could be traced; the vomiting was either reflex to the pain, or directly due to the irritation of the vagus at its nucleus or along its course. Secretory errors when present suggested a vagus irritation which might result in vagotomy.

He sounded a warning against the common error of diagnosing the attack as an abdominal surgical disease necessitating operation, and at the same time emphasized the need of the recognition of concomitant organic lesions of the gastrointestinal tract as a contributing factor to the attack.

Where gastric crises represented the initial symptom of tabes the diagnosis could not be made without examination of the spinal fluid. In other cases an examination of the nervous system would suggest the true nature of the condition. The differentiation of the pain might be determined by Holmes's adrenalin reaction. To obtain a true picture of the secretory disturbance diagnosis by fractional gastric analysis was urged.

The treatment might be divided into the management of the acute attack and the treatment of the intercurrent periods. During the acute attack treatment consisted of absolute rest in bed, abstinence from oral feeding, continuous lavage, administration of antispasmodics, such as atropine and belladonna, to overcome spasm, supplemented by a mechanical



maneuvre directed to stimulate the spinal nerve roots, to overcome a vagotony which gave rise to acute dilatation of the stomach. This was especially emphasized. For relief of pain he advised a trial of adrenaline chloride intramuscularly with final recourse to morphine. During the intercurrent period the patient's health should be built up in the attempt to prevent or abort further attacks. Rest, hygiene, a hyperalimentary diet, tonics, and above all the intensive use of antispasmodic therapy by intramuscular, intravenous, and intraspinal routes should be used.

#### SECTION IN SURGERY.

June 7, 1917.

##### **Intravisceral and Intraabdominal Pressure.**—

Dr. ROBERT C. COFFEY, of Portland, Ore., said that the formulation of principles came from tedious work and was necessary before technical points could be made. Abdominal pressure was greater than atmospheric pressure and excess was called intraabdominal pressure. Intraabdominal pressure was maintained and regulated by the relatively inelastic abdominal wall, intraabdominal fat, and intestinal gases and fluids. The law of equilibrium was maintained by reaction of these factors. Absorption of fat caused dilatation of the hollow viscera with gastrointestinal disturbance. There were three degrees of intravisceral pressure. The first was embodied in reservoirs, such as the colon, stomach, and bladder; the functioning portion of the small intestines contributed the second degree of pressure, and the functioning glands which emptied through ducts constituted the third degree of pressure. Pressure from these various sources was regulated by valves, and this was of important surgical significance in that intravisceral pressure caused incompetence of the valves and this in turn was liable to result in dilatation of the ducts.

Dr. EDWARD MARTIN, of Philadelphia, said that the abdominal wall was not inelastic. The major factor to be considered was the blood supply and when this was not interfered with normal function could be maintained regardless of the mechanical factors involved. X ray examination could be very deceiving. The psychology of these cases was that he who believed in his work could get results even with different methods. Sphincteric action was to grip tight and these sphincters work together. Constipation occurred in chronic appendicitis because irritation from the chronically diseased appendix caused spasm of the ileocecal valve.

##### **A New Operation for Movable Kidney.**—

Dr. WILLARD BARTLETT, of St. Louis, reviewed the methods which have been proposed for the surgical treatment of movable kidney, and found that the suspension principle underlay all of them. He proposed an operation which was intended to support the organ from below by the physiological use of the patient's own fat. The operation consisted of six steps: 1. An incision was made, bisecting the angle formed by the last rib and the erector spinae. 2. The fat was stripped from the inside of the lumbar muscles. 3. The fatty capsule of the kidney was

stripped off except at its attachment around the hilum and was completely inverted as the kidney was lifted out of the wound. 4. This fat was transformed into a ball by catgut sutures. 5. This ball was drawn down into the defect into which the kidney formerly slid, and anchored to the inner surface of the abdominal wall just below the incision. 6. The wound was completely closed without drainage.

In this manner a threefold purpose was accomplished. The selflubricating joint like bag in which the kidney slid about was completely removed; the organ was held up in a new, high position by the ball of fat, and adhesions were allowed to form between the exposed muscles of the abdominal wall and the kidney. The author had done this operation on twenty patients and in every instance the kidney had remained in place. The functional results had been most gratifying as late as five years after the operation.

Dr. H. H. ROYSTER, of Raleigh, N. C., said that improved operation for floating kidney was greatly needed. Recurrences were common and many patients were not improved by the usual operations. The symptoms of misplaced kidneys were very baffling and sometimes floating kidney gave no symptoms at all. Many results were not permanent and any method by which better results were obtained was greatly to be desired.

Doctor EISENDRATH, of Chicago, Ill., said that patients with floating kidney usually had a general visceroptosis and could be improved by general treatment. Diagnosis of the condition could be facilitated by making pyelograms.

**The Abortive Treatment of Infection.**—Dr. WILLIAM SHERMAN, of Pittsburgh, spoke on the Carrel method of treating infected wounds. He said that much unjust criticism had been made by those who were not qualified to make them. Carrel's work had accomplished marvelous results with many kinds of injuries. To understand the method it was necessary to study the technic by three or four weeks' special work and unless the technic was carried out exactly as Carrel had devised it failures were bound to result. The results obtained by those who were using the method in the hospitals in France were almost miraculous. Badly infected wounds of all sorts were successfully treated by this method and union obtained after the wound had been practically sterilized. The wound was first thoroughly cleansed with a soap solution and then treated by allowing Dakin's solution to come in contact with every part of the wound by installation of the chlorine solution every two hours. Wounds were dressed aseptically and very carefully every twenty-four hours with skin around the wound being protected with applications of yellow vaseline. Granulation tissue formed rapidly and was firm and healthy with very little bleeding. There was no pain and the wounds healed with marvelous rapidity and without the formation of much fibrous scar tissue. It was recommended that the Carrel method be adopted for general use in military and civil practice and if carried out properly would save many amputations and prolonged infections.

Dr. CHARLES L. GIBSON, of New York, said that he could confirm everything that had been said by Doctor Sherman from his own personal observations in hospitals in France. He said that it was impossible to overemphasize the significance of Carrel's work. The technic was very important and must be mastered by special training before satisfactory results could be obtained. The method was not one of drainage and not an irrigation. There was nothing to drain, as there was little or no pus in the wounds. The wounds should be laid wide open, all foreign bodies removed and carefully cleansed before applying the solution. Smears were made of the wounds each day and bacteriological counts made of many different fields and the estimated number charted each day. The curves on this chart showed the rapid decrease in the number of bacteria and the improvement in the condition of the wound was coincident with the drop in the bacteriological count.

**The Evolution of Cancer of the Breast.**—Dr. PARKER SYMS, of New York, said that the question of whether mammary cancer developed in breasts that were otherwise normal was one of the important topics of the day. The present conception of cancer accepted by the majority was that cancer developed by evolution from normal cells rather than congenital cancerous cells. Chronic cystic mastitis was a complex process evidenced by signs of inflammation, by hyperplasia of the different elements of the gland, by cyst formation, and by neoplasias. These various histological changes represented stages of the disease or development according to certain tendencies. There was a great disturbance of the epithelium in growth, activity, and function. If penetration of the basal membrane and infiltration of the stroma by the epithelial cells was the last stage of chronic cystic mastitis, then the last stage of this disease was cancer. A plea was made for a standardized method of examining the whole breast in cases of suspected cancer and in all cases in which the breast was removed. In this way fewer mistakes would be made in the removal of breasts for cancer which on examination by the pathologist were found to contain no cancer cells.

**Advantages of the End Result System to Surgical Science.**—Dr. ERNEST A. CODMAN, of Boston, presented an abstract paper on the advantages of the end result system as used at the medical hospital of Harvard in China. He said that by the end result system an efficient record and tabulation of all cases treated in hospitals could be kept. It was an essentially efficient method by which accurate data of all cases were secured and kept by the hospital. When such a system was adopted it of necessity compelled subordination of individual interests to the demands of the system. By its accurate and available records were secured both of the results obtained, whether good or bad, and by whom the patient was treated, and in that way fixed the responsibility. It was an improvement of the follow up system. All cases were classified and indexed under the diagnosis and each case given a number.

**Gunshot Fractures.**—Dr. J. R. EASTMAN, of Indianapolis, reported the work that was being done

by the Central Powers in the treatment of gunshot fractures which he had observed during a year's residence in a hospital in Vienna. He said that practically all gunshot fractures were infected, some with a low grade infection, others with more severe types of infection. In reference to Dakin's solution, he said that it was being used in thousands of selected cases, but he could not agree with those who advocated Dakin's solution in all cases of infection. There were other methods of treating infections, such as heliotherapy, which was extensively used, and other antiseptics, which were used when indicated. He described the methods of securing precise and uninterrupted immobilization by means of open splints, which allowed room for dressing and heliotherapy. The supportive apparatus used must allow free access to the wound and be one requiring the least technical skill and experience. Rest was a very important factor in healing. He then described the various splints that were used and explained the advantages of the Scherz clamp over the Steinman pin and the Hey-Groves screw clamp. Hinged steel splints were used to prevent stiffening of joints during extension. Lane's plates were used in many cases.

**Choice of Method in Operations on the Pituitary Body.**—Dr. CHARLES H. FRAZIER, of Philadelphia, Pa., said that the study of pituitary diseases during the last few years had stimulated an interest in the surgical aspect of pituitary tumors. Some of the secretory disorders of the pituitary could be treated by substitution therapy and were not surgical conditions. The indications for operative intervention were practically only the neighborhood symptoms of headache and threatened vision. There were two methods of approach to the sella turcica in use, the submucous nasal route and the transorbital route. He said that there was much greater danger of meningitis with the nasal route and that the bleeding often obscured observation. The transorbital route was preferred because it was more accessible and gave a better view, greater facility of dealing with the lesion and good end results.

Doctor ELSBERG, of New York, said that he preferred the transorbital route. He also employed lateral or bilateral temporal decompression, when there was present marked tension under the dura.

**Studies in Experimental Hyperthyroidism.**—Dr. EDWARD C. KENDALL, of Rochester, Minn., said that long continued injection of aminoacids into animals produced either an increased irritability with tetany and death or a state of depression. In the urine of the dogs with tetany the percentage of the total nitrogen in the form of urea and ammonia was very low. Upon allowing the urine to stand twenty-four hours the amount of ammonia present did not change, but the amount of urea increased as much as 100 per cent. The preurea compound thus demonstrated appeared to be the cause of the tetany. The urine of the dogs with depression showed a large amount of ammonia but no preurea compound.

The high percentage of ammonia and low urea appeared to be the cause of the depression. The condition of the animal therefore was determined by the proper metabolism of ammonia. From what



was known of adrenal cortex activity it seemed probable that the adrenal cortex furnished the mechanism for the conversion of ammonia into the preurea compound. Blood, liver, and adrenal tissue from a normal animal—cat, dog, or guinea pig—did not act upon ammonium carbonate. After stimulation of the adrenal by fear, by electricity, and by injection of ammonium carbonate, the blood, the tissues, and most of all the adrenal would convert ammonium carbonate into something not urea. While not yet proved, it seemed most probable that this substance was the preurea compound responsible for the tetany mentioned above. The results were interpreted as follows: The mechanism by which ammonia was supplied to the body was the thyroid hormone. Unless the adrenal cortex reacted with this, a state of depression resulted. The symptoms of so called hyperthyroidism resulted only when there was a simultaneous stimulation of both the thyroid and the adrenal cortex. Hyperactivity of the adrenal cortex which caused an abnormally high concentration of preurea compound throughout the body resulted in tetany.

**Sodium Citrate Blood Transfusion.**—Dr. B. M. Bernheim, of Baltimore, said that sodium citrate transfusion represented the ideal method of working with blood in an uncoagulable state. The simplicity of the technic and the ability to remove blood from one individual, keep it in a flask for hours at a time, and then take it to the bedside of a patient many miles away and give it in form of an infusion, was an advance of most profound importance. Other lesser advantages, such as the ability to carry out transfusion without the donor ever seeing the recipient, were also noted. But it was not sufficient to procure a noncoagulable blood. It was necessary to prove that citrate blood did qualify equally to whole untreated blood. This it seemed to him had definitely been proved by case reports embodied in the paper. The only drawback to the method that need be seriously considered was the occurrence of a chill and fever following about one out of every three transfusions, which apparently were of no significance, for they never affected the course of the disease nor the result of the transfusion.

**Constitutional Disturbances Which Come with Chronic Goitre.**—Dr. CHARLES N. DOWD, of New York, reported his observations from a large series of chronic goitre cases. Many of these patients had been operated upon for constitutional symptoms, esthetic reasons, or pressure symptoms. Some of the chronic goitre cases presented no constitutional symptoms and were apparently colloid goitres without hyperplasia of the gland cells, although in such cases it was difficult to prognosticate or tell whether constitutional symptoms might intervene. Attention had been focused upon the study of Graves's disease and had overshadowed a consideration of these moderately toxic and non-toxic goitres. The symptoms from such goitres might affect the health in several ways: by nervous disturbances and interference with basic metabolism; by causing pressure on the trachea and adjacent structures; by causing annoyance or apprehen-

sion or discomfort from the mechanical presence of the tumor, and by causing a site for acute inflammation and abscess. Surgical intervention was strongly recommended in these cases and specimens were shown illustrating the pathology of chronic goitre.

Doctor OCHSNER, of Chicago, said that in his experience the colloid type of goitre usually showed some cellular hyperplasia in other parts of the gland. In the postoperative toxic conditions in these patients he had found it advisable to wash out the stomach, which might be a source of toxic absorption. He advised the use of Crile's method of anociation and the taking of every precaution to prevent exacerbations.

Dr. SOLIS-COHEN, of Philadelphia, said that chronic and colloid goitre was a surgical condition and operable, but Graves's disease was a functional disturbance and was best treated by medical means.

Doctor ROGERS, of New York, said that a great deal of the knowledge of disorders of the glands of internal secretion was superficial and unreliable. He was in favor of operation or ligation for chronic goitre cases, and stated that antithyroid serum had been given up as no good.

**Shock during General Anesthesia.**—Dr. FRANK C. MANN, of Rochester, Minn., stated that surgical shock, occurring during general anesthesia might be due to several causes. The most common cause was free hemorrhage. All persons did not react the same to loss of blood and the estimation of hemorrhage during operation was very inaccurate. Another common cause of shock was trauma to the viscera when shock was due to a loss of circulatory fluid in the traumatized areas, mainly brought about by a local peripheral mechanism. Shock produced by excessive nerve irritation under an anesthetic was probably a much more rare occurrence than clinical reports would seem to show. The mechanism involved in these cases was unknown. In cases of fractures and operations involving trauma to large areas of fat, in which shock was diagnosed, pulmonary fat embolism might be the cause. Some of the endocrine glands, particularly the adrenals, were sometimes factors, but it was difficult to determine to what degree they participated as primary active agents in producing the state, or how much they were affected by the low blood pressure and the changes incident to the condition itself.

The nerve impulse probably bore no quantitative relation to shock. Deep etherization might produce most of the symptoms of shock. The continued depressed state following deep anesthesia, while primarily due to the anesthetic, was soon complicated by the resulting factors of low blood pressure, subnormal temperature, and other changes. Some cases of the conditions diagnosed as surgical shock might be due to a combination of very deep anesthesia with reflex inhibition of respiration. Ether certainly blocked afferent impulses to the higher centres, but some of the reflexes involving the medullary centres, particularly those which inhibited respiration, were not blocked when very strong stimuli were employed.



## SECTION IN PHARMACOLOGY AND THERAPEUTICS.

June 7, 1917.

**Observations on the Excretion of Dyes.**—Dr. RICHARD WEIL and Dr. RUSSELL L. CECIL, of New York, stated that the excretion of dyes was of interest from the physiological standpoint as throwing light upon the functions of the excretory organs and upon the mechanism for elimination of waste; pharmacologically, as a means of investigating the relation between excretory function and chemical structure; and clinically as providing a means of measuring excretory activity. Human beings could be given considerable doses of various dyes intravenously without harm, although in the case of the diazo dyes there was much variation in toxicity. This variation did not seem to be related to their chemical structure in any direct way. When given intravenously these dyes circulated in the blood for days, but the tendency of the body was to eliminate them. Some of the dye was taken up by various cells of the phagocytic group and this was specially marked in inflammatory areas. Thus trypan blue accumulated in the joints in arthritis and congo red in the necrotic areas of malignant neoplasms and also the latter was excreted into the pleural fluid and mucopurulent secretion of the respiratory tract. The latter was also thrown out in abundance on the surface of skin ulcers, appearing in about an hour after intravenous injection and continuing to come out for several days. Congo red could not be used for the detection of gastric or duodenal ulcers or cancers, since it was found to be excreted by way of the bile. For the diagnosis of such lesions a dye would have to be found which was excreted through ulcerated surfaces, but not through the bile or other intestinal secretions. Study of this problem showed that the nontoxic dyes could be grouped into three classes: 1. Those regularly excreted through the bile by the normal liver, such as congo red, methylene blue, etc. 2. Those which did not come out in the bile, such as rosanilin, trypan red, eosin, etc. 3. Those which appeared in the bile at times and failed to do so at others. It was found that the diseased liver, as in experimental phosphorus poisoning, would excrete the dyes of both the first and third classes, but not those of the second. Possibly a dye of the third class might be found which could be used to determine the presence of liver disease clinically. Experiments were under way to find such a dye, as well as one of the second class which might be used for the diagnosis of gastric disease.

Dr. ARTHUR D. HIRSCHFELDER, of Minneapolis, pointed out that trypan blue was specifically excreted into inflammatory tissues and could be used to mark them out clearly and distinctly from the surrounding normal structures. He thought the applications of the use of dyes suggested by Weil and Cecil were both interesting and very hopeful of being developed into diagnostic methods of practical value. In the use of the benzidine dyes in man caution was necessary to avoid toxic actions which resulted when solutions of these substances were allowed to stand. The toxic properties seemed in some way bound up with the property of these colloidal solutions to undergo aggregation into larger molecular groups. This could be avoided by using only freshly made solutions in distilled water.

**Innovations in Intravenous Medication.**—Dr.

WALTON FOREST DUTTON, of Tulsa, Okla., stated that intravenous medication was not the most common method of introducing therapeutical agents into man. This was true for several reasons: It was a comparatively new procedure; it was impossible to prepare the organism for such medication; and there was no established system of doses or method of preparing drugs for intravenous medication. He discussed the ways and means of overcoming these difficulties and briefly described his methods of treating pneumonia, malaria, syphilis, and tuberculosis. During the last two years he had treated forty-two cases of incipient tuberculosis and ten third-first stage cases with good results by the following method: The patient's own serum was used. Ten to twenty c. c. of blood were withdrawn and the serum reinjected. The injections were given twice a week. If blood cultures showed streptococci or pneumococci, or in cases of cough with expectoration and a predominating bacteria, autogenous vaccine was made and injected with the patient's serum. When this was not found convenient a standardized commercial vaccine was used. Drugs were introduced in like manner. In none of these cases were the phenomena of hypersusceptibility in evidence. Many of the low vitality cases were stimulated by the occasional use of 200 c. c. of isotonic solution. Forty-two of these patients were in his opinion cured. Eight have had no untoward symptoms in the last six months. One was stationary, and one was unimproved. The last two patients would probably be improved by a change to Colorado or New Mexico. Dutton's experience has been so favorable that he would suggest his method as a means of cure in incipient tuberculosis.

Dr. TORALD SOLLMANN, of Cleveland, emphatically condemned the routine practice of intravenous medication and thought it should be reserved for the administration of a very limited number of drugs or to meet special indications. Where a drug was destroyed in the tissues before absorption, as was sometimes the case, the intravenous route was the only one available. It should be resorted to where prompt effects were required and the drugs to be used were slowly or uncertainly absorbed. It was certainly not suitable for the administration of drugs where their prolonged and continuous actions were desired. In addition to the precautions already mentioned by Doctor Dutton it was most essential to make all intravenous injections very slowly to avoid danger to the heart.

Dr. CARY EGLESTON, of New York, agreed fully with Doctor Sollmann's remarks and expressed the belief that the indiscriminate practice of intravenous medication would lead to many unfortunate accidents. He pointed out the dangers of thrombosis from such use of irritant drugs as mercuric chloride and the narrow zone which separated the doses of quinine recommended by Doctor Dutton from those which had proved fatal. He also cited instances in which quite unexpected results followed the intravenous injection of well known drugs. Thus he had seen death result instantaneously from the intravenous injection of as little as three milligrams per kilo of caffeine in dogs, while very many times this amount was survived when

slowly injected or given by other routes than the vein.

**The Nonspecificity of Vaccine Therapy.**—Dr. JOSEPH L. MILLER, of Chicago, stated that it was difficult to draw accurate conclusions as to the value of new remedial agents in the treatment of infections and that it was necessary to study a large number of cases with carefully selected controls. Typhoid fever was the only acute infection treated by the subcutaneous use of vaccines in which such conditions had been fulfilled and the accumulated evidence did not indicate that the treatment had materially modified its course. Well defined favorable results had, however, been obtained from the intravenous injection of vaccines in typhoid, but these were just as good from other vaccines as from the specific typhoid vaccine. This had led to the investigation of the cause of the results and much work which had been done pointed strongly to the occurrence of a nonspecific factor as the cause. The same results could be secured from the intravenous injection of a large variety of nonspecific agents, including bacteria, proteins, peptone, deutoalbumose, etc. The beneficial results were found to follow in direct relation to the appearance of a transitory acute febrile reaction resulting from the injection. Similar favorable results could be secured from such injections in a large variety of infective processes, including tuberculosis, arthritis, etc. While such was proved to be the case, it was observed that permanent relief did not usually result in the presence of a focus of infection. In such a case the symptoms might be completely relieved in a few hours after an injection but after a few days had elapsed they would return as the infecting organisms again multiplied and gained a new foothold. This was well illustrated in cases of gonorrheal arthritis and in acute arthritis complicating infective endocarditis. Many cases of permanent cure, following immediate relief of the acute symptoms were, however, now on record in cases of acute, subacute, and chronic arthritis in the absence of focal infection. While almost any protein might be used for such treatment great caution was necessary, especially with the commercial vaccines which varied widely in their bacterial content, to gauge the dose so as not to cause too extreme a reaction. Although the method seemed to offer great possibilities it was not free from danger and in the present state of our knowledge it could not be regarded as having reached more than the experimental stage. Much had still to be learned before it could be offered to the general practitioner with any measure of safety.

**Prophylactic Use of Vaccines in the Great War.**

—NEWTON E. WAYSON, of Washington D. C., reviewed the attempts to prevent the occurrence of the enteric infections such as typhoid, the paratyphoids, and cholera during the present war. The results had shown the inadequacy of general sanitary measures to prevent these diseases in the absence of individual prophylactic immunization. While the immunizing agents used had varied in preparation and dose, the basic principle of choosing the method by which the immunogenic properties were preserved and the infectivity was destroyed was followed by all nations. The tendency seemed to be to increase

the doses of vaccines used, both individual and total. Experience had shown that the period of effective protection was shorter than previously believed and revaccination should be practised annually for the typhoid paratyphoid group. Oral administration of specifically prepared vaccines had been tried, but the results were not promising and the subcutaneous route remained the one of choice. This was relatively simple, rapid, effective, and safe for robust persons below forty years of age. General reactions occurred in only a small proportion of instances and were almost always of very mild grade. Among the contraindications to vaccination the following had been found to be the most important: fatigue, the prodromal stages of acute and chronic infections, organic respiratory, renal, or circulatory diseases, and systemic diseases. Failure to observe these contraindications, to select the men with reference to age and health, and to follow the inoculations by periods of rest had led to such complications as nephritis, pulmonary, and intestinal troubles, and the lighting up of latent tuberculosis. Prophylactic vaccination had shortened these diseases, reduced their severity, and diminished both the morbidity and mortality. Typhoid diagnosis had become more difficult and hemoculture was the only reliable method in recently inoculated subjects. A triple immunization against typhoid and the two paratyphoids was essential since the reduction of the frequency of typhoid by vaccination had enormously increased the prevalence of the paratyphoids. Anticholera vaccination produced less severe reactions than antityphoid but the immunity conferred was of shorter duration and the inoculations had to be repeated three or four times each year. The results were favorable, however, in respect to the severity, mortality, and morbidity of the disease. The only unfavorable result of these prophylactic vaccinations had been the great increase in the number of carriers of the intestinal infections.

**A Study of the Eggleston Method of Administering Digitalis.**—Dr. S. MARX WHITE and Dr. R. E. MORRIS, of Minneapolis, emphasized the uncertainty of the usual methods of administering digitalis. Preparations differed in activity and we could not be certain of the amount of digitalis which would be required and in some cases, unless watched from the start, could not be sure that the patient had received a sufficient dose for a fair trial of the drug in the absence of the development of any of the characteristic signs of action. A considerable series of cardiac cases was therefore treated, using the Eggleston method of administering digitalis. This, in brief, consisted in using digitalis which had been standardized upon the cat according to the method described by Hatcher, which measured the activity of the drug in terms of the cat unit. This unit was the amount of digitalis, in milligrams of the leaf which was required to kill one kilogram of cat weight. According to Eggleston the total amount of digitalis required to produce full therapeutic effects was 0.146 cat unit to a pound of the patient's body weight. Employing this unit the dose was calculated for each patient and one half of the total was administered as the initial dose; one half of the remainder was given from four to six hours later;



and the remaining quarter was given in two equal doses at further intervals of from four to six hours. The administration was controlled in all cases by polygraphic and electrocardiographic methods, as well as by careful clinical study. It was found possible in this way to secure pronounced digitalis action in practically every case within a period of eighteen to twenty hours after beginning the administration. Although the individual doses used seemed very large no ill effects whatever resulted from their use. Further, by this method of administration the effects could not only be secured much more promptly than usual, but also the distressing symptoms of nausea and vomiting seldom appeared. Following the rapid induction of digitalis action a large proportion of the patients were given tonic digitalis treatment, consisting of the administration of from one to three mils of the standardized tincture daily. Observations were also made upon a number of different varieties of native digitalis, and of digitalis of both first and second year growth. These showed the native drug to be of a potency quite equal to the best imported varieties and that there was no difference in activity between the first and second year plants. In addition to the commonly used *Digitalis purpurea* other species were found to be highly active, especially *Digitalis lutea*. Studies of the latter variety seemed also to indicate that it was relatively less actively emetic, compared to its cardiac activity, than was *Digitalis purpurea*.

**Influence of Digitalis and Digitoxin on the Blood Pressure.**—Dr. CARY EGGLESTON, of New York, pointed out that both digitalis and digitoxin were still believed by many to cause vasoconstriction and elevation of the blood pressure when given to man. He called attention to the fact that this belief was founded on certain pharmacological experiments on animals which had been accepted as applying to man. The transference of the results of these experiments to man was wholly unwarranted, since in them the vasoconstrictor actions were demonstrable only after the rapid intravenous injection of doses from five to fifteen times the fatal. The observation in these animal experiments that smaller doses than these did not cause vasoconstriction was, in itself, strong reason to expect that the drugs would not cause any vasoconstriction when used therapeutically, though this view was quite contrary to that expressed by the authors. A number of careful clinical observations had been made, some of which were cited, which showed that digitalis did not tend to increase the systolic blood pressure in man, except to a very slight extent and in a small minority of the cases. Fourteen hospital patients were very carefully studied in the present investigation, every element of control having been employed, and the results showed that large doses of either digitalis or digitoxin, given orally to man over a period of only a few hours, had very little tendency to raise the systolic blood pressure. The systolic pressure was increased in only two of the cases, by eleven mm. Hg in one and fifteen mm. Hg in the other; in only one case was it materially diminished, falling to the extent of twenty-three mm. Hg. The diastolic pressure, on the contrary, was decreased by more than ten mm. Hg in half of the

cases and was not materially increased in a single instance. From a careful analysis of the facts here brought together he concluded that there was no evidence that either digitalis or digitoxin had any direct action on the vessels when given to man even in large therapeutical doses. This conclusion agreed, in his opinion, with the results of animal experiments. He suggested that those changes in the systolic and diastolic pressures and the pulse pressure which were observed following the therapeutical use of digitalis were to be explained on the basis of responses secondary to the effects of the drug in improving the circulation through the bodily tissues in general. This improvement in the circulation was the direct result of the well known actions of the drug on the heart.

#### SECTION IN DISEASES OF CHILDREN.

June 6, 1917.

**Observations on the Presence of the Bacillus Abortus in Certified Milk.**—Dr. E. C. FLEISCHNER presented the paper prepared in collaboration with Dr. K. F. MEYER, both of San Francisco. Certified milk, they stated, was the only exception to pasteurized milk admitted by the State laws, and even this was not perfectly safe. Bovine infection formed the weak link here. Experiments were made upon guineapigs to test certified milk for tuberculous reactives. The results showed the action of the *Bacillus abortus*. This organism must be reckoned with in the effect of such milk upon human health. Tables were shown exhibiting the reaction from milk gathered from five dairies over several months. Large positive results were obtained because of the large quantity of milk used in the experiments. The conclusions were that the *Bacillus abortus* was always found in certified milk in San Francisco. There was not enough tuberculous infection present to cause tuberculous lesions in guineapigs. Therefore there was no necessity, if this was correct, to cook milk as a measure against tuberculous infection, but the result obtained in regard to the *Bacillus abortus* was one more definite indication to consider from every angle the effect of such milk upon infants.

Doctor SEDGWICK, of Minneapolis, spoke of the complement deviation as a positive reaction obtained in children's blood denoting the presence of *Bacillus abortus*, which was never obtainable in the blood of the newborn. As high as forty-two per cent. passes over from cow's milk. Its pathogenicity for children was, however, unknown.

Doctor FLEISCHNER spoke again of the large literature upon this subject. Study on the pathogenicity has been initiated in this country with Doctor Sedgwick as a pioneer. Two tentative conclusions may be drawn from the report made here. The *Bacillus abortus* was present in raw milk in an extremely large proportion. Moreover the bacilli of tuberculosis were in all probability never present in certified milk in sufficient quantity or frequency to constitute a danger of tuberculous infection.

**Rumination in the First Year of Life.**—Dr. CLIFFORD G. GRULKE, of Chicago, reported upon sixteen cases of rumination in the first year of life found in the literature. It was, however, much



more frequent than this, but often in such mild form that it was not recognized and diagnosed as such. It very often proved fatal in severe cases. He showed in one case a definite dilatation of the esophagus. Pylorospasm seemed to play a large part. There was increased muscular action of the stomach and lessened resistance of the cardia. There was relaxation of the esophageal wall and in certain individuals spasm of the circular involuntary muscles. The patient was nervous, emaciated, did not sleep, took his food greedily, but brought it up, gargled it and swallowed it again. Death resulted from starvation. Drugs did not give any results. A diet of cereal gruel or puree was used or the nostrils were plugged. Lavage and gavage were tried but all these measures showed little or no success. Psychological treatment was important in withdrawing the attention from the practice.

Doctor TAYLOR, of Minneapolis, reported a case in which the child was nearly dead in spite of all forms of treatment. Then the child's jaw was tied in order to interrupt its reflex chain and rumination; the child gained steadily and became well.

Doctor KERLEY, of New York, said that mild cases were unrecognized. He pointed to the habit as an evident desire on the part of the child. He was not happy unless he could get the food up again.

Doctor GOLDBERGER, of New York, spoke of the therapeutics of thick barley gruel or jelly.

Doctor GRULEE said in conclusion that it must be regarded as a habit spasm, but asked where such a habit started and what was its mechanism. He suggested a Freudian explanation.

**Effect of Body Posture on the Position and Emptying Time of the Stomach.**—Dr. LAWRENCE R. DEBUYS presented the report prepared by himself and Dr. ADOLPH HENRIQUES, both of New Orleans, of their observations upon nineteen infants with the subject in the erect, lateral, left and right, supine, and prone postures. There was increased motility in all cases in the right lateral position. Movement in the supine position was comparatively slow. This work was still being pursued and was here reported upon a comparatively small number of cases as yet.

Dr. ROOD TAYLOR, of Minneapolis, suggested that this was a complicated subject, as it was largely dependent upon the quality of foodstuffs, length of time without food, forms of disease, etc.

Doctor TAYLOR, of Boston, told of a method of testing with long, flexible, small calibre rubber tube which finds the amount of residue in the stomach.

**Recent Literature Pertaining to Vitamine.**—Dr. LOUIS FISCHER, of New York, said that from the conclusions of Funk and his coworkers deficiency disease resulted from the deficiency or absence of a crystalline substance or substances which could be chemically isolated, and to which the name "vitamine" had been given. This vitamine was an antiscorbutic element, and when absent was an important factor in the development of Barlow's disease, rickets, and beriberi. According to these investigators all foods contained vitamine. Just as some foods were high or low in fats or proteins, some were also high and others low in vitamine. Funk stated that a definite relationship existed be-

tween the onset of certain deficiency diseases and the amount of carbohydrates consumed, and that it was certain there was a definite relationship between the vitamine content of the food and the amount of carbohydrates which had to undergo metabolism. Accordingly it must be emphasized that a certain amount of vitamine could take care only of a certain amount of carbohydrate.

Another interesting point brought out by Funk was that animals fed on white rice, or rice from which the shell containing the vitamine had been removed, showed marked changes in the chemical composition of the brain. Remembering that the most characteristic feature of the deficiency diseases was a group of symptoms arising from the central nervous system, his findings must be regarded as very important. Experiments were made with autolyzed yeast, and it was found that when three per cent. of yeast was added to the food of white rats their growth was stimulated. When symptoms of a deficiency disease were noted in infants, autolyzed yeast in doses of ten to sixty drops was added to the food. The clinical aspect of vitamine therapy had been studied by M. Stark and Edelman at the Post-Graduate Hospital, and their interesting report in *American Medicine*, November, 1916, deserved careful study.

The action of the vitamine was to stimulate internal secretions. By setting free these secretions they acted as hormones. These hormones again stimulated the enzymes. To guard against deficiency diseases vitaminic foods, such as spinach, and other vegetable juices should be given during the early months of infancy. To supply the live factor or vitamine necessary to the proper assimilation of food a mixed diet must be given consisting of fresh vegetables, such as potato, spinach, dandelion, carrots, peas, and beans, in addition to fruit juices, such as orange, lime, and pineapple juice, also fresh milk, fresh meat, and hard boiled yolk of egg. The outer coats of wheat, oats, and especially barley, were rich in vitamine. The excellent results obtained by Kassowitz with phosphor cod-liver oil therapy in rachitis, in the light of our present day knowledge, was due to the vitamine content of the codliver oil.

When the vitamine was absent from food there was a lack of coordination of the food elements, and the resulting metabolism was abnormal. There was a deficiency of the food compounds, and this deficiency was shown by a series of symptoms such as restlessness, irritability, and greenish stools containing either mucus or curds. Weight was stationary and sometimes decreased. If food rich in vitamine was given these symptoms gradually subsided, there was a stimulation of growth and weight, and the child regained or reached his normal condition. If neglected one of the deficiency diseases, such as rickets or scurvy, would result. It was the physician's duty therefore to prevent the development of the deficiency diseases which in time meant structural weakness. Such children were more susceptible to the acute infectious diseases and offered less resistance to disease in general.

Doctor SCOTT, of New York, said that foods should be chosen not only for their caloric value, but

for their vitaminic value as well. Continued sterilization and pasteurization of milk destroyed the vitamins.

Dr. I. V. LEVI, of Philadelphia, reported successful yeast feeding in a small child.

Doctor SOUTHWORTH, of New York, objected that Doctor Fischer's case was not conclusive, but the latter showed how radical had been the change in diet from milk apparently without vitamins to milk plus vitamins, with a corresponding marked result in the child's weight.

#### **A Study of Diarrheal Conditions in California.**

—Dr. WILLIAM P. LUCAS, of San Francisco, spoke of the climatic conditions peculiar to this region. Its salubrity was not diminished by the prevailing humidity, because of the favorable temperature. Housing and other environmental conditions were as unhygienic here as in other cities, and yet there was but a small mortality from infant diarrhea. As a result of a study of infectious and noninfectious cases of diarrhea occurring in the Children's Department of the University of California from August, 1913, to January, 1917, it was found that this disease cleared up with astonishing rapidity and there was an absence of those cases of malnutrition which appeared on the Atlantic coast after summer diarrhea. There was, however, an increase in respiratory diseases in San Francisco. Bacillary dysentery existed, but was not serious. Its course was shorter than in the east and there were no marked sequelae.

Dr. L. T. ROYSTER, of Norfolk, emphasized the importance of radiation as a factor in the theory of heat. Radiation increased the general tone and promoted resistance. In order really to know the rôle played by climate in the onset of diarrhea one should know the temperature curve and humidity curve for some days prior to the attack. In Norfolk there was an increase of diarrhea with the cool, humid weather in May, and again with the extreme early summer heat. The child improved at the seashore because of the breeze, which promoted radiation.

Dr. H. I. BOWDITCH, of Boston, called attention to the possibility of the frequency of contact diarrhea, which might be present in adults but recognized only in the child because of more severe symptoms. It was sometimes discovered that the blood of the entire family gave a positive agglutination test to the organisms in the stools.

Doctor SOBEL, of New York, found that mortality in diarrhea was due to a high degree of humidity rather than temperature. This disorder had proved itself easiest for municipal control and it now ranked third in causes of infantile mortality.

Doctor ABT, of Chicago, asked when the diarrheas were classified as due to the same cause, whether all were considered bacterial or some put upon a food basis.

Doctor LUCAS answered in his conclusion that he believed that there was a distinct type with a distinct cause. There was certainly an infectious diarrhea. Several cases were found in one home and most of the cases were from institutions. There were also a great number due to a variety of causes, when diet and change in temperature and clothing

had at least lessened resistance. It was difficult to trace contact cases in scattered areas.

#### **A Comparison between Clinical Examination and Röntgenograms in Diseases of the Chest.**

Dr. HENRY D. CHAPIN, of New York, discussed the value of this aid to the difficult diagnosis of chest conditions merely by physical signs in small children. The heart röntgenograms were not always easily interpreted, since the soft muscle was subject to dilatation and it was sometimes difficult to distinguish the shadow, but it was still a valuable aid to diagnosis. In the lungs congestion, military tuberculosis, and hilum infiltration might be detected in the absence of physical signs. The x ray gave the deeper sign by which the focus of tuberculosis could be made out and also proved that in pneumonia the congestion proceeded from the periphery to the centre instead of the opposite as supposed. The delay in the bronchial and voice sounds, and hence in the diagnosis, was due to the fact that these were not noted until consolidation toward the centre was complete. Diagnosis must depend upon a combination of x ray and interpretation.

Dr. J. L. MORSE, of Boston, stated that interpretation of the röntgenograms must be modified by clinical experience. Caution must be exercised in diagnosis of small amounts of fluid in the pleura, and of enlargement of tracheal and bronchial glands. The recognition of acute military tuberculosis in babies was one of the most important services of the x ray.

Dr. A. C. EASTMAN, of Springfield, Mass., reported an unexplained case of supposed empyema which was tapped three successive days with dry tapping and then cleared up of symptoms. There was an x ray shadow over the base.

Dr. J. E. BENJAMIN, of Cincinnati, asked if there were not thymus patients who came into the clinic coughing and choking and showing apparently a one hundred per cent. cure.

Dr. E. S. RIMER, of New York, asked if the dullness was not a much earlier sign than breath and voice sounds.

Doctor CHAPIN said in conclusion that there was nearly always slight dullness at the fourth or fifth day, but the x ray diagnosis explained the working out of the bronchial signs. This work needed both the expert clinician and interpreter of plates.

June 7, 1917.

**Intubation of the Larynx.**—Dr. HENRY JAMES CARTIN, of Johnstown, Pa., reported 350 cases of laryngeal diphtheria intubated in private practice under most adverse conditions, with forty-eight deaths, a mortality of fourteen per cent. He hoped that it would lead to more general use of the operation where hospital facilities were lacking. He had no trained assistants, and used the attending physician and a neighbor or parent in operating. There was nursing care in only eighteen cases. Many of the children played as usual and ate at table in spite of orders. The age of the patients ranged from seven months to thirty-four years. The main results are as follows: There were no chronic tube cases, and no patients needed tracheotomy. He had no permanent disturbance of phonation. Only thirty-two patients needed reintubations: twenty-eight, one;



one, two; one, three; one, four; one, five. Causes of death were: heart failure, eight; sepsis, five; diphtheritic pneumonia, twenty-seven; scarlet fever, two; one each for pertussis, pulling out tube, spasm of glottis, tube blocking, convulsions, and coughing up tube. He used no specially constructed tubes. O'Dwyer's instruments with hard rubber tubes were employed. There was no occasion to use the Casselberry method of feeding nor to resort to gavage. He always removed the string. The wearing of the tube for five days resulted in fewer needing re-intubating. Only one patient was intubated twice, interval attacks being two years. Early intubation and larger dose of antitoxin reduced mortality. Extubation was found easier than intubation.

Dr. J. F. HOGAN, of Baltimore, urged that a plea be made for instruction in the training schools in infectious diseases, since few graduate nurses have received this or know anything of care of intubated cases. Antitoxin, he believed, would not allay the need for intubation in younger children because of the depth of the laryngeal condition.

Dr. H. L. WHITNEY, of Plymouth, Pa., advocated one large dose of antitoxin for anaphylaxis. A little water given after every feeding prevented choking of the tube.

Dr. A. J. BELL, of Cincinnati, commented on the success of these cases in the absence of the hospital conditions which were so essential for this work.

Doctor ABT, of Chicago, discussed the advantage of the erect position for operation and warned also against considering this an easy operation. Intubation in scarlet fever had not proved favorable because the membrane in severe laryngitis descended rapidly. Early operation might be indicated in unfavorable districts, but in hospitals should be undertaken only in dyspnea, cyanosis, and definite retraction. He warned against the use of force which might cause perforation.

Doctor ROYSTER, of Norfolk, urged that this should be considered a major operation and should be undertaken by no one without sufficient training.

**The Weight of Clothing in the First Five Years of Life.**—Dr. J. P. CROZER GRIFFITH, of Philadelphia, reported upon a study that he had made to ascertain as a matter for convenience the average weight of clothing at this period of life. There has been no such standard by which to compute net weight when, as so often happened, the weight of children was taken in their clothing. The absolute weight was of less importance than the amount of gain or loss. Absolute accuracy was of course not claimed for the computed table of relative weights.

Dr. F. C. NEFF, of Kansas City, called attention to the fact that such a table might serve as a basis for advice to parents in regard to the overdressing of children.

**Edebohls's Operation in Nephritis in Childhood.**

—Dr. JOHN LOVETT MORSE, of Boston, reviewed the literature on Edebohls's operation with a summary of the operations done upon children. He concluded that the restoration of the circulation from without was not beneficial because it could not restore the cortex. It was better to decapsulate and obtain a new capsule with a new blood supply. The

new capsule was, however, more dense than the old and the blood supply was diminished. The author had punctured or incised the capsule in acute nephritis and also decapsulated. The former procedure could not remove the cause of disease nor affect the pathological condition but it relieved conditions. In one case good results were obtained with decapsulation, relieving the enlargement of the kidneys, engorgement with blood, restoring the compressed circulation and removing the anuria. Operation was performed only when anuria was present and toxic symptoms were developing, and life was to be saved. His conclusions were that in chronic cases operation might prolong life and in childhood at any rate it improved circulation and function. In acute cases life was saved and prolonged with improved conditions.

Dr. J. S. WALL, of Washington, D. C., said that the child's recovery was the final criterion for Edebohls's operation.

Doctor MORSE said in closing the discussion that the indication for operation differed in chronic and acute conditions. In the former there was no reason except the direct benefit of the child; in the latter it was to relieve congestion temporarily and tide the child over the period of acute illness.

**Diagnosis of the Age of the Fetus by Röntgenograms.**—Dr. JULIUS H. HESS, of Chicago, presented a series of slides showing the röntgenograms of the development of the human skeleton from the seventh week of pregnancy to term. Though there was known to be bone deposit in the sixth week, the x ray did not show it until the seventh. This work was only in its beginning, but would prove itself of great importance in determining the age of the fetus. It was a reliable method, showed the regular development and gave criteria for diagnosis. Development showed itself to be more accurately determined in the earlier than in the later stages. The centres were more constant near the head region. The further from the head the less reliable was the course of development.

**Phenolsulphonephthalein Elimination in Infants and Children.**—Dr. J. CLAXTON GITTINGS, of Philadelphia, presented the paper prepared by Dr. ALBERT GRAEME MITCHELL, and himself, both of Philadelphia, in which they reviewed the literature upon this subject, and found that this test was considered the most valuable indication of the ability of the kidney to eliminate toxins, but by no means final. They described their own technic upon children tested in Philadelphia. The phenolsulphonephthalein was injected intramuscularly and the urine tested after two hours. Marked diminution was noted but once in acute diseases and that in a case with tuberculous lesion, while there was marked diminution in acute nephritis. They concluded that there was no marked decrease in other disease than renal.

Dr. J. S. LEOPOLD, of New York, used the same technic and came to the same conclusions. He considered anything above fifty per cent. as normal.

Doctor MORSE, of Boston, insisted on the two hour period for testing the urine. He believed that the fixation of the specific gravity of the urine was to be an important test of the function of the kidney.



**Prophylactic Use of Pertussis Vaccine Controlled by the Complement Fixation Test.**—Dr. E. J. HUENEKENS, of Minneapolis, after reviewing the literature on the value of pertussis vaccine as a prophylactic and recent literature about the complement fixation test in pertussis, gave the technic of making vaccines. He made prophylactic injections in young children in doses varying from 100,000,000 to 2,000,000,000, and after two weeks' testing for the presence of antibodies by means of the complement fixation and agglutination tests, in none of the cases were the antibodies against the bacillus of Bordet and Gengou found to be present. The conclusion to be drawn was that prophylactic injections of pertussis vaccine has no specific value in preventing pertussis.

Dr. J. A. FOOTE, of Washington, D. C., reported that the small dose used by him had afforded no protection, did not alleviate the symptoms nor shorten the period of disease. Agglutination test had given no results.

Dr. H. L. F. LOCKE, of Hartford, had had much more favorable results, especially with very young infants. Mortality was a third less than in a former epidemic. The cause of death was bronchial pneumonia followed by whooping cough. He attributed his results to the large dose used, 500 to 2,000 millions.

Doctor FISCHER, of New York, advocated the large dose even to 5,000 millions, but stated that the value seemed to be only prophylactic. The curative value, if any, was supported by diet and fresh air.

Doctor FAISON, of Charlotte, N. C., reported marked results in very young children. He found the spasms reduced as greatly as from twenty-five to twelve in twenty-four hours. He gave large and repeated doses.

Dr. PAUL LUTTINGER, of New York, stated that a member of the Board of Health was responsible for the large dose. Five hundred to 2,000 millions was a moderate dose, but was used in the clinic in order to avoid reactions alarming to parents. In private practice he used much larger doses, for he did not believe the full value was obtained unless reaction was produced.

Doctor HUENEKENS said in conclusion that several things remained to be determined: how soon antibodies appear in the blood and the question of larger doses and the relation of the age of the child. The present standard did not mean immunity, but was an advance toward it. He advocated the large dose.

**A Series of Trophoneuroses Probably Due to Infection.**—Dr. ALBERT H. BEIFFELD, of Iowa City, Iowa, reported a series of five cases presenting similar and unusual signs and symptoms, all of a trophic character resembling those of pellagra. In several of these the history of an infection of the upper respiratory tract, sometimes with purulent nasal discharge, was obtained. Then followed photophobia, general weakness, irregular and continued fever, double keratitis, in one case, alopecia, painless falling out of the teeth without local reaction of the gums, swelling, pigmentation and desquamation of the skin of the hands and of the feet, and distinct parasthesia. In two cases the rash extended to the

body and was vesicular. In one case a deep seated phlegmon developed before death. Cerebral symptoms suggesting disorientation were noted. No flaccid paralysis such as is found in the ordinary type of polyneuritis was seen. Not all signs and symptoms were found in each patient. These manifestations are those described as occasionally following infections of various kinds.

The first patient presenting this picture was seen during convalescence and at that time a diagnosis as stated in the title was made. In the next two patients pellagra was suspected, but these showed such stormy symptoms of fever, and the course was so acute and treatment by diet, including the vitamin from brewer's yeast, being without the slightest influence, this diagnosis was considered improbable. In the fourth patient the condition was unusually mild and its course not carefully noted owing to the fact that he refused to enter the hospital. The fifth patient presented the same general picture as the two that died. Because of the nasal discharge tinged with blood diphtheria was suspected and a diphtheria like bacillus was found in the nose. Antitoxin was administered. This did not control the severity of the illness. With the passage of many crusts from the nose a sinus infection was suspected and was found. Operation with continued irrigations produced a definite improvement with ultimate complete recovery. In view of the acute nature of the disease, the history of infection, the irregular fever, and the marked improvement following treatment of the sinus in the last case, pellagra was ruled out. No evidence of syphilis was found in any one of the patients. The possibility of a diphtheritic infection of the sinuses must be borne in mind, although a recent patient observed did not present the picture of this disease. Consequently it was assumed that this syndrome was the result of a respiratory infection.

**Pyelitis of Infants: Phenolsulphophthalein Test.**—Dr. RICHARD M. SMITH, of Boston, stated that the phenolsulphophthalein test had been applied quite generally to adults and children. It had been found of particular value in estimating the prognosis of diseases involving the urinary tract. A low phthalein output indicated almost invariably a bad prognosis. In normal infants and children the phthalein excretion was somewhat higher than in adults. There were, however, exceptions to this rule. In children with pyelitis in a small number of observations the phthalein output was low, but no uniform connection could be found with this low output and the other methods of estimating the severity of the disease. It was possible that this test might be an additional guide to the prognosis of the condition and possibly to treatment.

**Experimental Pyelitis in the Rabbit.**—Dr. HENRY F. HELMHOLZ, of Evanston, Ill., stated that infection of the kidney occurred when there was a stopping of the urinary passages, the washing out passages. If the urinary tracts were unobstructed there were no positive results in experimental pyelitis. There was as great a tendency to lesions of other organs as of the kidney. Isolated colon bacilli were injected by stomach and by rectum with no resulting lesions. Injection into the bladder, however, produced pyelitis, while intravenous injection

tions produced cortical abscesses and pyelitis. There was striking absence of lesions in other organs. This organism showed therefore a preference for the kidney when thus introduced. Its specificity for the kidney gave it experimental value in study of this organ. It was also of importance clinically that this specificity existed when the organism was introduced through the bladder, because of danger of invasion.

**Desensitization in the Treatment of Infantile Eczema.**—Dr. THOMAS B. COOLEY, of Detroit, believed that sensitization in a large majority of cases was the most significant factor in causation. After experimenting in the adaptation of Besredka's method of desensitization, he reported favorable results in the treatment of infantile eczema. He believed his results were sufficiently encouraging to warrant further trial and development of the technic.

**A Method of Determining the Exact Dose of Tuberculin for the Individual Child with Pulmonary Tuberculosis.**—Dr. MYER SOLIS-COHEN, of Philadelphia, said that the disfavor into which the therapeutical use of tuberculin had fallen, despite many instances of its beneficial effect, was due to the danger attending its employment and the failure to obtain consistently favorable results with it. Some years ago the speaker showed how all danger could be avoided by beginning with a very minute dose of 0.000001 milligram and gradually increasing it until a favorable reaction was obtained. While this method prevents harm from the doses usually employed to a patient who required such a minute dose, it delayed for many months the arrival at the appropriate dose for those patients who required a thousand to a million times this amount. Before the appropriate dose is reached, the physician may abandon the treatment as inefficacious.

To determine the exact dose of tuberculin for the individual child the speaker tested the degree of hypersensitiveness by injecting intracutaneously graduated doses of tuberculin. He injected in one forearm distally, medially, and proximally, respectively 0.000001, 0.00001, and 0.0001 milligram. If no reaction occurred, he later injected in the other forearm 0.0001, 0.001, and 0.01 milligram, and so on, up to ten milligrams. The smallest amount producing a reaction was then given therapeutically *per os* or hypodermically. No dose thus given had ever caused an unfavorable reaction, while all patients so treated had been benefited, tuberculin never being administered to a patient who was doing well without it. One patient reacted to 0.000001 milligram, another to ten milligrams, a dose a hundred million times larger. The present method of giving the same initial dose routinely to all patients or of guessing at the proper dose must fail in the long run, as in many cases the dose would be too great and in others too small.

Subsequent doses might be regulated according to the speaker's clinical method: maintaining a dose that produced a favorable reaction, diminishing one that caused an unfavorable reaction, and increasing one that had no effect at all. At intervals hypersensitiveness could again be tested, the dose then being made to correspond with the smallest dose producing a distinct reaction when injected intracutaneously.

## SECTION IN PREVENTIVE MEDICINE AND PUBLIC HEALTH.

June 6, 1917.

**The New Public Health.**—Dr. W. S. RANKIN, of Raleigh, N. C., advocated a more analytic conception of the health problem by improvements in the practice of medicine brought about by group practice and by a more economical plan of postgraduate medicine. He showed how it would be possible to institute throughout the United States extension clinical instruction as had been undertaken in North Carolina, resulting in greatly decreased cost to the physician and the possibility of enabling all physicians to avail themselves of postgraduate study rather than making it increasingly difficult for the general practitioner to meet the costs involved in present methods of postgraduate study.

Dr. W. C. RUCKER, of Washington, D. C., stated that it would be quite possible to establish in Washington better and more intensive postgraduate training for physicians engaged in public health service.

The paper was further discussed by Dr. A. T. MCCORMACK, of Bowling Green, Ky., Dr. HAVEN EMERSON, of New York, and Dr. H. M. BRACKEN, of St. Paul, Minn.

**The Diagnostic Clinic as a Factor in Higher Standards of Medical Practice.**—Dr. DAVID L. EDSALL, of Boston, advocated the system of group practice adopted in the Massachusetts General Hospital, because in the present organization of hospitals and clinics laboratory facilities for clinical diagnosis and consultation were available to few of the profession. He also pointed out that only the very rich and the very poor were able to make use of the best diagnostic facilities. Cooperative work of this type necessarily resulted in increased ability on the part of all taking part in the group plan. It was a form of postgraduate study as a result of which public health would necessarily be improved.

Dr. ROGER S. MORRIS, of Cincinnati, Ohio, and Dr. ROBERT POLLOCK, of San Diego, Cal., each spoke in favor of the group plan for diagnosis.

Doctor Pollock presented a detailed account of the highly successful group plan for diagnosis adopted in San Diego, Cal., at a minimum cost to the patient and with intensive cultural advantages to the physicians taking part.

LOUIS I. DUBLIN, of New York, presented a plea for social insurance.

**The Industrial Dispensary as a Contribution to Public Health.**—This paper by Dr. SYDNEY M. MCCURDY, of Youngstown, Ohio, emphasized the importance of the industrial medical dispensary as a means of putting medical service within the reach of a large group of persons who otherwise would be unable to avail themselves of medical attention. It had been shown that wherever such clinics were instituted, the medical supervision and care of employees had reduced the loss from illness to the worker from fifty to seventy-five per cent. The income of the industrial physician in fact depended upon his ability to promote prevention of disease through more careful study of industrial hygiene, factory sanitation, and the practice of periodical examination and reexamination of employees.



Dr. GEORGE M. KOBER regarded prevention of disease a community obligation as well as a public health function, and said that in industry as in public health there should be special corps of workers whose primary function was the prevention of disease.

**The All Day School Dispensary in Prevention of Disease.**—Dr. JOHN NEWELL HURTY, of Indianapolis, was not in favor of the all day dispensary conducted merely for the purpose of curing disease, but favored health supervisors in schools. He regarded the health supervisor as the coming greatest agent in social sanitation and prevention of disease. The child was the easiest and most fruitful avenue to public health.

Dr. TALIAFERRO CLARK, of Washington, D. C., stated that by properly supervising the health of the growing child we materially contributed to the effectiveness of social insurance and industrial hygiene. The establishment of dental and refraction school clinics, and the discovery of tuberculosis and hookworm disease, meant reaching the class of people who never would consult medical practitioners in any other way. The defects of the school child were perpetuated in the adult as evidenced in enlistment records.

Dr. J. C. PALMER, of Syracuse, N. Y., emphasized the necessity for correction as well as diagnosis of defects in school children. Many children could not afford treatment by a family physician.

Dr. H. M. BUNDERSON, of Chicago, emphasized the effective work done in the dental school clinics in Chicago.

**Health Insurance.**—Professor IRVING FISHER, of New Haven, Conn., said that at the present moment every effort was being made by the nation and should be made by all its citizens to conserve every ounce of energy toward the successful prosecution of the terrific undertaking upon which we are just entering. Numerous organizations through the country have passed resolutions favoring the passage of health insurance bills in the various States, while a large number have appointed committees to study the subject. The American Association for Labor Legislation was conducting a general campaign to secure health insurance legislation. Strong endorsement had come from many employers, from labor organizations and from all the socially minded classes, in spite of considerable opposition from others of these same classes and from certain interested quarters. The bills now before the various legislatures were, in general, based upon the Standard Bill of the American Association for Labor Legislation and provided for the compulsory insurance against sickness of the mass of workers, both men and women. Under this bill the worker, if kept from work through illness, received two thirds of his regular wage or salary for an illness of six months or less, and in addition medical, surgical, dental, and nursing care. These benefits were paid for at cost jointly by the employer, the employee and the State, each of the first two contributing two fifths of the total and the State one fifth. For the employee, this contribution would amount to about 1.5 per cent. of his wages.

Objection had been made in some quarters to the compulsion of health insurance that such obligatory insurance would militate against individual liberty. But this argument was as specious as a similar argument applied to universal education or universal liability to military service. Health insurance to be effective and economically administered must be universal and to be universal it must be compulsory; like universal education it was in reality liberative. It liberated from disease and poverty. To be specific, health insurance carried with it two great direct benefits, besides numerous indirect ones. The direct advantages lay, 1, in the usual insurance principle of indemnification against loss, and, 2, in the diminution of the loss itself. The workman's need of indemnification against loss was more vital than that of members of the wealthier classes, because he was more dependent upon his daily wage and because, as statistics everywhere indicated, the death rate of his class was much higher than that of his employers; and yet, with the exception of the workmen's compensation acts, he had to date received practically no benefit from the application of this great insurance principle. He was only too often thrown upon the scrap heap in his forties, because a series of unfortunate illnesses had put him "down and out." The other great benefit to be secured, even more important than the first, is prevention of disease and illness. Few people had any conception of the life and health that were daily being wasted. According to calculations made for the Roosevelt Conservation Commission in 1909, over 630,000 persons were every day needlessly confined to beds of sickness and forty-two per cent. of the persons dying each day died needlessly because the nation and the individuals who composed the nation were not taking advantage of the knowledge on health conservation. Expressed in money, as far as such losses can be expressed in that way, the people of the United States lost annually through loss of earning power and cost of combating disease \$1,500,000,000 through unnecessary death and illness.

An immense stimulus toward life and health conservations was bound to result from the introduction of health insurance. Employers would be led to install all manner of health conserving and hygienic devices, as they were similarly stimulated to install safety devices after the passage of the workmen's compensation acts; employees would necessarily awaken to an interest in sanitary surroundings and hygienic living for both their fellows and themselves; the public, through the interest of the first two parties, would be stimulated to provide better public water supplies, better sewerage systems, better milk, meat and food laws, better school hygiene, more playgrounds and parks, and proper regulations of liquor and other health destroying businesses. And probably one of the very greatest benefits of health insurance would not be felt immediately, but would accumulate year by year, as scientists through health insurance were influenced to further study of disease. This had been the experience in Germany, and statistics showed that her losses by disease in this war had been infinitely less than ever before. The beneficent effects of health insurance would not be limited to the prevention of disease.



**Facts and Fallacies of Compulsory Sickness Insurance.**—FREDERICK L. HOFFMAN, of Newark, N. J., said that the subject of compulsory health insurance remained one of academic interest.

Essentially, compulsory health insurance involved consideration of insurance theory and practice, of medicine and public health, of labor and industry, and of charity and relief. Yet as a matter of fact the State commissions appointed to investigate the subject did not include official representatives of the State departments of insurance, of labor, of health, and of charity, nor of the State medical society. In marked contrast was the method of procedure in the investigation of national health insurance by a committee of the Fabian Society, consisting of ninety-five members, including eighteen medical men, six actuaries, sixteen Friendly Society officials, thirteen trade union officials, about twelve lawyers, and a number of public officials connected with poor law administration, insurance committees, and public health. Obviously in a matter of such far-reaching importance, involving the future of the medical profession, aside from other and even more important public considerations, technical ability of a high order and the utmost fairness in the mental attitude toward the subject matter under investigation were absolutely required.

The report of the Social Insurance Commission of California proved that the average amount of sickness in that State was only about six days per wage worker per annum, and in the Bay cities, chiefly San Francisco and Oakland, the average amount was less than three days. There are other reasons for believing that the average amount of sickness among wage earners throughout the country is less than nine days per annum, but even at that rate the local incidence of sickness is unquestionably less than in foreign countries. Community sickness surveys of the Metropolitan Insurance Company have established an approximate rate of sickness of less than three per cent. among the industrial population, which might safely be considered a relatively low incidence, and conclusive proof that the general health conditions of the United States were quite satisfactory. The prevailing death rate during 1915 in the registration area was only 13.5 per 1,000, or the lowest on record, in marked contrast to the assumption of the late Doctor Farr that a rate of seventeen per 1,000 could safely be assumed as a sanitary ideal.

Both the California and the Massachusetts investigations presented nothing new as regards a possible satisfactory solution, but they merely in broad outline restated the general recommendations of the American Association for Labor Legislation, which has been chiefly responsible for the nation wide propaganda in behalf of compulsory health insurance. Regardless of its title, that Association was not representative of either labor or industry, and it certainly was not seriously interested in the welfare of the medical profession. The report of the Massachusetts Commission presented the subject in a better considered and more impartial manner than the report of the Commission of the State of California. It was suggestive to find, regardless of the misconstruction placed upon the official find-

ings by those who were actively engaged in the furtherance of the propaganda for compulsory health insurance, that the Massachusetts Commission concluded that "the Commission is therefore unanimous in not recommending any health insurance legislation for immediate passage," and furthermore, it was said that "any legislative consideration of the subject should be based upon a knowledge of conditions as they *now* exist"; but as regards one of the most essential aspects of the investigation it was frankly conceded that "as to the amount of sickness now existing among wage earners in Massachusetts the Commission has no definite statistics."

As regards the Commission's findings with reference to the very poor, it was self-evident that no material benefits could accrue to this element under any compulsory health insurance system which rested fundamentally upon the principle of continuous deductions from wages. This aspect of the compulsory health insurance propaganda was persistently ignored by its advocates, who, while never failing to direct attention to the insufficiency of medical aid and pecuniary support among the very poor in the event of prolonged illness, failed to offer any solution adequate to the purpose. The problem of the poor lay not in the direction of compulsory health insurance, but depended upon better social and economic conditions, better opportunities for employment, an increase in wages and general intelligence, and, last but not least, as far as the very poor were concerned, in better methods of poor relief and State medical aid.

In brief, the agitation for compulsory health insurance must be considered ill advised and opposed to the fundamental principles of democracy. It was absurd to argue that because we had compulsory education we must therefore also establish or willingly submit to compulsory health insurance. Because the principle of coercion was sound in one direction of public control, we were by no means justified in assuming that it was sound or necessary in others.

To the American medical profession the evidence to be derived from English sources was extremely suggestive, though, as a general rule, complaisantly ignored. The Weekly Supplements to the *Journal of the British Medical Association* contained a truly appalling amount of evidence opposed to the arguments that national health insurance in the United Kingdom had been of substantial value to the medical profession and their patients. The evidence was quite convincing that under national health insurance the British medical profession had been thoroughly disorganized and that the social and economic status had been perceptibly lowered. On account of the war there had naturally been a reluctance to make the matter a national issue; but far reaching reforms would be absolutely necessary if serious and substantial harm to the profession and the people was to be avoided. The best interests of the American medical profession demanded a thoroughly impartial ascertainment of the facts regarding the past and present status of the British medical profession under compulsory national health insurance, as a safe and sure guide to the framing of a deliberate policy to safeguard its highest and best interests and that of the public at large.

## SECTION IN DERMATOLOGY.

June 6, 1917.

**The Hospital Opportunities and Responsibilities to the Syphilitic.**—Dr. HENRY ROCKWELL VARNEY, of Detroit, outlined some of the opportunities and responsibilities of the general hospital toward the syphilitic, discussing the great diversity of opinion of hospital boards regarding the admission of syphilitics to their institutions; outlining the responsibility of the hospital to guard the health of the community; and emphasizing the number of syphilitics that were constantly in our hospitals unrecognized and therefore untreated.

During the recent survey of the leading hospitals of this country there was found a great tendency of the boards of control to close their free wards to all physicians who were not members of the staff. This action had been considered a distinct advance and in no instance was there any intention of returning to the old open hospital methods. The grouping of medical specialists in the closed teaching hospital was now demonstrated to be most successful. The leading institutions of our country, in discussing the responsibilities of the hospital to the syphilitic, advocated a department for syphilis which was under the direction of specially trained men. This service should not only be continuous, but should be a teaching service also, teaching not only the intern staff and nurses, but all syphilitics who entered the institution. This service should embody a well organized social service department with specially selected and instructed nurses.

No care of syphilitics in hospitals could be successfully carried on without a registration system and periodical follow up notifications for laboratory checks and treatment. With such a system we could control the disease and not simply treat the symptoms and allow the syphilitics to continue to transmit their infection.

Medical history recorded that following all recent wars there had been a wide dissemination of syphilis upon the return of the troops to their homes. Giving due consideration and credit to all modern prophylactic measures now instituted in the army and navy, we would still have much syphilis returning to the general hospital. This was a most important situation and we should be aroused to its responsibility, encouraging in every possible way the establishing of services for the syphilitic in all hospitals and dispensaries equipped with the most modern facilities for treating and controlling this international scourge.

**The Teaching of Syphilis in Undergraduate Schools.**—Dr. WALTER JAMES HEIMANN, of New York, said that the head of the department of syphilology should have a general training in biology and general medicine and a special training in dermatology and syphilis, with sufficient knowledge of pathology, serology, neurology, and diseases of the ear and eye to be able to teach syphilis intelligently. Above all, he should have marked pedagogic ability. His lieutenants should have a similar grounding, their limitations being only those of age and less experience than their senior. The department should consist of suitable clinics, wards, and laboratories, and the instruction should consist of lectures

and section demonstrations to cover a period of two years. Cooperation between the syphilology department and other departments was imperative. A harmonious point of view among the department heads was essential for proper instruction in order to avoid confusion among the students. No sections should have more than ten pupils. The entire scheme of instruction including that in the syphilology department and other special departments must be consistent and consecutive. The general syphilologist must at least be an expert dermatologist. Thus, as matters have shaped themselves in the development of specialism, the chair of dermatology and syphilis should be one. This chair should be represented on the faculty in order to facilitate the introduction of advanced teaching methods in syphilis and otherwise to supply the department with such representation as is always necessary if its teaching services are to be adequate.

**Lymphadenosis Cutis Universalis, Associated with Generalized Erythrodermia and Atrophy of the Skin.**—Dr. FRED WISE, of New York, said that this subject had received scant attention among American dermatologists, but there existed a voluminous European literature on it. The various leucemic disorders were often associated with morbid processes of the skin and the integument might also be extensively involved in the so called leucemic forms of leucemia. The subject of his report was an example of the aleucemic type of universal cutaneous lymphadenosis. It was peculiar in that the patient's skin exhibited at the same time the diffuse and the circumscribed types of the disease. Furthermore, there existed a generalized, almost universal, atrophodermia, associated with areas of deep, reticulated pigment deposits in the skin and glands, and there were large and small infiltrations, nodules, and tumors and ulcerated areas of skin. The color of the skin was a peculiar bronze red. Physical examination of the patient was negative. Numerous examinations of the blood revealed very little deviation from the normal. Guineapig inoculations of material from excised femoral and axillary glands proved negative. In short, no etiological data were ascertainable. The disease had existed for about eight years, and aside from his skin trouble, the patient's health was fairly good. The eruption had given rise to a great deal of diagnostic speculation; the changes resembled those of generalized cutaneous atrophy, universal erythrodermia, mycosis fungoides, lymphadenosis pernicioiosa, pityriasis rubra of Hebra, etc. Five or six years ago, when the patient was first examined by Doctor Lapowski, the lesions which he presented closely resembled those seen in lichen ruber acuminatus. Although many of the dermatologists who had had the opportunity to examine this patient's skin, deemed the eruption to be a unique one, Wise found, upon perusing the French, German, and British literature, that several similar instances have been recorded; only recently, Sweitzer, of Minneapolis, reported a somewhat analogous case. Wise examined and studied many microscopic sections from the skin and glands of his patient and also submitted specimens to Doctor Larkin, Doctor Snyder, Doctor MacKee, and Doctor Satenstein. The prominent



microscopic features consisted of dense lymphocytic infiltrations in the skin and glands, the presence of areas of infiltration consisting of embryonal cells of endothelial type, large deposits of pigment in the corium, the occurrence of giant cells; edema was pronounced throughout the sections; bloodvessels were thickened and dilated; marked endothelial proliferation was everywhere evident; epidermal edema and subepidermal vesicle formation were prominent features in the superficial portions of the integument. The clinical appearances in some ways resembled those of mycosis fungoides, but differed from that disease in the fact that Wise's patient exhibited a generalized atrophoderma, foreign to mycosis fungoides; that the patient's health remained unaffected—in fact, he had gained in weight recently; in the absence of festooned or garland like lesions commonly seen in advanced mycosis fungoides. The cutaneous infiltrations and larger nodules and tumors were subjected to x ray treatment, resulting in their involution.

**Epidermolysis Bullosa.**—Dr. A. RAVOGLI, of Cincinnati, reported a case of this rare disease in which bullæ or blisters form in the skin in any part of the body subjected to any slight injury, as knocking, rubbing, etc. He said it was usually congenital, but there were cases in which it was acquired. It was important to remark that in so called congenital cases symptoms began to manifest a few days after the birth. These are usually associated with some dystrophic condition, as lack of hair, nails, or teeth. This condition was found in the case reported. The little patient had no nails at all and the teeth were irregular, of a chalky appearance, and badly implanted. The parents stated that the eruption of bullæ began when he was nine days old. The whole body was badly pigmented from the preexisting bullæ, from the excoriated bullæ, and from the excoriations derived therefrom. The hands and the feet were nearly always covered with bullæ, and bullæ were on the feet where the shoes were tied. The elbows, knees, abdomen, and lumbar regions where the trousers were tied had constantly new bullæ.

So far the origin of the disease was not known. In this case the urine was negative. No deviation was found in the blood count. Wassermann test was negative. Doctor Ravogli established three principal points: heredity, vulnerability of the skin, and disturbed stability of the vasomotor system. These three conditions bore witness to a systemic disturbance caused by focus of toxicity in the organism. Wassermann negative proved that there was no active syphilitic virus in the system, but it did not disprove the possibility of a luetic taint transmitted by the parents. A luetic taint might have disturbed the vasomotor centres, or the glands of the internal secretions, subsequently manifested in the formation of bullæ. In several cases a mild mercurial treatment, as one sixth of a grain of calomel twice a day continued for some time, gave satisfactory results. In this case mercurials could not be used on account of stomatitis. The speaker resorted to intramuscular injections of neosalvarsan in oil of petrolatum two decigrams each time. After six injections the improvement was so remarkable

that the boy was discharged from the hospital. From the therapeutical results it was concluded to consider this disease a result of a luetic taint in the organism.

**Argyria Localis Due to Organic Silver Preparations.**—Dr. GEORGE MANGHILL OLSON, of Minneapolis, summarized his remarks as follows: A very unsightly permanent pigmentation of the skin may follow the local use of argyrol and the various other organic silver preparations. The use of freshly prepared solutions of argyrol did not diminish in any degree the danger of argyria. The bluish green or slate gray color was not due to a bluish green or slate gray color of the silver deposits, but to the fact that the dark brown silver deposits appeared bluish green or slate gray when seen through the uninvolved translucent epidermis. The occurrence of localized argyria following the use of argyrol, protargol, etc., was uncommon, but the resulting blemish was so unsightly that every care should be taken in the use of these substances. The solutions should never be forcibly injected into any cavity or canal as the tear ducts, urethra, etc., and should not be applied when the skin or mucous membrane is not intact. The general opinion was that the condition was irremediable. The conclusions drawn from this paper warranted a more hopeful prognosis. Local measures such as blistering and electrolysis were possibly of some value in causing an inflammatory reaction that favored absorption of the silver deposits. The hexamethylenamin treatment should be given in every case of argyria due to organic silver compounds.

**Perlèche.**—Dr. JOHN E. LANE, of New Haven, Conn., said that there was no original description of perlèche in the medical literature of the English language, and no information as to its incidence in this country. About fifty cases had been seen in New Haven in a year and a half. Perlèche was first described by Lemaistre, of Limoges, in 1885, and has been reported as frequent in Germany, Italy, and Argentina. It was a disease of infancy and childhood, affecting both labial commissures, characterized by whitening and maceration of the epithelium which later presented superficial transverse fissures and occasionally slight erosion, though there was never any ulceration. The child continually ran his tongue over the lesions, hence the name of the disease. There were no other signs or symptoms, very little local inflammation, and no glandular enlargement. The disease was probably caused by a streptococcus, though this was not absolutely proved. Professor Bartlett, of Yale University, made cultures from twenty patients. Every culture showed the streptococcus, which was the only organism constantly present, though practically every culture also showed various other bacteria. Perlèche was classed by some as an impetigo, though the absolutely different appearance of the two diseases and the infrequency of their simultaneous appearance at the angles of the mouth hardly seemed to warrant clinically such a classification.

The disease was highly contagious, often affecting several children in a family. It was most frequently transmitted by common drinking utensils. The diseases which were sometimes confused with per-



lèche were herpes labialis, eczema, stomatitis, and syphilis. In many cases it was impossible to differentiate it by the appearance alone from the mucous patch in the same location, but a careful examination of the mouth and the whole surface of the skin usually settled the question. The treatment was painting the lesions with ten per cent. solution of silver nitrate, diluted tincture of iodine, the copper sulphate or alum pencil. Cure was usually effected in two to four weeks.

#### SECTION IN PATHOLOGY AND PHYSIOLOGY.

June 6, 1917.

**Diet as a Factor in the Production of Pathological Changes.**—WILLIAM SALANT, of the Pharmacological Laboratory, Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C., said that diet as a factor in the causation of disease was slowly gaining recognition as a result of the investigations on scurvy, beriberi, and pellagra which had been made during the present decade. Evidence was also accumulating that the kind of food used by man and animals might be an important element in determining the action of well known poisons and drugs. The work of Ellinger with cantharides and that of Hunt with acetonitrile indicated that certain foods exert a protective action. The experiments of Opie and Alvord with chloroform, uranium nitrate, phosphorus, and potassium chromate, also furnished examples illustrating the protective effect of carbohydrates.

He had on several occasions called attention to the value of diet as a possible factor in determining the reaction to some drugs. The action of caffeine was found to vary in dogs according to the amount of protein ingested. Oil of chenopodium was less toxic when fatty oils were also administered. The toxicity of sodium tartrate was found to be much less in rabbits which had received young carrots, carrot tops, or sweet potatoes than those which were fed exclusively oats, cabbage, or hay. Evidence that metallic poisons might likewise be rendered less active by some diets was obtained in experiments with zinc malate. This salt was much better borne by rabbits on a diet of carrots than those on a diet consisting entirely of oats, which was probably due to the protection of the kidneys exercised by carrots. Direct evidence of the beneficial effects of carrots against renal irritants was obtained in experiments with oil of chenopodium and fatty oils. Results particularly encouraging were obtained in observations on the effect of diet on the renal permeability in tartrate poisoning. Doses of the salt that failed to produce any deviations from the normal when carrots were eaten caused in some cases a very marked disturbance of renal function as shown by the phenolsulphonephthalein test.

**Defective Angiogenesis as a Factor in the Production of Primary Renal Aplasia, Hypoplasia, and Dysplasia.**—DR. W. M. L. COPLIN, of Philadelphia, reviewed briefly the cases that he had presented previously, which were a group of cases showing defective angiogenesis, and practically all of them arteriosclerotic cases. Since then he has extended his studies and has secured material in

which evidences of defective angiogenesis are practically conclusive: renal artery and renal vein with practically no circular fibres and defective elastics. This he illustrated by means of a number of lantern slides.

Dr. JAMES EWING said that the explanation of atrophic kidneys as a result of acquired arteriosclerosis is not always satisfactory. He recalled the case of a policeman who died of acute colitis. Both kidneys were represented by small sclerotic masses of tissue measuring about three centimetres. He could not conceive that this condition was acquired. He thought the condition was a congenital aplasia of the organ, and felt that many so called cases of arteriosclerosis must be dependent on congenital conditions. It was quite impossible to explain these on the basis of acquired anomalies of the vessels. He said that it was a very difficult matter to distinguish between congenital hypoplasia and acquired arteriosclerosis, but he had no doubt that it would be possible to establish more or less well defined groups in which the two etiological types might be placed.

Doctor COPLIN replied that he had failed to make clear the point which the chairman had brought out. It was not until he had found almost complete absence of circular muscle fibres that he thought he had established the existence of that particular type. He had not for a moment wished to convey the impression that he believed the older view was not entirely correct.

**Cerebrospinal Fluid and the Colloidal Gold Chloride Test.**—DR. LLOYD D. FELTON, of Baltimore, summarized his paper and drew the following conclusions: 1. A simple technic for the preparations of the gold sol by the reduction with the formaldehyde was given. 2. The criteria for the prepared sol were practically the same as reported in the former publication in collaboration with Miller, Hammers, and Brush, with the exception that a P/H of 7 should be used, rather than a P/H of about 6 as determined by alizarine red. 3. Protected sols had greater colloidal dispersion than the nonprotected sols; this protection, excluding that caused by extraneous matter, was the result of slow, irregular heating and was more apt to occur in the use of triply distilled water. 4. Globulin prepared from sera giving a positive Wassermann reaction, from sera having a negative Wassermann reaction, from parietic spinal fluid giving a positive Wassermann reaction, and from a meningitic fluid giving a negative reaction, produced a parietic curve up to 0.1 per cent. solution in 0.84 per cent. sodium chloride made alkaline to a P/H 7.56 by means of sodium carbonate. 5. Zonal reactions were caused by the interrelationship of globulin and albumin, the albumin protecting, the globulin precipitating the gold. Relatively small amounts of albumin and globulin gave a zone in the low dilutions, while larger amounts of globulin and albumin produced a reaction in the higher dilutions. 6. The following points indicated that the globulins studied are positive sols: a, particles were acidic in nature; b, they migrated toward the negative pole of the battery; c, they precipitated negatively charged sol. 7. The Lange's colloidal gold reac-

tion was not specific for syphilis but was an accurate means of measuring the globulin present in the spinal fluid, and indirectly the quantity of the albumin. 8. Although the reaction had been found to be of a physical chemical nature depending upon the presence of globulin and albumin within certain quantitative proportions, the clinical value of the test remained.

DOCTOR CORNWALL, of New York, described a series of 550 spinal fluids which he had studied from the City Hospital and the Vanderbilt Clinic. He said that he had come to the conclusion that it was necessary to take the following precautions when doing the colloidal gold chloride test: First, a dry, sterilized, iridium platinum needle must be used; second, the tube in which the spinal fluid was to be collected must be prepared with the same care that the glassware receives which was used in the test, and last, Doctor Cornwall emphasized the fact that it was absolutely necessary to shake the tube immediately after the addition of the reagent.

Doctor MOODY, of Chicago, said that he was much interested in the colloidal gold reaction. He had examined 1,100 spinal fluids and was making the solution in the way in which he began. He said that this was merely a matter of becoming accustomed to preparing the solution. He made up 500 c.c. at a time, and used glassware cleaned well. Unlike the new method, he still used a thermometer and heated the water to about 60 degrees. He shook the tubes about a minute and a half. The reaction was invariably neutral and quite sensitive. In regard to nonspecific reactions, he called particular attention to hemorrhages within the brain substance. He had three or four cases which gave typical luetic reactions. The patients had no history of syphilis, and as later developed at autopsy showed no signs of syphilis. He warned against the danger of making a diagnosis on the result of only one test in these cases.

**The Nature of the Syphilitic Antigen.**—Dr. CARL C. WARDEN, of Ann Arbor, Mich., said that a definite lecithin complex is the active principle of the syphilitic antigen in the serum test. He considered that pure lecithin obtained from the human heart is equal, if not superior, to the best crude alcoholic extracts. He agreed with the observations made by Noguchi and other workers along these lines regarding lecithin of high iodine value being the true syphilitic antigen. Doctor Warden considered that the word "antigen" as it was applied to the serum test, was a misnomer, as the substance did not conform to the definition of that word, that is, it did not produce an antibody. The speaker suggested that it was rather a "metasome," or a "between substance," as it acted, by virtue of its power of lowering surface energy, specifically at the interface between colloidal systems in the serum so as to produce aggregation and absorption of complement. This "between substance," or what was generally called antigen, in the syphilitic serum test, was held to be specific, and the reaction itself specific, just as the gonococcus fatty antigen was believed to

be specific, together with the complement fixation test for gonorrhea.

**A More Delicate Wassermann Reaction Depending on the Use of Larger Quantities of Blood Serum.**—Dr. P. T. BOHAN and Dr. L. A. LYNCH, of Kansas City, reported their observations made over a period of one and one half years on 200 cases, which were examined serologically for evidence of syphilis. Of these, 143 were known luetic cases. The whole number were checked by a complete clinical history and physical examination, and all the patients showed clinical evidences of syphilis. Doctor Lynch said that quantities of blood serum as high as one c. c. and spinal fluid as high as ten c. c. might be safely used, as the results showed that fresh serum in as high an amount as one c. c. was not more anticomplementary than in smaller quantities. With larger quantities of serum a higher percentage of positive reactions was obtained. Normal serum did not cause complement fixation when one c. c. is used. The statement made by Lange that in nonsyphilitic cases negative reactions were obtained in the spinal fluid using ten c. c. of fluid was borne out by these investigations. Doctor Lynch thought a negative reaction with an increased quantity of serum did not positively exclude latent syphilis. In four per cent. of known luetics there was no inhibition of hemolysis when one c. c. of serum was used. A Wassermann test made with graded quantities of serum was not only an index of the activity of the syphilitic process, but it was of value in estimating the progress in the case under treatment.

Doctor RUSKIN, of Chicago, said that the technic was nothing else than the original complement fixation test, which used to be performed in large quantities, and the reason that it was decided to do the test in smaller quantities was because many negative reactions that later proved positive and were not specific were obtained. He had tried the same technic in larger quantities and had got better results in negative cases. Unless a specific history or clinical manifestations were present one must be very careful about making a positive diagnosis when a large quantity of serum was used. It was also advisable to control a test made with larger quantities of serum by a globulin test and cell count to be on the safe side.

Dr. LLOYD D. FELTON, of Baltimore, remarked that we could rule out the cases which give a positive reaction and were negative clinically better than we could reason the other way around.

Doctor MOODY, of Chicago, warned against the danger of trying to obtain too much spinal fluid at one time, as he had seen autopsies where the patient had died from that cause.

Dr. JAMES EWING, of New York, hoped that some of the workers in this field would rejuvenate Doctor Justus's tests for syphilis, which he employed with such success for a number of years. He wondered why this had not been retested. As a general pathologist, it seemed legitimate for him to say that as long as the Wassermann reaction and the colloidal gold test were nonspecific it was a serious matter to put too much trust in them. In spite of all the accuracy of these serum tests, the fact re-



maintained that there was only one safe way to make a sure diagnosis of syphilis, and that was the demonstration of the *Spirocheta pallida* in the tissues.

Dr. L. A. LYNCH, of Kansas City, said that from the beginning of the work they had been particularly watchful for nonspecific reactions. He could safely say that when working with a hemolytic system with which one was perfectly familiar, one c. c. of normal serum did not cause fixation of complement, as evidenced by his cases clinically. The serum was controlled in each of the different amounts used, and also was always inactivated. Both complement and amboceptor were titrated for each different amount of serum and spinal fluid used.

**Intravenous Injections of Acetoacetic Acid and  $\gamma$ -Beta-Hydroxybutyric Acid at Known Rates.**—In the absence of the author, Dr. RUSSELL M. WILDER, of Chicago, this paper was read by title.

**Clinical Evidence of Distinct Types in the Pathology of Diabetes Mellitus.**—Dr. ALBERT J. HODGSON, of Waukesha, Wis., called attention to the lack of any rational prophylactic treatment of diabetes, and deplored the fact that there could not be any rational preventive treatment until the fundamental cause was at least approximated. Following a short discussion of the pancreatic lesions frequently associated with diabetes, he mentioned other causes of glycosuria: injury to the floor of the fourth ventricle, affections of the hypophysis and adrenals, etc. In an analysis of 1,051 cases the speaker found that 588 developed on a basis of obesity, and in 245 more, one or both parents were obese. The predisposition existed to such a remarkable degree in the obese and their children that this field was considered the most favorable for research. Whatever the real pathology, two general factors were present in the disease—a predisposition and an excitant. Obesity and infection were found to be the commonest underlying conditions.

Dr. E. P. JOSLIN, of Boston, emphasized the importance of fat metabolism in diabetes. As far as cirrhosis was concerned, he doubted whether it was an important factor. Clinically, it could be said that when infectious processes were cleared up, the diabetic condition improved. Fever probably had not much significance. Prophylactic treatment should receive especial attention.

#### SECTION IN STOMATOLOGY.

June 6, 1917.

#### Radiographical and Microscopical Studies of the Tissues Involved in Chronic Mouth Infections.

—Dr. ARTHUR D. BLACK, of Chicago, chairman of the section, in a tabulation of 3,000 radiographic films, with illuminated exhibit of the films, showing prevalence of infections involving the maxillary bones, showed infections in mouths of fifty-two per cent. of persons between twenty and twenty-five years of age; seventy-two per cent. between twenty-five and thirty; eighty-seven per cent. between thirty and forty; eighty-nine per cent. between forty and fifty, and close to 100 per cent. in persons over fifty who have teeth. Systemic diseases resulting from local foci were shown to occur in much the same proportion. Report of microscopical studies of tissues involved in pyorrhea and chronic alveolar abscess

showed practical impossibility of curing these lesions by means commonly in vogue, radical changes in dental practice being demanded. The paper emphasized the wonderful opportunity before the dental profession of preventing serious systemic disease.

**Cysts of the Dental System.**—Dr. KAETHE W. DEWEY, of the Research Laboratory of the College of Dentistry, University of Illinois, said that the chief interest in the study of dentigerous cysts lay in the presence of epithelial cells within them. Two opposing views were held concerning the origin of these cells: One was that they were without exception derived from the mucous membrane of the mouth, a theory based on the assumption that a fistulous tract existed at one time or another from the cyst to the oral surface. The other more generally accepted theory was that they originated from the so called *débris épithéliaux* of Malassez, i. e., remnants of Hertwig's enamel sheath. Divergent conceptions were also held concerning the nature and purpose of these cell remnants which were practically always present in the peridental membrane. Some authorities considered them as mere embryonic remains of a used up organ. Noyes did not believe that useless embryonic *débris* would persist through life if it were useless to the organism, and was inclined to believe that they had some function, possibly one connected with the formation of the cementum. Black, insisting that there were two distinct types of these cells, maintained that those which persisted through life were normal constituents of this tissue and that they must be considered as glandular structures. A novel conception by Fischer was that the enamel epithelium, after having fulfilled its mission, was by no means resorbed, but was differentiated back into typical epithelium of the mucous membrane, a unique "return" of a differentiated tissue to the mother tissue, alleged to be proved by phylogenetic considerations.

As to the development of root cysts, the resting epithelium began to proliferate when through a chronic inflammatory irritation a hyperemia was kept up in the peridental membrane, which occurred most frequently through the direct contact of this tissue with the detritus of the root canal at the apical foramen. The beginning of the formation of the cystic cavity was through degenerative processes which occurred according to some authorities in the epithelium, according to others in the connective tissue. Cysts presenting some rare and unusual features were reported by the speaker. A cyst with small papillary outgrowths on the inner wall and rootlike prolongations on the outer wall was lined on either side with cylindrical or cubical cells, those on the inner surface being ciliated. Cysts with an inside and outside epithelial lining were extremely rare; only three cases had been reported. Another cyst presented angiomatous papillary protuberances on the inner wall; hyaline degeneration on a huge scale had taken place in the wall of the capillary vessels. Two cysts associated with giant cell sarcomatous tissue illustrated the formation of giant cell or syncytial masses along the walls of innumerable spaces which occupied some regions of the tumor tissue.



## SECTION IN OPHTHALMOLOGY.

June 6, 1917.

**Eye and the Endocrine Organs.**—Dr. WILLIAM ZENTMAYER, of Philadelphia, chairman of the section, presented this paper as the opening address. He said that it had been noted that extirpation of the thyroid was followed by keratitis, blepharitis, conjunctivitis, and cataract, and pointed out the possibility that the parathyroids were factors in the production of congenital and other forms of cataract. It was possible that disturbance of the pituitary body might be the cause of hereditary optic atrophy, as well as of some other forms of atrophy of the optic nerve. Amaurotic family idiocy and osteitis deformans had been attributed to adrenal insufficiency and disturbance of the pituitary body respectively, and it was believed by some that disturbance of the ductless glands was the cause of pigmentary degeneration of the retina. The relationship best understood was that between the pituitary gland and the numerous functional and organic eye symptoms caused by affections of that body, and that between the thyroid and the ocular symptoms of hyperthyroidism. Retrobulbar neuritis had been caused by the use of thyroid extract usually in the form of some proprietary remedy in the treatment of obesity. The ocular symptoms of athyroidism were definite, but not numerous. Papilledema and cataract had been noted after thyroidectomy. The thymus gland was responsible for some of the symptoms of exophthalmic goitre. Glandular therapy had been of value in the treatment of blindness due to choked disc and pallid optic nerves which were the results of disease of the hypophysis, as well as in the treatment of uveitis and interstitial keratitis, and might possibly be of value in the treatment of pigmentary degeneration of the retina and of hereditary optic atrophy.

**Chief Functions of the Oblique Muscles of the Eye.**—Dr. SAMUEL THEOBALD, of Baltimore, contended that the view commonly accepted in the early part of the last century that the oblique muscles acted as opponents of the rectus muscles and thus steadied the eye in the orbit and enabled it to turn about a fixed centre—a provision so essential especially to accurate binocular vision—was the correct one. He opposed the theory now generally held that this end was accomplished by the bulboorbital fascia, maintaining that the fascial bands passing from the eyeball to the orbital walls would have to be so tense and inelastic to effectually oppose the very real backward pull of the rectus muscles that they would necessarily interfere seriously with the rotational movements of the eye. Certain subjective light sensations, manifestly caused by contraction of the oblique muscles, which he had observed, showed that these muscles took part in all movements of the eye, with the possible exception of the conjoint action of the internal recti, and thus lent support to his contention.

Dr. LUCIEN HOWE said in discussion that there was every reason to suppose from the anatomical standpoint that the eye is brought forward by the oblique muscles and suggested that the eye is held in place as in a cup by the capsule of Tenon which passes behind the globe.

Dr. EDWARD JACKSON called attention to the fact that the recti drew the eye back and to the nasal side, the obliqui forward and to the nasal side, while there was no muscular opposition to this nasal traction. The eye rotated about a fixed centre which was situated behind the geometrical centre. The eye was not fixed in a single place, but rolled, and found sufficient support, as in a hammock, from the loose tissues. When the lids were opened widely there was a slight protrusion of the eye.

Dr. FRANCIS VALK disagreed with Doctor Theobald as to the chief function of the obliqui, which he believed to be to keep the meridians of the eyes parallel. He did not believe that the obliqui took any part in the movements of the eyeball.

Dr. ALEXANDER DUANE asserted that no marked protrusion of the eye was to be seen in ophthalmoplegia, though this would be expected if the forward action of the obliqui was not opposed by the backward traction of the recti, and that the eye was not drawn forward by traction on the oblique muscle. He believed the bulboorbital fascia to be sufficient to support the eye in place, slung as it were in a hammock. He also believed that every muscle, except a direct antagonist, took part in every movement of the eye.

Dr. W. B. LANCASTER thought that the eye was poised as the result of the combined action of all of the tissues about it. The fascia allowed movements in all directions, but the eye could make much greater excursions if it were not present. All muscles, including antagonists, acted every time the eye moved.

Doctor WALKER emphasized the fact that there was no protraction of the eye in paralysis and called attention to the varying direction of the traction exerted in different refractive conditions because of the varying angle of insertion.

Dr. PARK LEWIS spoke of a case of enophthalmos, which he ascribed to the violent stretching of the fascia that formed the hammock like support of the eye.

In closing the discussion, Doctor THEOBALD called attention again to the subjective sensations of light which showed that both obliqui took part in all movements of the eye.

**Binocular Single Vision.**—Dr. EDMOND E. BLAAUW, of Buffalo, stated that the problem of binocular single vision was a physiological one, that the mathematical treatment it had received had made it unnecessarily complicated, and that its psychological explanations were little better than disguised metaphysics. He made a distinction between stereoscopic and normal binocular single vision; the former was obtained with virtual images, the latter with real ones. The apparatus of binocular single vision had two qualities which were the cause of the production of stereoscopic relief—the faculty to fuse the exteriorated images of disparate retinal points, and the localization of the binocular images where the axes of projection met. The chief function of binocular single vision was the precise localization in space of the visual sensation with appreciation of depth and distance. Various factors entered into the appreciation of depth which varied in different individuals. Its presence or absence might

account for the different results obtained by correction of anisometropia, as well as for the varying effects produced by muscular imbalance. The projection of stimuli of corresponding points gave sensation of single vision in plane of fixation. The only examinations for binocular single vision that have been made in this country were qualitative, and Hering's experiment was one which should be interpreted with caution and only by physicians who thoroughly understood it and its limitations. Stereoscopic parallax was the measure of the sense of depth, which had a high practical value. He exhibited an instrument devised for use in the examination.

In the discussion Dr. W. B. LANCASTER traced the evolution of binocular vision and its final development into binocular single vision. He maintained that perception of depth was not a function of the eye, but one of the brain, a psychical synthesis. When the visual axes converged the consciousness was able to combine the images with appreciation of depth. The value of stereoscopic vision had been overestimated; it has been proved to be not indispensable.

Dr. GEORGE T. STEVENS objected to Doctor Blaauw's characterization of mathematical and psychological interpretations of binocular single vision. Persons with well marked exophoria were easily able to obtain stereoscopic vision. The psychological element was important. Both physiology and psychology took part in the observation of objects, and mathematicians explained the phenomena.

Dr. LINN EMERSON maintained that there were just as many gradations in the faculty of binocular single vision as there were in vision itself, ranging from the faintest perception through a slow and gradual appreciation with coaxing to instantaneous perception. The faculty was due to a physiological action in the brain. He found the amblyoscope of Worth with varying illumination the instrument best suited for measuring the faculty.

Doctor STARK emphasized the difference between binocular and binocular single vision. Under certain circumstances a perception of solidity can be obtained with one eye alone. It was also possible for the eyes to have fusion for near, but not for distance.

Dr. LUCIEN HOWE said that the question seemed to him to be a psychological, rather than a physiological, question.

**The Treatment of Hypopyon Keratitis.**—Dr. FREDERICK H. VERHOEFF, of Boston, reviewed the various forms of treatment which have been advocated for this condition, and then presented his own method. The patient was placed in bed, his eye cocaineized, and a speculum inserted, and then caused to look in such a way that the ulcer is directly upward. An incision was then made with a Beer's knife with its back to the cornea through the ulcer but not through Descemet's membrane. Radial incisions were then made from the centre of the first. The infiltrated margin was superficially curetted and the material obtained used for bacteriological examination. After this the entire surface of the cornea was dried with absorbent cotton. A highly concentrated Lugol's solution was applied to the floor of the ulcer until every part had been touched, and

then a drop was placed on the floor and allowed to remain for five minutes. This solution must not be allowed to flow over the cornea as it was quickly destructive to the epithelium. At the end of five minutes the solution was quickly flushed out by a jet of boric acid solution. Should the patient move his eye the solution must be washed out at once, and, if the five minutes have not elapsed, the cornea redried, and the Lugol's solution reapplied. When the ulcer was very small, the progress not rapid, and the hypopyon not large, the Lugol's solution might be applied without the preliminary incisions. In rapidly progressing large ulcers a puncture might be made at the centre and the aqueous evacuated after the foregoing treatment has been completed, but it was not well to try to evacuate the hypopyon. The beneficial effects did not become apparent until after forty-eight hours, when the ulcer appeared to be cleaner, the hypopyon smaller, and the patient more comfortable. He has treated forty-two cases in this way, six infected with diplobacilli, the rest with pneumococci. He felt safe in saying that this method would stop the progress of any small ulcer, leaving a minimal scar, and that it would check the progress of ulcers of moderate size, but failures would occur often in cases of very large ulcers because the germicide could not reach all of the bacteria.

**Further Study of the Effects of Heat on the Eye.**—Dr. WILLIAM E. SHAHAN, of St. Louis, exhibited a simplified thermophor with a thermometer attached which he had devised for the purpose of applying heat to serpiginous ulcers of the eye in which pneumococci were the active agents. The temperature necessary for the immediate death of these organisms was from 152° to 158° F., applied for one minute. He reported several cases in which this treatment had been used with much benefit.

In opening the discussion of these two papers Dr. WILLIAM C. POSEY, of Philadelphia, said that good results were to be obtained in mild cases by the application of zinc if the microorganisms were diplobacilli, and by ethylhydrocuprein when pneumococci were present. He had found serum to be of uncertain value. In very bad cases Guthrie's incision, modified by Schwenk, was to be preferred to Saemisch's. He considered Verhoeff's treatment one that deserved a trial, but did not think the results sufficiently good in bad cases.

Dr. EDGAR THOMSON likewise thought serum to be of doubtful value, and that the value of optochin was uncertain. Shahan's method seemed to him to deserve an extensive trial, but he considered it questionable whether all infections could be destroyed in that manner.

Doctor SCHWENK described his modification of Guthrie's incision, which antedated Saemisch's. A narrow knife was passed through the cornea with its edge up, a counterpuncture made, the knife then pressed back and rotated so as to evacuate the anterior chamber gradually, and then an incision was made slowly upward. The operation must be done under general anesthesia and every movement must be made slowly. It was applicable only to very bad cases. In less severe ones he had obtained good results from carbolic acid, followed by glycerole of tannin. He was of the opinion that hospital life,

and particularly confinement to bed, was deleterious to these patients. It was better for them to be out of doors, and the daily walk to and from the clinic may be beneficial.

Dr. JOHN E. WEEKS, of New York, said that when the diplobacillus is present zinc was a specific remedy. When pneumococci were present he was accustomed to cut away the overhanging lip at the advancing edge of the ulcer, curette the surface, and apply a germicide. The surest way was to apply the cautery, but when this was not done he had found commercial formalin, reduced to eight or ten per cent., the best germicide. The epithelium and the surface of the ulcer must be dried before it was applied. As regards the escape of the hypopyon after incision, it was usually gelatinous and had to be pulled or washed out.

Doctor STARR expressed his faith in the efficiency of covering an ulcer with conjunctiva. It had often been found difficult to keep the flap in place, so he described his procedure. This was to free the conjunctiva all around the cornea, gather it up with a pursestring suture, and draw it up until the entire cornea was covered. It was kept in that position for several days.

Doctor DONOVAN expressed himself as disappointed in Verhoeff's results and did not consider his procedure an improvement. He preferred to cut off the spreading edge of the ulcer with the red electrocautery and to make punctures in the floor and finally pass the black cautery over the entire surface of the ulcer.

Doctor BLACK, of Denver, preferred large subconjunctival injections of cyanide of mercury,

cainized. After eight hours a dull, deep pain developed, but was not very severe.

Doctor BENNETT endorsed Starr's use of a con-



GEORGE S. DERBY, M.D.,  
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in Ophthalmology.

junctival flap as very efficient. He found optochin a great aid in the treatment of ulcers.

Dr. B. M. RANDOLPH, of Washington, D. C., emphasized the fact that the hypopyon was usually sterile. He was disappointed in his use of heat and the cautery and preferred applications of carbolic acid, or of tincture of iodine, with irrigations of sterile salt solution for ten minutes every hour as his next choice.

Dr. S. LEWIS ZIEGLER, of Philadelphia, found that serum succeeded in some cases, but was not dependable. When an incision was needed, he preferred a peripheral paracentesis. The only way he used heat was with the cautery point, followed by an application of formalin, one to three per cent., after drying, as it caused less scarring. He believed in stretching the tear duct to the limit.

Dr. F. PARK LEWIS, of Buffalo, had used superheated air blown upon the infected area.

Dr. L. WEBSTER FOX, of Philadelphia, had not found heat equal to his expectations, but had found trichloroacetic acid in one, two, three, or even ten or thirty per cent. solutions, to have penetrating power and to be efficient.

Doctor ZENTMAYER had been much impressed by the good results he had obtained in fifteen cases from the use of ethylhydrocuprein.

In closing the discussion, Doctor VERHOEFF said that the efficiency of his treatment should be judged by its results in checking ulcers, not on the visual results in bad cases.

Doctor SHAHAN said that the visual results must depend on the size and situation of the ulcer itself. The morbid process had been stopped in all of his cases. The heat was controllable and passed through the cornea into the anterior chamber.



WILLIAM ZENTMAYER, M.D.,  
Of Philadelphia, Pa., Chairman of Section  
in Ophthalmology.

twenty-five to thirty minims of a 1-1,500 to 1-2,500 solution with a third of a grain of novocaine and, when the pupil was not dilated, 0.01 grain of atropine. The great pain said to attend this procedure was not felt if novocaine was used and the eye co-



**Crystalline Deposits in the Eye.**—Dr. F. PARK LEWIS, of Buffalo, said that a study of the conditions in which life processes were carried on side by side with degenerative changes in which the tissues were reduced to the elemental substances of which they were composed, was especially impor-



ISABELLA C. HERB, M.D.,  
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in Pathology and Physiology.

tant in studying eye changes, because here alone in the body the structural changes might be accurately observed, and from the condition seen might be deduced an understanding of remote changes in other parts of the body which could only be determined symptomatically. Crystalline deposits in the cornea sometimes had the effect of foreign bodies. Occasionally they might be removed in the form of casts, leaving a rough honeycomb surface beneath. Lime deposits in the substance of the cornea were more rare. Occasionally they were found in cases in which there had been no previous inflammatory changes. They were of much the same character as the structural degeneration which occurred in the elastic tissue of the vessels in arteriosclerosis. Perhaps the most typical form of degeneration which might go through the various phases to the deposit of lime salts was found in the lens. In considering this reversion in the living body to primitive forms we were looking at the last phase of organic life. It was the end product of a long series of changes of which the beginning was in the protoplasmic cell.

One of the most vital problems of today was that of the colloid. In it crystalloid substances were readily soluble. In order to visualize these cellular activities which were constantly taking place we must think in terms of cell structure contiguously related. With such colloids as the cornea, the membrane of Descemet, the lens capsule, the lens cortex, the vitreous, the hyaline membrane, the nerve cells of the retina, and the membrane of Bruch in contact with such colloids as the lymph and the blood

plasma, with the aqueous filled with crystalloids in solution, with each cell penetrable by the toxins given off from bacteria or from chemical changes, enormous possibilities opened up concerning not only the physiology and pathology of the eye, but the therapy as well. The same laws governed the cell contents and its membrane as to osmosis and surface pressure as apply to other animal membranes, and while it was not yet proved, it was not at all improbable that the edema within the eye, whether it took the form of an acute or a chronic, a simple or a fulminating, glaucoma, might ultimately be found to be due to the swelling within the vitreous cells caused by soluble toxins. Equally the atrophic changes in the lens fibres, like the fibrous and subsequently fatty changes in xanthelasma or in the arcus senilis, were evidences of the presence of soluble toxins which had disturbed the normal functioning of local cells.

To avoid the final degenerative changes, which were so often presented, all possible sources of infection must be sought before the damage had been done.

SECTION IN LARYNGOLOGY, OTOTOLOGY, AND RHINOLOGY.

June 6, 1917.

**Vertigo as a Symptom of Primary Disease of the Labyrinth.**—Dr. GEORGE F. SHAMBAUGH, of Chicago, said that vertigo was always considered a symptom of intracranial disease until Ménière in 1861 associated this phenomenon with disease of the internal ear. The literature contained reports of many cases since the time of Ménière where in the absence of any previous ear trouble,



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the patient had been seized with attacks of vertigo, tinnitus, and deafness, often associated with nausea and vomiting, to which the term Ménière's disease had usually been given. It had usually been assumed that circulatory changes in the labyrinth were responsible for these symptoms; actual hemor-

rhages in the severe cases, angioneurotic disturbances in the milder types. It was recognized now that these symptoms were only very rarely the result of hemorrhages into the labyrinth; therefore, the term Ménière's disease had been given up and the term Ménière's symptom complex was still re-



OTTO P. GEIER, M.D.,  
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Preventive Medicine and Public Health.

tained in describing these cases. Any sudden disturbance of the function of the internal ear, where it involved both the cochlea and the semicircular canals gave rise to this symptom complex: a hemorrhage, such as occasionally happened, for example, in leucemia and pernicious anemia; emboli in the labyrinthine artery, which occurred especially in caisson workers in the form of air emboli; lues, both the secondary and tertiary stages; neuritis of the eighth nerve as the result of poisoning from drugs, but more frequently as a result of the toxic action of infectious fevers. The most frequent cause for these symptoms was a chronic progressive degenerative process in the internal ear, which occurred independently of lues and infectious fevers and in some cases at least seemed to be the result of focal infection such as existed frequently in chronic infection of the faucial tonsils or in chronic abscesses about the teeth. Acute tonsillitis was occasionally seen to be responsible for an acute peripheral neuritis involving the eighth nerve. This was the Ménière symptom complex in its most characteristic form.

**Sudden and Profound Deafness.**—Dr. OTTO STEIN, of Chicago, said that the type of deafness that appeared suddenly and was complete occurred as the result of certain diseases and under certain conditions. If these conditions were recognized promptly and treated energetically, the deafness might be often avoided. A thorough investigation into the various causes operative in this class of deafness would render beneficial results when the appropriate treatment was applied.

### The Hearing Test from a Practical Standpoint.

—Dr. GEORGE L. RICHARDS, of Fall River, Mass., said that hearing tests known to modern otology were so numerous and complex that the busy physician was often tempted to neglect or omit them altogether. Many of these tests were scientifically interesting, but had no great diagnostic or prognostic value. If the tests of minor value were omitted from the routine examination and the one of greater value applied in all cases of deficient hearing, prognosis and diagnosis in ear diseases would be raised to a higher standard. He stated briefly a plan whereby important tests might be made without consuming too much time and at the same time applicable to all but the unusual and medicolegal cases, these two latter conditions of course always requiring much detail work. The tests used in the United States Army examinations for entrance to the Aviation Corps were described in detail.

**The Foundation of Voice Impairment Resulting from Tonsillectomy.**—Dr. ELMER L. KENVON, of Chicago, presented some new observations concerning the physiology of the soft palate and pointed out the essential importance of the capsule of the tonsil to the muscular physiology of this region. In the light of the information obtained from the study of 161 tonsillectomized throats, operated on by about twenty different operators, and of thirty cases of voice or other local disturbance resulting from tonsillectomy, he was able to draw conclusions with respect to causes of such disturbances. The amount and prevalence of deformity resulting from tonsil-



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lectomy was striking and serious. In only one case in twenty was a close approach to an ideal anatomical result reached. The anterior pillar was totally obliterated in thirty-nine per cent. of the cases, and the posterior pillar very seriously impaired, or else completely destroyed, in fifteen per cent. The pal-

ate tended to become stiff and retracted from the adhesions. The posterior pillar was an intrinsic and important factor in the physiology of the soft palate, and its serious impairment must always jeopardize the voice. But the fate of the voice was dependent not alone upon the degree of deformity



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in Stomatology.

in the faucial region, but also upon variable conditions with respect to the anatomy and physiology in the individual case. For example, a throat possessing a naturally long soft palate was less likely to suffer from voice impairment than one with a short palate.

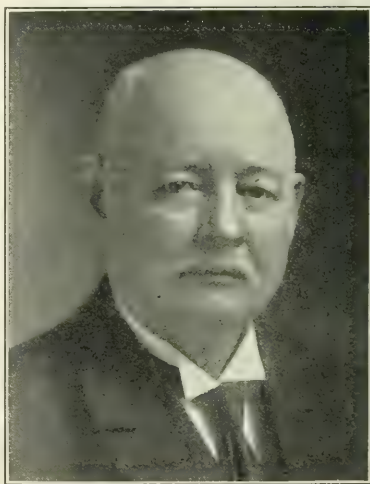
Deformity, and even serious deformity, following tonsillectomy was inevitable even with the best operating. This was due to the fact that when the tonsillar capsule had been extirpated the whole plan of intramuscular relationship tended to fall to pieces. He tabulated seven cases of permanently nasalized voices; thirteen cases of nasalized voices in children, some of which doubtless would prove to be temporary, but some also permanent; one case of parietic tongue; one case of permanently "tired" throat.

Nasalized voice resulted from such retraction and holding of the palate that it was prevented from reaching the posterior wall on phonation; from such stiffening of the soft palate that the elevator muscles no longer raised the organ completely to the posterior wall; from purely functional causes; and from destruction of the palatopharyngeal muscles, and the failure of the superior constrictors to act sufficiently in their stead on phonation.

He concluded that danger to the speaking voice necessarily lurked in the very nature of the operative conditions, and impairment to the speaking voice was in an as yet unknown percentage of cases inevitable. The danger to the singing voice from stiffness and adhesions began theoretically long before that to the speaking voice. The present situation called for further intelligent efforts applied to the technic and delicacy of procedure, and possibly

to greater care in lessening postoperative scar tissue, in the hope that the adhesions and tension might be decreased. In addition, he believed that experimental operative work upon an intracapsular operation was called for, that ultimately the operator should have at his disposal a conservative as well as a radical operative procedure.

**The Diagnosis of Tuberculous Laryngitis.**—Dr. JULIUS DWORETZKY, of Otisville, N. Y., stated that in order to be successful in the treatment of tuberculosis laryngitis an early diagnosis of the lesion was essential. He advocated a careful examination of the larynx of every patient suffering from pulmonary tuberculosis even where the patient had no symptoms referable to the larynx. When the patient was examined by a laryngologist and there was no definite history of pulmonary tuberculosis the slightest pathological manifestation in the larynx resembling tuberculosis should be carefully investigated. All patients in sanatoria should be examined on admission and subsequently at frequent intervals. He therefore concluded that through the cooperation of the family or clinic physician, laryngologist, and the sanatorium physician no case of laryngeal tuberculosis should ever escape attention. Dysphagia, aphonia, and dysphonia were rare in early cases, while much less common in late cases than generally supposed. The frequency with which a part of the larynx was found to be affected was in direct proportion to the amount of trauma that part received as a result of its location and functional activity. The parts affected were in the following order: interarytenoid space, vocal processes, ary-



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in Stomatology.

tenoids, vocal cords, epiglottis, ventricular bands, and aryepiglottidean folds. Cases of bronchiectasis, lung abscess, and accessory sinusitis presented a picture in the larynx very similar to that in tuberculosis and a thorough study of each one was essential to rule out the above condition.

(To be concluded.)



## Letters to the Editors

### A NONBREAKABLE LUMBAR PUNCTURE NEEDLE.

NEW YORK, N. Y., May 11, 1917.

To the Editors:

Within recent years lumbar puncture for the withdrawal of cerebrospinal fluid for diagnostic and therapeutic purposes, as well as for the various methods of intraspinal treatment, has become a routine procedure. Its comparative simplicity in performance, and its frequent relegation to the hospital house staff, has often resulted in carelessness in its application. It occasionally happens that the needle is broken off after its introduction. I have known a number of instances in which the needle has snapped off near the hub and has become imbedded between the vertebrae or in the sacral canal during an epidural injection. Such an accident may be due either to a defect in the construction of the needle, unnecessary force, or carelessness and inexperience in its manipulation, sudden resistance on the part of the patient, or to a combination of these conditions.

In order to avoid such an unpleasant complication, I have recently had a special needle constructed which will meet all essential requirements without any material increase in its cost over that of the ordinary lumbar puncture needle. It is known as a "Nickeloid Malleable Spinal Puncture Needle. It is somewhat softer than the regular tempered steel needle, but has the advantage of being non-corrosive, more flexible, and very hard to break; in fact, breakage should be impossible with ordinary usage. It is manufactured by Becton, Dickinson & Company, of Ruthersford, N. J., and can be obtained from any surgical instrument dealer.

WILLIAM M. LESZYNSKY, M. D.

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Eye, Ear, Nose, and Throat. A Manual for Students and Practitioners.* By HOWARD CHARLES BALLENGER, M. D., Professor of Oto-Laryngology in the Chicago Eye, Ear, Nose, and Throat College; Formerly Instructor in Otology, Rhinology, and Laryngology in the University of Illinois School of Medicine; Attending Oto-Laryngologist to the West Side Free Dispensary, Chicago, etc., and A. G. WIPPERN, M. D., Attending Oculist and Aurist to St. Elizabeth's Hospital, Chicago; Formerly Professor of Ophthalmology and Otology, Chicago Eye, Ear, Nose, and Throat College; Formerly Assistant Surgeon to the Illinois Charitable Eye and Ear Infirmary, etc. New Second Edition, Thoroughly Revised. Illustrated with 180 Engravings and 8 Colored Plates. Philadelphia and New York: Lea and Febiger, 1917. Pp. viii-524. (Price \$3.50.)

This, the second edition of the well known manual of the diseases of the eye, ear, nose, and throat, has been amply revised and brought fairly well up to date, at least as far as a manual aiming within a compass of some five hundred pages to treat of these diseases can be reasonably brought up to date. While of uneven merit, the subjects have all been treated, as the authors state in their preface, "briefly, clearly, and reliably," and some of the chapters, such as those on functional tests of hearing, submucous resection, the nasal accessory sinuses, and tonsillectomy and adenectomy, are treated with a fullness and a clear comprehension that are in no way inferior to what we are accustomed to find in larger and more pretentious textbooks. We should, however, like to see a little more space devoted in a manual of this kind to the subject of tuberculous laryngitis, even at the risk of omitting some other rarer conditions of the larynx, such as certain of the neuroses, that the student and the practitioner for whom this book is preeminently written, either seldom see or pass by unrecognized. Tuberculosis of the larynx constitutes at times a not inconsiderable part of

one's every day tuberculosis work, and the general practitioner can and does easily acquire the technic of laryngoscopy to a degree sufficient to enable him to attack the condition in its incipency when the greatest relief can be afforded the sufferer. To those of our readers who are looking, not for a short cut to a specialty, but for reliable and easily accessible information on diseases of the eye, ear, nose, and throat that can be applied in daily work, we heartily recommend this book as one of the best short and comprehensive manuals on the subject.

## After Office Hours

The peculiar conditions which apply to the physical examination of recruits for the army are not generally understood by the layman and sometimes, we fear, not even by the civil practitioner. The latter will find his information in the *Military Surgeon*, and if the candidate for enlistment who thinks he is "physically fit" will read an article in the *New York Times* Sunday magazine for June 3, written by an army surgeon, he will begin to understand why so many are called and so few are chosen.

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Further extracts from the Diary of Samuel Pepys, M. D., June 4: After dinner, I read in the *NEW YORK MEDICAL JOURNAL* that the Warr Department doth call for more chirourgeons and that a Warr Committee is sitting to choose who shall go and who shall stay at home. Which doth trouble and perplex me to the heart, and I shall not let any Committee bid me to leave my house, where my neighbors do so need me in the many colicks and defluxions, from which they suffer and I, only, can find panaceas for them. In the evening comes a bricklayer, twenty-nine years of age, to beg that I give him writings, to take to the Military Tribunal, that he may be exempted from the Registration tomorrow. He tells me that in Winter, he is stricken with divers humours and a trembling of the joints, and cannot fight. Lord, that such an unpatriotic man should be in Amerique! I did rate him pretty smart and would give him no writing.—(Quoted in slightly altered form from the *British Medical Journal*.)

\* \* \*

The psychology of furniture is a fascinating subject. Clothes we wear out and throw away, food is the thing of a day, but the table, the clock, the couch, and the easy-chair grow into our lives and become a part of them. The more human a man is the longer he will keep about him pieces of furniture which have grown old and battered and which are sadly out of harmony with the new articles about them—the products, perhaps, of more prosperous days. And that is the true explanation of the conglomerate assortment so often found in the doctor's office and waiting room. Can we part with yon straight back uncomfortable, ugly chair in which our first patient sat? Never! As soon rid ourselves of the old, black marble clock we used to watch so impatiently when its indication that our office hours were over for the evening was also the signal for us to make a non-professional call on a certain young lady, who now—such is the poetic injustice of the world—would have us sell this selfsame clock. The above was inspired by a little sketch in the *New Republic* for May 26th, called *Sentimental Furniture*.

## Meetings of Local Medical Societies

MONDAY, June 18th.—Medical Society of the County of Erie; Elmira Clinical Society.

TUESDAY, June 19th.—Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Federation of Medical Economic Leagues of New York.

WEDNESDAY, June 20th.—Medicolegal Society, New York; Buffalo Medical Club; Bronx County Medical Society; Dunkirk and Fredonia Medical Society (semiannual).

THURSDAY, June 21st.—Auburn City Medical Society (annual); Geneva Medical Society; New York Celtic Medical Society.

FRIDAY, June 22d.—Italian Medical Society of New York

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending June 6, 1917:*

- CLARK, F., Surgeon. Ordered to deliver an address on medical inspection of schools at the meeting of the Social Service League of Montgomery County, Md., at Chevy Chase, Md., June 18, 1917; ordered to represent the Service at the meeting of the American School Hygiene Association at Albany, N. Y., June 7 and 8, 1917.
- COBB, J. O., Surgeon. Ordered to proceed to Columbus, Ohio, or direct a junior officer to proceed on the same duty, for conference relative to the examination and certification of water furnished by common carriers in interstate traffic.
- CREEL, R. H., Assistant Surgeon General. Ordered to proceed to Philadelphia, Pa., for conference relative to quarantine matters on the Delaware River.
- CROHURST, H. R., Sanitary Engineer. Directed to proceed to Okmulgee, Okla., for observation of municipal water supplies and recommendations as to improvement.
- DESAUSSURE, R. L., Assistant Surgeon. Granted two weeks' leave of absence on account of sickness from June 1, 1917.
- FOX, CARROLL, Surgeon. Ordered to proceed to Richmond, Va., to conduct the study of public health administration.
- FREEMAN, A. W., Epidemiologist. Ordered to proceed to necessary places on the watersheds of rivers in Virginia and North Carolina emptying into the Atlantic, to assist in field surveys.
- FROST, W. H., Surgeon. Granted two days' additional leave of absence from June 1, 1917.
- HOSKINS, J. K., Sanitary Engineer. Ordered to proceed to necessary places on watersheds south of the Ohio River and east of the Mississippi River to assist in field surveys.
- KERR, J. W., Assistant Surgeon General. Directed to stop en route under Bureau orders of May 22, 1917, at Philadelphia, Pa., for conference relative to studies of industrial sanitation.
- LYOYD, B. J., Surgeon. Directed to attend conference of city and county health officers at Spokane, Wash., June 18-19, 1917.
- McMULLEN, JOHN, Surgeon. Granted seven days' leave of absence from June 4, 1917.
- MUSTARD, H. S., Assistant Surgeon. Ordered to proceed to Maysville, Ky., for studies of rural sanitation.
- NIDEGGER, J. A., Surgeon. Granted five days' leave of absence on account of sickness from June 4, 1917.
- PREBLE, PAUL, Passed Assistant Surgeon. Ordered to proceed to necessary places on watersheds south of the Ohio River and east of the Mississippi River to assist in field surveys.
- PRICE, W. H., Scientific Assistant. Ordered to proceed to necessary places on watersheds south of the Ohio River and east of the Mississippi River to assist in field surveys.
- SMITH, H. F., Assistant Surgeon. Ordered to proceed to necessary places on watersheds south of the Ohio River and east of the Mississippi River to assist in field surveys.
- TARBETT, R. E., Sanitary Engineer. Ordered to proceed to places on watersheds south of the Ohio River and east of the Mississippi River to assist in field surveys.
- TOWNSEND, J. G., Assistant Surgeon. Directed to proceed to Maysville, Ky., for studies of rural sanitation.
- TREADWAY, W. L., Assistant Surgeon. Directed to proceed to Sussex County, Del., to complete the mental examination of school children.
- WAGENHALS, H. H., Sanitary Engineer. Ordered to proceed to places on watersheds south of the Ohio River and east of the Mississippi River to assist in field surveys.
- WALLER, C. E., Assistant Surgeon. Ordered to proceed to necessary places on the watersheds of rivers in Virginia and North Carolina emptying into the Atlantic, to assist in field surveys.

WAYSON, N. E., Assistant Surgeon. Directed to stop at New York en route to Washington to present a paper at the sessions of the Section in Therapeutics and Pharmacology of the American Medical Association, June 5-7, 1917.

WHITE, J. H., Senior Surgeon. Granted three days' leave of absence from May 31, 1917.

### Board Convened

Board of commissioned medical officers convened at Ellis Island, N. Y., to make the physical examination and conduct the mental examination of candidates for appointment as assistant surgeon.

Detail for the board, Surgeon E. H. Mullan, chairman; Passed Assistant Surgeon E. R. Marshall, recorder.

## Births, Marriages, and Deaths

### Married.

DONLAN-DOUGHERTY.—In Altoona, Pa., on Tuesday, May 29th, Dr. F. Albert Donlan, of Lilly, Pa., and Miss Evangeline Dougherty.

HAYES-NOLAN.—In New York, N. Y., on Wednesday, June 6th, Dr. Stephen W. Hayes and Miss Margaret Agnes Nolan.

MORROW-MINSINGER.—In Pittsburgh, Pa., on Saturday, June 2d, Dr. Frank L. Morrow, of Braddock, and Miss Mabel S. Minsinger.

ORDWAY-COOK.—In Springfield, Mass., on Tuesday, June 5th, Dr. William H. Ordway, of New York, and Miss Hazel Pearl Cook.

SIMONS-MILLER.—In Elizabethtown, Pa., on Friday, June 1st, Dr. I. S. Simons and Miss Edna Miller.

### Died.

CROWELL.—In Charlotte, N. C., on Tuesday, May 29th, Dr. Samuel M. Crowell, aged forty-eight years.

DAWN.—In Knoxville, Tenn., on Monday, May 28th, Dr. Frederick F. Dawn, aged seventy-three years.

GRIFFIN.—In Honesdale, Pa., on Sunday, May 27th, Dr. Patrick F. Griffin, aged fifty-three years.

HAUGH.—In Delphi, Ind., on Wednesday, May 30th, Dr. Charles Haugh.

HAUPT.—In New York, N. Y., on Monday, June 4th, Dr. Walter Clark Haupt, aged thirty-one years.

JUSTICE.—In Columbus, Ohio, on Friday, June 1st, Dr. Harry C. Justice, aged forty-nine years.

KEATOR.—In Roxbury, N. Y., on Sunday, May 20th, Dr. Harry Keator, aged forty-four years.

LARKIN.—In Athens, Tex., on Tuesday, May 29th, Dr. Percy Larkin, aged fifty-six years.

LOWRY.—In Woodhull, Ill., on Tuesday, May 22d, Dr. Nelson H. Lowry, aged forty-six years.

McCABE.—In New Haven, Conn., on Tuesday, June 5th, Dr. Edward M. McCabe, aged fifty years.

McGLUMPHY.—In Vermillion, S. D., on Saturday, May 26th, Dr. Samuel B. McGlumphy, aged eighty years.

MOORE.—In Helena, Ark., on Saturday, May 26th, Dr. Friarson Moore, aged sixty-one years.

O'CONNOR.—In Kansas City, Mo., on Thursday, May 31st, Dr. Cornelius O'Connor, aged sixty-five years.

PAGE.—In Pittsburgh, Pa., on Friday, June 1st, Dr. James A. Page, aged forty-seven years.

PALMER.—In New York, N. Y., on Tuesday, May 29th, Dr. Edmund J. Palmer, aged sixty years.

PILLSBURY.—In Berkeley, Cal., on Tuesday, May 29th, Dr. Harriet Foster Pillsbury, aged eighty years.

POFFENBERGER.—In Sunbury, Pa., on Friday, June 1st, Dr. Albert T. Poffenberger, aged fifty-four years.

REED.—In Flat River, Mo., on Saturday, May 26th, Dr. Benjamin Hopkins Reed, aged forty-one years.

REILY.—In Los Angeles, Cal., on Saturday, May 26th, Dr. C. Guy Reily, aged fifty-eight years.

ROGERS.—In Willimantic, Conn., on Friday, June 1st, Dr. Frederick Rogers, aged eighty-two years.

SATTERWHITE.—In Louisville, Ky., on Sunday, June 3d, Dr. Thomas Palmer Satterwhite, aged eighty-two years.

STEIN.—In New Orleans, La., on Monday, May 28th, Dr. Joseph Stein, aged sixty-eight years.

YANCEY.—In Memphis, Tenn., on Wednesday, May 30th, Dr. Thomas B. Yancey.

YOUNG.—In Stockton, Cal., on Wednesday, May 23d, Dr. Junius D. Young, aged fifty-nine years.

# New York Medical Journal

INCORPORATING THE

## Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 25.

NEW YORK, SATURDAY, JUNE 23, 1917.

WHOLE No. 2012.

## Original Communications

### CONSTRUCTIVE SUGGESTIONS TOWARD THE CONTROL OF TUBERCULOSIS

IN TIMES OF PEACE AND  
IN TIMES OF WAR.

*With a Plea for Wiser Statesmanship, Less  
Phthisiophobia, and More Humanity.*

By S. ADOLPHUS KNOPF, M.D.,  
New York,

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Consumptive Poor, Health Department  
of the City of New York.

The first and most important suggestion toward the control of tuberculosis is that all cases which come under the observation of physicians in both private and institutional practice be conscientiously reported to the city health department. Not only can the sanitary supervision of all cases be carried out more effectually in this way, but the important following up work, so essential in the control of the disease, can thereby be facilitated. It has been shown that all this can be done without annoyance to either physician or patient, which, I believe, the profession in New York has learned to realize. There have been reported no less than 19,297 tuberculosis cases for the year 1916. The deaths reported from pulmonary tuberculosis were 8,411, which means a death rate of 1.5 per 1,000. Deaths from the other types of tuberculosis were 1,237, or a rate of 0.22 per 1,000.

In a paper, *The Period of Life at which Infection of Tuberculosis Occurs Most Frequently*, presented at the combined session of the twenty third annual meeting of the American Public Health Association and the New York State Conference of Health Officers at Rochester, N. Y., a year ago, I gave the following statistics: The frequency of infection increases with the age of the child and is affected by the environment the child comes from.

Under one year, the lowest percentage is 1 per cent.; the highest 0 per cent.

From first to third year, the lowest percentage is 9 per cent.; the highest 50 per cent.

From third to fifth year, the lowest percentage is 27 per cent.; the highest 75 per cent.

From sixth to tenth year, the lowest percentage is 34 per cent.; the highest 75 per cent.

From eleventh to fifteenth year, the lowest percentage is (private) 12 per cent.; the highest (hospital cases) 94 per cent.

\*Chairman's address, read at the eighth annual New York City Conference of Charities and Correction, meeting of the Committee on Public Health at the Academy of Medicine, May 22, 1917.

The organs most frequently involved are the lungs and lymph nodules.

The age at which a tuberculous infection, contracted in infancy or childhood, becomes active is, according to the majority of observers, at or shortly after fifteen years; next between eighteen and thirty years. The age at which tuberculosis is diagnosed and apparently contracted most frequently in later life is given as between twenty and thirty-five years.

My studies have convinced me that the child conceived when the mother was suffering from an active pulmonary tuberculosis is very apt to become tuberculous because of the inherited predisposition caused by the toxins entering into the cell life during the development of the fetus. There is less likelihood of the child acquiring tuberculosis from the tuberculous father except by afterbirth infection. Of course it is obvious that when a child, already predisposed, is cared for by his tuberculous mother, it is even in greater danger of postnatal infection.

What is the constructive suggestion which I can offer? The parent with active tuberculosis, father or mother, should be taught to postpone the increase of the family until reestablished to health. If in spite of the physician's warning a child is conceived by a tuberculous mother, the most expert counsel should be sought to decide whether or not the mother will be strong enough and her life not be endangered by the continuation of pregnancy. When as a result of a consultation it is decided that the mother will be able to bear the child without any danger, then is the time that our constructive work for the upbuilding of the lives of mother and child should begin. The more time can be consecrated to the open air, hygienic, and dietetic treatment of the mother prior to confinement and the more time mother and child can devote to it after confinement, the more reasonably can we look forward to preserving the health of both.

In the homes of the well to do such treatment can be carried out under the guidance of the family physician. A separate room with southern exposure, should be provided and an outdoor sleeping device or a window tent installed. The baby can have his own crib and be an open air baby. A healthy wetnurse can be engaged to assure the best possible nutrition for the child so as to overcome the physiological poverty which it may have inherited. In the homes of the poor, however, and in those of the only moderately well to do, the principles of hygiene, aero-



therapy, and good appropriate diet, rest, and freedom from worry and anxiety are not as easily carried out.

The essential treatment in the control of the disease in a tuberculous mother, even if it is in a quiescent stage, should be directed toward keeping her physical condition up to the very best so that there may be no breaking down of tissue and her negative sputum may never become positive. It is not only through indiscriminate deposit of the expectoration that the germs of tuberculosis are often transmitted by the ignorant or careless mother; kissing a child or tasting the child's food, milk or mush, and then putting the nipple or spoon into the child's mouth without having cleansed it are frequently modes of transmitting tuberculosis to infants. There are also other microorganisms which are often present in the mouth of the adult, such as the pneumococcus of pneumonia of Fränkel, the Pfeiffer bacillus of influenza, or the Bacillus catarrhalis of the ordinary cold, which may be conveyed in the same manner to the delicate child organisms. All these germs are infectious. They are also frequently transmitted through droplet infection; that is to say, the small particles of saliva or nasal secretions which are expelled in the form of a spray during the so called dry cough, which is never dry, or during excited talking or sneezing. It is particularly important that the child should never be exposed to this kind of infection which, however, is fortunately lessened if the coughing and sneezing individual takes care not to approach within a distance of three feet from the child.

In a recent address on Maternity Insurance as a Means to Lessen Disease and Death Rate of Mothers and Children, delivered before the International Child Welfare League (1), I pointed out the almost utter impossibility of preserving the life of a pregnant tuberculous mother and her child, even if she were in the relatively quiescent stage of the disease, when she was obliged to work in factory, cannery, workshop, or at home often until within a few hours of her confinement, and also obliged to resume work very soon afterwards, when besides she probably had to live an unhygienic life in an insanitary home during all this time. I have pleaded more than once for special maternity sanatoria for this class of women and their babies. If our ardent desire for State maternity insurance becomes a reality, such institutions may become self supporting, but we should not wait until then. I therefore embrace this opportunity to plead with our philanthropists once more for the establishment of these maternity sanatoria, not only as one of the greatest humanitarian works they can possibly devote their fortunes to, but also as one of the surest and most constructive means in the prevention of tuberculosis. Infant mortality from tuberculosis and other diseases is highest in institutions, such as foundling asylums, and I do not doubt for a moment that many a child becomes tuberculous because of institutional life. What a splendid opportunity is there for childless couples to save lives by adopting children from such sources before they have had a chance to become infected with tuberculosis! Here

I cannot help paying my highest tribute to the unequaled philanthropy of a fellow member of our Committee, my esteemed friend and colleague, Professor Henry Dwight Chapin. He takes into his own house some healthy born baby that has become undernourished and puny through institutional life and by the skilful and tender care bestowed by him and his good wife upon this little atom of humanity, it becomes a healthy and handsome child for which he has on his list a number of prospective foster parents who will welcome the little boy or girl as their own in their own home. This is, indeed, a unique and praiseworthy philanthropy well worth emulating.

The statistics mentioned earlier in this paper show that the infection of tuberculosis manifests itself most frequently between the ages of three and ten years; but in hospital cases, that is to say, in the children of the poorer classes, the highest percentage is between the ages of eleven and fifteen. I ascribe this greater frequency between the ages of eleven and fifteen among children of the poorer classes not only to the malnutrition but also to that horrible institution known as child labor which, in factory or at home, endangers the delicate growing organism of the child and makes tuberculous infection sure to develop into a dangerous tuberculous disease.

But let us return to the younger children. Kindergarten often constitute a focus of infection. One youngster comes in and coughs and before twenty-four hours all the little ones come home with colds. One has infected the others. If the hygiene of the private and public kindergarten would correspond, not necessarily to open air schools, but to open air classes, I believe that there would be fewer infections not only of common colds but also of measles and bronchopneumonia, not to mention tuberculosis. The latter infection manifests itself very frequently in the average child between the ages of six and ten. To have open air schools for all grades or at all seasons is an impossibility, but open air classes, well ventilated schoolrooms, more recess time in the open air, and less home work, properly adjusted seats, desks at the proper height, more time for luncheon, and good school lunches at cost price can be had everywhere. Since many children of the poor never leave town they should not be deprived of a good midday luncheon during vacation time, and since we are beginning to use our schools during the summer as well as at other times, substantial school luncheons should be an uninterrupted feature of child life in the city. In view of the well known fact that there are no less than 160,000 children in this city diagnosed annually as being undernourished, the reasonableness and necessity for this appeal, I am sure, will be convincing. The children of today are the men and women of tomorrow; if they are undernourished at adolescence, the harm done can never be compensated.

Weather permitting, singing, recitation, and later botany, zoology, and geology can certainly be taught in the open air. Athletics and indoor gymnastics may perhaps have their place in the curriculum of the school, but if I had to choose between teaching

boys and girls to walk straight, sit straight, breathe deeply, and do calisthenics in the open air, and college and school athletic exercises which make athletes of only a few and do not benefit the rest, I would certainly teach the former.

Recently I visited one of the largest public schools in the Borough of Brooklyn and there witnessed the calisthenics, marching, and breathing exercises, carried on indoors and in an air laden with dust, and I felt certain that such exercises in that environment could not do the children the good they should, but on the contrary, might be productive of a great deal of harm. I called the attention of the superintendent and teachers to the situation, and they all agreed with me on the insanitary condition and possible harmful consequences, but said that they were unable to change conditions because of lack of space. The little yard attached to the school, serving as an outdoor playground, was far too small to accommodate all the children.

But why try to have all the children out at the same time? This idea brings us naturally to the now well known Gary plan, devised by Mr. Wirt, of Gary, Indiana. This plan permits the use of the playgrounds, gymnasiums, and auditoriums every hour of the day. The children learn by doing. Handicrafts are taught, and boys and girls become interested in them and gladly remain at the school-house instead of roaming in the street and alleys. Attention is given to each child's need and ability. The school fits the child, not the child the school. There are special teachers for special studies, and no longer one grade teachers and one school seat all the time. Children are kept busy working, studying, and playing in a good environment all day long, because public agencies cooperate to make the city a fit place for rearing children. In short, the Gary system creates a child world for city children, and I am delighted at the prospect of seeing the Gary plan in vogue ultimately in all the public schools of New York city.

As a physician and not an educator, there is only one suggestion which I venture to make, and that is to incorporate in the daily program of the school's activities, at about the middle of the day, thirty to forty-five minutes complete rest and relaxation for pupils and teachers. It might be divided into fifteen minutes before and twenty to thirty minutes after luncheon. The physiological benefit which would be derived from this little innovation I believe could not be overestimated.

The unnatural attitude and improper posture in sitting, standing, and walking which school children and young men and women in college are allowed to assume, is deplorable from a physical, esthetical, and even moral point of view. I believe the young men and women in high schools and colleges consider the stooping shoulders, sunken in chest, and slouchy walk—the so called society or debutante slouch—to be fashionable. In reality, this attitude is thoroughly detrimental to chest development, and tends to create the *habitus phthisicus* described long ago as significant of tuberculosis by Hippocrates, the father of scientific medicine.

I believe in discipline, but I question the wisdom of punishing children by keeping them in school after school hours. The younger children, particu-

larly, should not be punished in this way. It is a very difficult task for many a youngster to sit for three quarters of an hour without wriggling. This might not seem very important, but I venture to classify it with the constructive work toward the prevention of tuberculosis in childhood.

I have already mentioned child labor. Space is too limited to dwell upon this important theme for any length, but I am willing to confess that never have I read a more depressing story of child life than the one in the February number of the *Child Labor Bulletin*, published by the National Child Labor Committee. This bulletin is illustrated and one does not need to be a tuberculosis specialist to recognize the *habitus phthisicus* in fourteen year old Mary and her ten year old brother who rise at 4 a. m., milk seventeen cows, and work all day in creamery, stable, and pasture until just before supper. Other illustrations show how boys and girls of ten to fourteen are gathering, piling, and spiking tobacco, and later on housing tobacco in the barn as hired hands of a tenant farmer—all this during school hours. Tuberculosis workers know that housing and stripping tobacco belong to the occupations most strongly predisposing to tuberculosis. I refer to this unusual type of child labor because one is apt to think of child labor as only carried on in city factories, canneries, or sweatshops. More stringent Federal laws more strictly enforced will alone save this nation from the results of the yet all too prevailing curse of child labor in factory, cannery, workshop, farms, and homes. This, too, belongs to the constructive control of tuberculosis in childhood.

I must at this moment sound a note of warning because of the efforts of certain politicians—let me hope only thoughtless and not heartless—who, as the tools of cruel and greedy employers and contractors, are trying to undo all the good which has been accomplished in behalf of child labor in recent years by State and national legislation. These agitations for the repeal of child labor laws are made under the guise of economic necessity because of the need of labor in field and factories in these hours of national crisis. In answer to these agitators and thoughtless statesmen who contemplate plunging twelve year old children into our industries, I will quote from a letter received from the New York Child Labor Committee as late as April 25, 1917:

All warring nations now regretfully admit that their wholesale exploitation of child workers was a grievous mistake. The race needs strong men and women and we demand protection for our future citizens in education, health, and morals. The Council for National Defense has not asked that the child labor standards be lowered. The farmers of this State have made no demand for the use of little children.

Even should it become an imperative necessity for the older children to do some gardening or farm work in the country, let us see to it that in the places to which they are sent they will have a clean, hygienic environment and will be properly fed.

The majority of causes of tuberculosis in adult life are well known. I will not enumerate them here, but will only make some suggestions which may perhaps tend to diminish the still too great morbidity and mortality of the disease, and the fearful economic loss which it causes to the com-

monwealth and to the nation at large. Legislative action for better ventilation; more hygienic factories and workshops; better and more sanitary houses for the masses; rational temperance, that is to say, substitution of strong alcoholic drinks by light wines and beers; compulsory health insurance, including insurance against tuberculosis; reasonable limitation of hours of labor for women and men, will all have to form part of the antituberculosis program for our statesmen. Our municipalities must provide more parks, playgrounds, and recreation places for old and young, more bathrooms in the houses of the poor, and more public baths free or at reasonable rates. All these things must go hand in hand with continued popular education in the prevention of tuberculosis if we ever wish to become masters of the situation.

What I have just outlined applies mainly to the direct prevention of causes predisposing to tuberculosis. Nevertheless, we must not lose sight of the fact that activities of our special institutions for the cure of the early and the care of the advanced cases, particularly the isolation of careless, ignorant, or helpless cases, are most essential in the warfare against tuberculosis inasmuch as we are thereby suppressing centres of infection. The terrible European war, which now has also involved our own country, has aroused a new and intense interest in the tuberculosis situation. Everywhere in the warring countries, and apparently particularly in France, tuberculosis is causing most fearful ravages. I learned from Doctor Biggs, who recently returned from a mission to investigate the tuberculosis situation, that, roughly estimated, 150,000 French soldiers have had to be returned from the trenches because they had manifested active tuberculosis, and throughout brave and beautiful France there are now probably 400,000 to 500,000 open cases. There are hospital and sanatorium accommodations for only a few thousand.

Under the leadership of men like Doctor Biggs and the late Doctor Trudeau, we have fortunately learned to do considerably better in this country inasmuch as we have now no less than 600 tuberculosis sanatoria and special hospitals, accommodating approximately 35,000 patients. In this number are not included over 125 penal institutions and hospitals for the insane which are making special provisions for their tuberculous inmates. Aside of these, we have 500 dispensaries which are most helpful in the discovery of early cases and the care of ambulant ones. There are now at least 1,000 open air schools and open air classes in operation in the United States, destined to help the tuberculous and anemic children. The general tuberculosis education is carried on by about 15,000 committees and antituberculosis associations, and nearly 500 nurses are giving all or part of their time to tuberculosis work.<sup>1</sup>

Perhaps our present facilities to take care of the tuberculosis situation in the United States might be considered, if not complete, at least almost adequate in times of peace. But will it be enough in the event that this war should last a long time? We

do not know what is before us, but we do know that lack of food, insanitary housing, exposure, improper clothing, and insanitary living in general, along with the stress and strain of war for the civilian as well as the military population, is responsible for the fearful increase of tuberculosis in Europe. Let our statesmen take timely action that there will be enough food and no extortion in food prices.

Overfeeding predisposes to tuberculosis as much as overwork and insanitary housing. Such legislation as is now contemplated in Albany by Senate Bill Int. No. 1176, introduced by Senator Lawson, of Brooklyn, providing for the conversion of old private dwellings into three family tenements, would mean more dark bedrooms and insanitary toilets, in short, the conditions of bad housing which always means increase in tuberculosis. Equally nefarious would be the passage of Senate Bill No. 1495, introduced by Senator Brown, which would break down the hard won standards for the protection of our industrial army.<sup>2</sup>

And now, to a subject which is particularly near to me at this time. In the recruiting work, which is now a national feature throughout the country, many a young man discovers to his amazement that he is rejected because of a tuberculous condition of which he may not have been aware. Some have presented themselves for military service who, although one time tuberculous invalids, considered themselves cured, but the discovery of the old lesion was sufficient cause for rejection. Some, conscious of a little physical weakness, have sought military training and service in the hope thereby of regaining physical vigor and strength. All these types of men are told at the recruiting station that they have to be rejected.

Have you ever thought what all this means? Would it not be well for our statesmen and military authorities to combine and make good use of these young patriots, not by exposing them to the rigors of military warfare, but by utilizing them in suitable agricultural work and industries where they can be of incalculable service to the country at large? Why do we not draft these men, the majority of whom are perhaps only a little below par, into regiments to remain at home and do such work as will rather tend to overcome their physical weakness and at the same time help in doing the work whereby the nation's food supply will be secured and other work of public utility be continued and increased?

We do not at this moment know how long the war will last; we do not know how many men we will need if it should last one or two more years, as some have prophesied. An opportunity for immediate service should be given to all who are willing to serve now. The clerk or bookkeeper, suspected of tuberculosis, if given an opportunity of six months outdoor work in field or garden, may overcome his physical infirmity entirely and even become fit for military service. Aside from that, there may be a number of lives saved even of those

<sup>1</sup>I am indebted for these figures to Dr. Philip P. Jacobs, the assistant secretary of our National Association for the Study and Prevention of Tuberculosis.

<sup>2</sup>Since the above communication was read, the two bills—the Lawson bill for the conversion of old private dwellings into three-family tenements, and Senator Brown's bill which was intended to relax restrictions for the protection of working men, women, and children—have come before Governor Whitman for signature. He has vetoed Senator Brown's bill, but signed Senator Lawson's bill which will prove detrimental to the sanitary housing of the masses.



who presented themselves for military service when distinctly tuberculous, if they can be at once, according to their condition, be sent to a special hospital or sanatorium. A State agricultural colony for those able to do a few hours of outdoor work a day would be a Godsend to them and to the country at large now in need of agricultural products at reasonable rates.

Some of the young men who present themselves voluntarily for military service but have to be rejected because of being a little underweight, undersized, or because their chest expansion is below the standard, might be advantageously advised to undergo a course of physical training in one of the private or public gymnasiums, and there, under a careful instructor, have a chance to improve their physique and develop sufficiently to enter military service. In the rejection of a volunteer candidate for military service in an hour of national crisis, we must not forget the psychological element and the depression which is produced in the minds of these young men when they are told they are physically unfit to serve their country. We should do all we can to direct these patriotic youths so that they shall be encouraged in their aspirations to attain the physical requirements for military service. To raise the physiological standard of an individual who is below par by giving him proper exercise, appropriate diet, and improved hygienic living is constructive work toward the prevention of tuberculosis as much as anything else.

One more word on the food supply. If we wish to avoid malnutrition of the masses in our present crisis and prevent tuberculosis arising therefrom, let us economize on all other things except bread and milk. The need of production of these standard food articles has been pointed out by such authorities as Professor Alonzo E. Taylor, of the University of Pennsylvania, Professor C. E. A. Winslow, of Yale, and Professor Graham Lusk, of our own city. The necessity for this has been forcibly shown by the sad experience of the European countries now at war. To prevent waste of carloads of foodstuffs owing to lack of transportation facilities, the dehydration process cannot be too highly recommended. With all this, we must of course not neglect to prevent waste of foodstuffs in all other directions, and particularly in our own households.

Now, in conclusion, permit me to touch briefly the two remaining topics of my plea, which are for less phthisiophobia and more humanity. Phthisiophobia, the exaggerated fear of the presence of consumptives, is still rampant. The consumptive is still shunned, no matter how careful he may be in the disposal of his expectoration and during coughing and sneezing. Land owners and communities still oppose the erection of tuberculosis institutions in their vicinity and many employers hesitate to give work to men whose cases are arrested and who have no longer infectious sputum. Let us have it understood once for all that the honest, conscientious consumptive is no more a danger to his fellowmen than a well man; that in well conducted sanatoria and hospitals infection of doctors, nurses, and employees is virtually unknown; that by their example to the neighboring community these institutions tend rather to decrease than increase tuberculosis in the

neighborhood, and that there is sufficient evidence that real estate values have never depreciated but often increased because of the vicinity of tuberculosis sanatoria and hospitals.

While the ignorant consumptives must be taught and the careless consumptive reprimanded and controlled with a firm hand, while the irresponsible case or the hopelessly ill must be given proper care and be isolated, let us treat all of them with kindness, consideration, and compassion. When in the presence of poor consumptives without means, let us remember that we are our brother's keeper. Let us infuse into our antituberculosis campaign all the humanity we possibly can. It is needed in a disease which has so large a social aspect. When scientific training of the physicians, popular education of the masses, and wise statesmanship at the head of our governments shall combine with philanthropy and humanity, who will dare to say that when once more peace shall reign and liberty, fraternity, and equality be the possession of all nations, the great white plague, this great enemy of mankind, may not be conquered in its turn!

#### REFERENCE.

1. *Medical Record*, May 26, 1917.

16 WEST NINETY-FIFTH STREET.

### BIRTH CONTROL AND THE PHYSICIAN.

By B. S. TALMEY, M. D.,  
New York.

In the modern agitation, the terms birth control and contraception are as a rule used interchangeably, especially in this country. There are, however, many other ways to control birth besides the prevention of conception. The oldest means to control the population increase was the practice of infanticide. This practice dates back to remote antiquity. The first traces of this barbaric practice for political reasons is found in the Bible (Exod. i, 16, 22), when the Egyptians ordered the Hebrew boys drowned in the Nile. Infanticide was also practised among the Greeks in historical times. Here the exposure of sickly children was practised for eugenic reasons. Besides the political reason, which does not exist any longer among cultured nations, there are four main motives for the practice of birth control: the medical, the eugenic, the economic, and the hedonic.

There is a medical point of view quite different from the economic, in regard to birth control. Take the actual case as follows: A young woman calls on the doctor with the complaints of a sensation of constant pressure in the back of her head, palpitation and pain in the region of the heart, insomnia, loss of appetite, heaviness in the thighs, frequent desire to cry, etc. Upon a thorough examination, no pathological basis for her complaints can be discovered. She is twenty-seven years old, has been married six years, has one child five years old. When asked why she had no more children her answer is: "Well, doctor, we are taking care." Now the doctor tells her: "My friend, the cause of your trouble is your irregular life; if you wish to get well you will have to live a regular sex life." It is the doctor's duty to give this advice, even if

there were no laws against advice concerning contraception. A physician has no right to prescribe any medical device which may bring harm to the patient or to her mate. *Nihil nocere suprema lex esto*, and there is no harmless contraceptive, all the pseudosexologists to the contrary notwithstanding. One may do more harm to the husband, the other to the wife, but harm it will surely do in the long run. Now it is the patient's turn to ask the doctor: "How can I risk having another child when I scarcely can bring up properly the one I have?" The doctor's answer is: "This question is economic in nature; its answer does not lie in the domain of medicine at all." Here is where economics and medicine are at the parting of the ways.

There is scarcely a physician who does not see a patient now and then who, through a pregnancy or confinement, would jeopardize her health or life. In all cardiac affections pregnancy and confinement may bring the patient to the brink of the grave. As a rule it always aggravates the condition as the following shows:

CASE I.—Mrs. C., married five years, consulted the writer for her sterility. Upon her examination, a slight diastolic murmur at the mitralis was discovered, and the patient was advised to avoid having any children instead of being treated for sterility. But she insisted upon having a child even if she had to die. She was treated with electricity by Apostoli's method, and in a year she became pregnant. She was confined at home and attended by two physicians. Six months after her confinement she called again, this time for a pronounced insufficiency of the mitralis, with circulatory and respiratory difficulties. She is now a complete invalid, and a second pregnancy will probably end fatally.

Those suffering from weak kidneys should also avoid pregnancy.

CASE II.—Mrs. C., twenty-two years of age, consulted the writer for some bladder trouble. Upon the examination she was found to be three months' pregnant. The urine showed some albumin and a few casts. When told of her pregnancy, she forgot all her troubles and declared to be willing to undergo all annoyances if she only could have a child. But within six months she lost her fetus. Upon the examination four weeks later, the albumin had disappeared. A year later she was again pregnant, and the albumin appeared again in an aggravated form. She did not carry this child either. In the interval between the second and the third pregnancies the albumin did not entirely disappear any longer. When this pregnancy also terminated prematurely, she became resigned to her fate and decided to avoid any farther gestations. But as far as her kidneys were concerned they had become permanently damaged.

In osteomalacia repeated pregnancies will surely lead to a fatal end. In fact in all chronic diseases, such as tuberculosis, etc., pregnancy has grave dangers in store for the patients. In all these cases birth control ought to be practised for medical reasons.

Another valid reason for birth control is the eugenic. The aim of eugenics is the production of a better racial type. There is no gainsaying that a disastrous selection of the unfit is taking place in all civilized nations. The greatest part of all our charities is in the service of the defectives and degenerates. We make fostering of the unfit and of the cripple our highest duty. Medical science operates to prolong the existence of the unfit and enable defectives to become parents. We are constantly making environment safer for the feeble in mind

and body. Manifold facilities are offered for the survival of the unfit. In former periods of human history natural selection was the most potent factor for the elimination of the weak and the feeble. Nowadays a social contraselection is at work. All our sentimental activities in the interest of the weak, praiseworthy as they are, are in the last analysis antisocial. The superior classes either do not marry at all, e. g., priests, nuns, teachers, nurses, or when they marry practise limitation of the offspring into the bargain. The inferior classes, on the other hand, multiply like rabbits. In this way society is overburdened with the listless and the incapable, and reformatories, prisons, asylums, and homes for defectives are overcrowded.

Eugenics therefore is endeavoring to restore the former selection of the fit instead of the present contraselection of the unfit, by the limitations of the offspring among the defective classes. Persons with a neuropathic or alcoholic diathesis, those in whose families are found many cases of dementia præcox or manic depressive insanity, or those suffering from incurable inheritable diseases, such as tuberculosis, cancer, syphilis, hemophilia, color-blindness or albinism, ought to preclude themselves voluntarily from parenthood. Those whose judgment is so materially impaired as to be unable to realize the seriousness of their propagation, such as the incurably insane, born epileptics, deaf mutes, idiots, imbeciles, and morons, should be deprived of the means to procreate variously defective offspring. Society is already awakened to the dysgenic danger, hence the laws to prevent the marriage of the sick and to sterilize criminals such as the rapist, the confirmed inebriate, the incorrigible burglar or gunman, and the unstable erotopath, as the sadist and masochist. The two latter anomalies are especially a great danger to the community, since in all other respects these persons appear sane and are not suspected of any mental aberration. The writer had recently under treatment a professor of a celebrated university who was acquainted with a beautiful young lady with whom he never had any carnal relations, but who demanded to be allowed to bite his lips and suck and swallow his blood. In her letters to him she was frequently very abusive without cause. Otherwise the girl was quite modest, popular, and to all appearances normal. Her parents lived separately from each other, which does not always constitute a tainted family. Such a woman ought to renounce propagation one way or other. Although her descendants may not necessarily inherit her sadistic inclinations, as to kill a rival on a roof garden, still they may in other respects show certain mental derangements. Another case became recently known to the author of an old man who had for a number of years maintained an elaborate furnished apartment for a beautiful demimondaine not for the purpose of consorting with her but for the following procedure. He often called on her in this apartment. She had to strip herself of all clothing and stand before him in Eve's costume. Thereupon he anointed her entire nude body with oil. After he had performed this symbolical service of slave to mistress with great satisfaction, he left the young woman without ever having any carnal rela-

tions with her. This pronounced masochist was married and had children. Yet from an eugenic point of view such a defective ought to have been prevented from propagation.

Another reason for the practice of birth control is the economic. It was Malthus who first taught the necessity of controlling the birth rate for economic reasons. He showed that the human race is increasing in a geometrical ratio, while the food supply increases only in the arithmetical ratio. Hence for the sake of food supply he demanded abstinence from propagation. If every couple leaves only four descendants, then in thirty-six generations or in 900 years each couple now living would leave 131,879,434,496 descendants, or there would be no standing room on this earth for the descendants even of one couple. The farmer population that practices birth control, e. g., in France, is led to the practice for economic reasons. In aristocratic England where the greater part of the land of the kingdom is in the hands of the lords, it is in the interest of the tenants to procreate large numbers of progeny to help in the labor of the fields. But in France, where since the great revolution the country has been divided up in small farms, and each child inherits an equal part, such a farm would become infinitesimal in size if the small farmer did not restrict the number of his children to two. When these two children inherit one farm and marry two children in possession of another farm there is an equalization of one farm to the couple. In this way the farm is not subdivided, and the population remains stationary. In recent years the laboring classes have also learned that a liberal number of children is not only a great drain upon the small income of the wage earner but that the greater the number of offspring the greater the competition will be among these children when they reach adult age. Hence they argue that restriction of child bearing accrues to the benefit of the child itself.

In modern feminism another enemy arose against the potential child. The woman looking for a career sees in a large number of children a drawback to her aspirations. If a child means anything to a woman she cannot allow another to have the affection, the care, and the anxiety about it. She must give her own soul to the child, even if it should interfere with her picture, book, lecture, or research. In the conflict between the satisfaction of the craving of the member of the race and those of her own personality, she generally chooses the latter and refuses to bring up more than one or two children.

Another reason for birth control is the hedonic. Pregnancy and birth interfere with the pleasure of the parents. Luxury and comfort have become the modern gospel of the rich. Even among the middle classes and better artisans with whom economic considerations are of little account, although they are often given as an excuse, the bearing and rearing of children interfere with the social enjoyments of the parents, and among all these classes personal happiness has been set up as the goal of life. The hedonic motive underlies also the practice of birth control among the unmarried. Their relations owe their existence to hedonic considerations. But the consequences have to be avoided. In the present

state of sex morality conception in the unmarried victim is nothing short of a tragedy. In fear of dishonor and ostracism, such a victim will go to any extreme to cover her shame.

Corresponding to the four main motives for birth control, there are four ways to effect the limitation of offspring. There is in the first place the lawful and even hallowed device of total abstinence from any marriage relations. A considerable part of humanity has surrounded this action with the halo of sanctity. An aureole is placed upon the head of the religious abstainer. These religious abstainers prove that total abstinence is compatible with perfect health. To be sure, the pseudosexologist is always on hand with a history of some priest who in a personal letter described the terrible agony caused by the sex hunger he has to undergo, but because a priest with an exaggerated sex urge does suffer agonies does not indicate that sex satisfaction is an absolute necessity for everybody. Many an ambitious man suffers agonies because he can not have a country home, and many a woman pines away from grief because she cannot have her own automobile. Yet the country home and the automobile do not belong to the absolute necessities of life. The nosology of the religious celibates, whether of the men or of the women, does not materially differ from that of any married man or woman. The flippant remark about the religious abstainer's housekeeper is a cheap insinuation. It may be true of some of them, but not of a majority. The writer is not a Catholic, but he was brought up in a Catholic college and in a Catholic university. His professor of Hebrew was a Catholic priest, the rector magnificus who matriculated him at the university was a Catholic priest, and he does not believe that these scientists have all violated the vows they have taken when entering the priesthood. And how about the nuns, do they also have housekeepers? The writer happened to have been intern in a hospital where nuns took the place of nurses, and he does not think that these magnificent women who were working day and night in the cause of suffering humanity for no other remuneration except to please the Lord have ever committed an unchaste act. There are no more diseases among them than among married women, and their longevity compares favorably with that of the latter. When a certain class of sexologists, such as Marcuse in Germany and his less learned followers here, maintain that the repression of the sex urge is the cause of a number of nervous anomalies, they use the word sexuality with a certain vagueness of connotation and confuse it with sensuality.

Sensuality is destructive, sexuality is constructive. The main sufferers from sexual repression are those living in the lowlands of modern sensuality. Only those shackled by an overpowering sensuality suffer by repression. The nervous tension and the material congestion which represent the gross sex urge are consonant with the character of the stimuli applied. Where the gross sex stimuli are absent, the internal sex urge is reduced to nil. The religious abstainers are, as a rule, not tormented by passionate urges. Their sex needs are indeed not repressed, as falsely asserted; their sex urge is almost entirely absent, they never have the full sense of desire.



The natural impulses accumulated through the internal secretions find riddance in sublimation, i. e., in the exchange of the original object of sex for other higher objects. The higher aims are then equivalents of the sexual voluptas, or of the sex urge of ordinary mortals. In all his writings the author makes a strict distinction between voluptas and libido. By voluptas he designates the sexual desire, the sex urge; by libido the quality and quantity of the pleasure during the sexual experience. The use of the word "libido" interchangeably for the sex urge and the pleasure is the cause of much confusion. Voluptas is a vehement emotion; libido is the measure, the gauge of the gratification of the senses. Hence both must not be expressed by one and the same word. The stored up nervous tension is vicariously discharged by being sublimated or transformed into energy in the service of great social ends, such as religion, philosophy, science, art, charity, or commerce. The primal impulses are switched into other forms of expression. They find their outlet in a kind of vicarious functioning, they take a psychical channel instead of the usual physiological path. The sex energy is used in a different mode of expression. It is applied to the mental output. The brain output of a Kant, Beethoven, Leonardo da Vinci, Newton, Locke, Pope, Hume, Adam Smith, Goldsmith, Macaulay, Herbert Spencer, all celibates, was due to sublimation of the normal desire. Such men use up their sexuality in their work, which occupies their minds and satisfies the natural cravings. Their sexuality is not repressed, it is merely directed into different paths, where it finds other forms of expression. The insinuation by the sensual pseudosexologist that bachelorhood is no proof of abstinence shows the ignorance of the dabblers in sex matters. If the scientist's sexuality has not been sublimated into other activities, why did not he marry? Extramatrimonial relations may satisfy the sex urge, but do not satisfy the permanent mating instinct, and this instinct is, in the long run, as powerful as the temporary mating impulse. The latter is in no way a substitute for the former (1). Hence the only explanation for the scientist's bachelorhood is sublimation. Still, although total abstinence in normal men and women is thus feasible, for practical reasons it is of negligible value. Very few will practise continence to secure childlessness.

Another device to secure childlessness is castration or sterilization. The latter operation is quite innocent in nature. It may be performed in the male in five minutes, by the severance of the vasa deferentia, and in the female in ten minutes by vaginal salpingotomy, and the patients may attend to their daily duties after a few days of rest. The operated men or women do not change their characters as the castrates do through the elimination of the internal secretions, the testines or the ovarines. The sex urge and the power of libido of the sterilized remain intact. Still, in practice this operation for the mere sake of procuring sterility is of little value for the healthy individual. Once sterilized the individual is condemned to childlessness for life—the reparation, although theoretically possible, is no easy task—and no normal individual

cherishes the thought of having been permanently deprived of the power of procreation. Moreover, these two operations are forbidden by law. Even in countries where suicide, or the destruction of the entire organism, may be committed with impunity, the ablation or elimination of the genital glands is prohibited by the penal code. A person may have his healthy appendix removed as a precaution, but if he or she wishes to have the healthy testicles or ovaries respectively removed, the law steps in and forbids the operation. These organs belong to the state and not to the individual.

Another device to control birth which mostly concerns the physician and which people invariably have in mind when they speak of birth control, is the prevention of conception by onanistic, mechanical, and chemical means. In all his writings the author makes a strict distinction between masturbation and onanism, terms which most authors use interchangeably. Masturbation, from the Latin words *manus*, the hand, and *stuprare*, to commit lewdness, is used to express selfabuse; onanism is exclusively used to designate the act of Onan (Genesis xxxviii. 9), i. e., congressus interruptus. The unnatural onanistic congress reduces the male orgasmic intensity to a minimum, and the woman in the majority of cases is entirely cheated out of her climax. The love congress demands a certain degree of repose of mind, concentration of energies, direction of the idea toward the goal, and intensity of attention. If the man is constantly reminded to be careful, all sentiments are destroyed. The couple's sex life becomes abnormal and masturbatic, and in the long run both mates show all the symptoms of confirmed masturbators.

Where the mechanical or chemical contraceptives are employed the male suffers less, although even they spoil the libido and disturb the finer sensibilities of both mates. But the female is harmed by all devices which prevent the entrance of the sperma into the uterine cavity. Congress involves the transmission into the female organism of certain fluids from the male which have a beneficial effect upon the woman (2). The influence of the seminal excitation is quite different from the copulative excitation. If the latter is induced while the former does these maneuvers are often repeated the woman debility and other disturbances. The female plays the receptive part in the love game and must receive her due. If she is cheated out of her share she will suffer in body and mind. Roubaud (3) says: "The desire and the copulative libido awaken the sensibility of the womb and prepare it to receive the normal excitation of the sperma. If its arrival fails, the uterine sensibility, awakened by the erotic sensibility, reacts upon the mobility in a confused manner and causes unsuitable and irregular motions. If these maneuvers are often repeated the woman eventually becomes a nervous wreck. For this same reason masturbation in women is more harmful than in men. Any orgasm in the female requires reception of sperma, just as in the male the orgasm demands ejaculation. Congressus reservatus is abnormal and harmful to both mates. The laws which govern the natural discharge of the function of the generative organs and its proper disposal cannot be

infringed without causing derangement throughout the body.

Even the orgasm of masturbation is incomplete in the female on account of the absence of the sperma and its tonic influence. One of the writer's patients (4) confessed that she derives more libido from manustuprum than from congress. Still, after some prolonged abstinence from the latter, although fully indulging in the former, she has a veritable thirst for sperma. This shows that the female who is in the habit of tasting from the tree of knowledge, no matter by what means, needs the tonic effect of the sperma and suffers from sperma starvation. W. F. Waugh (5) says the female requires for her own systemic harmony the secretion of the male genitals. She suffers from starvation of male sperma.

All means of prevention of conception, the mechanical, chemical, and onanistic, to be efficacious, must prevent the sperma from entering the uterus. Once the sperma has entered the womb unaltered it is beyond the control of any kind of contraceptive. There is hence no contraceptive which will obviate the consequences of sex life without some definite harm to the female. The worst part with all these harmful contraceptives is the fact that they are rarely efficient and all the sacrifices are offered in vain. All the various methods are without exception inefficient in the long run. The writer does not wish to imply by this that contraceptives do not prevent at all. They do for a certain length of time. Especially when several devices are employed at one and the same time, a woman may thus escape pregnancy for several years in succession. Then one accident will happen after the other, so that with all precautions she will become pregnant in average half a dozen times during her twenty-odd years of childbearing age. Even if contraception fails once out of a hundred it is of no value. Any other remedy that would cure in ninety-nine per cent. would be hailed as a specific, but a contraceptive that fails even only once in a hundred is valueless. If the average couple follows Luther's advice:

In der Woche zwier,

Macht im Jahr hundred und vier.

Twice a week no more,

Makes in a year a hundred and four,

then in the course of a year the contraceptive will fail at least once. The woman may on the average be impregnated once a year, and she cannot be impregnated more than once a year anyhow. What service has then the contraceptive done except of ruining the health of the couple? Robert Michels (6) tells of a friend who procreated every one of his five children while using a different preventive measure each time. The propagandists of contraception who give themselves the mysterious air as if they in their superior wisdom had discovered absolutely effective contraceptives and are only prevented from imparting their treasured secrets by the vicious laws are either deceived or deceivers. They cannot divulge any more about the use of contraceptives than the greater part of the population has already tried and found wanting (7). The best proof that prevention in the long run never really prevents is the European propaganda for the repeal of all laws

against abortion. Prevention is surely the easier way; it is a private affair, not subject to interference by a third party. Moreover, destruction of conception is not in harmony with the religious, moral, and human sentiments. Still, scientists like Doctor Lion (8), Judge Eduard v. Liszt (9), Hans Gross (10), Professor J. Kocks (11), Albert Moll (12), District Attorney v. Hessert (13), the Pirogoff society in Russia, and many other scientists on the European continent, who surely know all the contraceptives in existence better than our reformers here, are advocating abortion instead of the gentler contraception. Why do they do it? Because they know that prevention in the average does not prevent. Another proof of the failure of contraception is Holland, where contraception is not prohibited by law. There are there even societies and clinics to teach every one in need how to prevent conception. Still, in the report of Treub and Katharina von Tussembrock (14), who were appointed to investigate this matter, the two investigators state that the practice of volitional abortion has increased in a disquieting way. This shows that with all their knowledge of contraception the Dutch women still become pregnant and have to resort to the destruction of the products of conception.

In the light of these experiences the question arises whether a physician has a moral right to advise a patient suffering from a severe heart or kidney disease to avoid pregnancy by means of prevention and thus expose her to all the dangers in the train of contraception. Since the married woman is in need of the tonicity not only of the ovarines but also of that of the testines, is it justifiable to deprive the already damaged organism of the valuable tonic, the testines? Is it not more advisable to sterilize the invalid, so that she may lead a natural sex life and enjoy the benefit of the testicular tonic? Sterilization would seem to be the method of choice, because in the long run, in spite of the contraceptive practices, the invalid will accidentally become pregnant and will have to seek relief in therapeutic abortion, which in her case is beset with danger no less than a confinement.

The fourth device for the control of birth is the destruction of the products of conception. Thousands of zygotes or impregnated ova are unwittingly destroyed daily by therapeutical measures. Intro-uterine pessaries, legitimately worn by patients, suffering from ante-flexio or retro-flexio destroy zygotes by the thousands. Anyone who has had the opportunity to observe the uterus during the female orgasm, as in the following case, will admit that no matter how occlusive a pessary might be it cannot prevent the spermatozoa from entering the uterus. It thus becomes an instrument of destruction instead of prevention. While examining a patient by the combined method, the woman suddenly exclaimed: "Doctor, what are you doing?" sat up, looked the examiner over from head to foot, smiled, and said: "Oh, it is all right," and lay down again. After the examination, when the patient was leaving the office she was asked for the reason of her strange behavior. After some hesitation she confessed to having experienced an orgasm during the examina-

tion of the same quality as in erotic congress and hence thought she was being abused. When she sat up and saw her mistake she had to smile over her foolish suspicion. The writer thereupon decided to observe her more closely at her second treatment. Not suffering from prolapsus uteri, the patient had to be observed by means of a speculum, and such a phenomenon as the descent of the uterus was prevented by the instrument. The cervix was found to be of normal consistency, and the external os was just passable for an ordinary uterine sound. Suddenly the cervix became red, congested, and soft, and the sound within the uterine cavity began to execute certain movements, resembling pendulum swings. The os opened so wide as to admit the index finger besides the sound and the cervical lips made three gasps, each time drawing the tissues at the margin of the os within the cervical canal. After a few seconds the paroxysm was over. Only four other similar observations could be found by the writer in medical literature: Beck (15), Wernick (16), and S. E. McCully and Paul Mundé (17). On account of the scarcity of observations, the writer begs leave to report his case, which stands in some relation with the occlusive pessary. Moreover, the occurrence had some romantic background, worth knowing by every physician.

Now, supposing that instead of the sound a pessary for the correction of an antelexio was present within the uterine canal, and the orgasm took place immediately after the male ejaculation, when the disc of the pessary is lying in a pool of stowed up sperma, near the os of the cervix. Ample space would have been formed between the shank of the pessary and the uterine wall, to admit millions of spermatozoa into the uterine cavity, and by the suction taking place at the tubouterine orifices a number of them would reach the tubes and be at once beyond the damaging influence of the pessary, and after the paroxysm it would adjust itself in the former position without the woman ever being aware what had taken place. If then a ripe ovum were met by the spermatozoa within the tube it would be impregnated. But when the zygote thereupon reached the cavum uteri it could not be attached to the mucous membrane on account of the presence of a foreign body. Thus the pessary is destructive to the zygote.

Another therapeutical measure by which thousands of zygotes are daily unintentionally destroyed is the practice among certain high class ladies in European capitals of going weekly to the gynecologist for intrauterine treatment. At these procedures many an impregnated ovum is destroyed without the physician or the patient ever becoming aware of it.

From an ethical point of view contraception is not innocent. In an article on birth control the writer said: "If it is wrong to destroy the zygote, or the ovum and spermatozoon, after their union, it is also wrong to destroy them before their union by contraception. There is no essential difference between anteconceptional and postconceptional destruction." The editor could not refrain from criticizing this assertion by the following novel doctrine: "Before impregnation these [ovum and spermatozoon] are not

living organisms; they are just cells." According to this scientific truth, cells are nonliving organic substances which may unite and create a living organism, a kind of modified *generatio spontanea*. Harvey's principle, *omne vivum e vivo*, it seems, has not been accepted by all medical editors. Still there is a difference between contraception and destruction if Nature is taken as a guide for our conduct. Nature does destroy the separate living sex cells. With every ejaculation 200 to 300 million spermatozoa are discharged, all but one must necessarily perish. The ovaries of the new born girl contain about sixty thousand ova, all but a dozen or two could ever reach their goal. On the other hand, once the ovum and spermatozoon are united, Nature will never destroy them except in pathological cases. Hence postconceptional destruction is contrary to Nature, while anteconceptional destruction is not entirely out of harmony with Nature. From a religious point of view contraception is no less a sin than abortion. "*Homo est qui futurus est*," says Tertullian in his *Apologia*. The ripe ovum and the spermatozoon represent a future man even before their union. Hence the Biblical penalty for onanism is death (Genesis xxxviii, 9-10). According to the Talmud masturbation even is a great sin. The masturbator is procreating evil spirits with Lilith. Even abstinence is a sin according to Talmudic law. "Anyone who abstains from sex activity commits the same sin as if he spilled blood (Jebamoth 63b, also Qidusin 30a).

Besides these two innocent ways of unintentional and unconscious destruction of the zygote before it has manifested its presence in the uterus by the cessation of the menses, there is much deliberate embryonic destruction by autoabortion after the zygote's presence becomes apparent to the woman through the well known sign. The number of such destructive practices by the women themselves will never be revealed. Only once in a great while medical help is sought when an accident happens. The writer (19) described a laparotomy he performed on a woman for the removal of a bougie she had introduced herself into her nonpregnant womb. She perforated the uterus, and the bougie slipped out of her hand and entered the abdominal cavity. The other case is that of a virgo intacta who managed to introduce a bent hairpin into her cervix for masturbating purposes. This shows that the average woman is able to locate her own uterine os as certainly as she can find the anal orifice. Still this fact is very little known. In a case where the writer was called as an expert a prominent surgeon and professor in one of our medical schools, when asked by the defendant's lawyer whether the woman could not herself have introduced the instrument into her uterus, answered that this was impossible, since even the physician has some difficulty to probe the uterus. But the analogy is not well taken. A man may grope in the dark with great difficulty to find another man's nostril but he will easily find his own. This shows how little even the medical man knows about the life around him. Some women make intrauterine injections for cleanliness. When the woman is in crouching position, whereby the uterus is pressed down, she need not be very familiar with



the anatomy of her genitourinary organs to be able to introduce the nozzle into the external uterine os. A. Percival (20) describes a number of cases where women themselves made intrauterine douches in nonpregnant uteri without any difficulty. Yet a professor of gynecological surgery is ignorant of these things which one woman tells the other over the dumbwaiter. Only recently, when the writer was discussing the antinarcotic laws with a druggist, the latter remarked about the inconsistency of such laws which forbid the sale of an hypodermic syringe without prescription and allows the sale of bougies, although to one bougie sold to a physician ninety-nine are sold to women.

The other device of deliberate postconceptive destruction are the thousands of operations performed by professional abortionists in every large city. In the consciousness of the people there is no difference between the desire not to have any children and abortion. The result is that in Manhattan and the Bronx alone about eighty thousand abortions are produced every year (21), and the number is steadily increasing. Only one out of every thousand cases is detected, namely, those which end fatally for the mother. A special committee appointed by the Michigan Board of Health in 1881 concluded that one third of all pregnancies ended in induced abortion, that at least one hundred thousand volitional abortions occurred in the United States annually, and that nearly six thousand women died annually from the direct cause thereof (22). Professor Lacassagne, of Lyons (23) found in Lyons 19,000 abortions to only 8,000 births annually in a city of only 450,000 inhabitants.

How the people in our own city regard the question of abortion may be seen from the remarks of the attorney of the County Medical Society, A. C. Vandiver, and of Dr. Florian Krug (24). Vandiver tells of a case where the jury acquitted the operator because the operation was highly successful, holding that a successful operation was a good thing. In ten years only three abortionists were convicted and all three were pardoned by the governor. Krug was foreman of a coroner's jury that refused to hold an abortionist in a case of death because the jurors did not believe in punishing any one for a thing like that. Krug in his article shows himself quite indignant with the jury. His indignation would subside if he made a deeper study of the functions of the jury. The function of the jury is not to administer the law; this could be done better by the judge. He knows the law; the jury does not, even after the judge's charge. The jury's function is to find whether an individual should be punished for an act committed in a certain age of the history of a certain country, in a certain locality, and by a member of a certain class. Precedents of law are cited dating back centuries ago, as Goethe says:

Es erben sich Gesetz' und Rechte  
Wie eine ewige Krankheit fort;  
Sie schleppen von Geschlecht sich zum Geschlechte,  
Und rücken sacht von Ort zu Ort.  
Vernunft wird Unsinn, Wohltat Plage;  
Weh dir dass du ein Enkel bist!  
Vom Rechte, das mit uns geboren ist,  
Von dem ist, lieder! nie die Frage.

Still what was wrong a century ago may not be

wrong today; what is wrong in a village may not be wrong in the large city; what is wrong for one class under the principle of *noblesse oblige* may not be wrong for the other class. Nay, under certain circumstances even embezzlement may become a duty, as Cicero says in *De Officiis*, "*Si gladium quis apud te sana mente deposuerit, repetat insaniens, reddere peccatum sit officium non reddere.*" The law is rigid and inflexible, the jury is human. The jurors are supposed to be the peers of the accused who can understand his psychology. Hence the jury cannot be expected to punish the man whose services they may some day seek themselves. Few legislators and even judges are to be found who have more than two or three children. Where are the others? They have been prevented from coming in spite of their own laws.

The reason for this refusal to punish the abortionist is perfectly plain. The practice of postconceptional destruction, in spite of the legal, religious, ethical, and moral efforts for centuries to counteract it, is still in harmony with the conscience of the people. If the law had sprung from the essence of the thing, or as Cicero puts it, "*Est hæc non scripta sed nata lex*," the tide of volitional abortion would not have inundated the most progressive nations of the world, and the number of abortions would not be constantly on the increase.

The decline of the birth rate, observed in every civilized country, is hence not necessarily due to contraception, as the propagandists of birth control wish to make believe, but may be rather attributed solely to postconceptional destruction. The number of women who, in spite of the use of all kinds of contraceptives, have not been pregnant at least half a dozen times during the twenty-odd years of their childbearing age, and after all their vain efforts take their refuge in postconceptional destruction, is very small indeed. But for these destructive practices there would be no considerable falling off of the birth rate.

Moreover, there is very little hope to expect a change, as some religious and ethical enthusiasts entertain. Education, moral advancement, and social uplift seem to have no influence upon the practice of feticide, since even ministers who are supposed to live on a higher plane do not hesitate to ask their physician for a postconceptional destructive agent not only for members of their immediate family but even for some member of their flocks, as experienced by the writer.

The futility of all laws against the limitation of offspring is hence indisputable. They have not the sympathy of the community. This is the reason for the European propaganda for the repeal of all laws against postconceptional destruction. The trite objection often heard that the laws of burglary have not banished burglary out of the world sounds clever, although not original, but it has no bearing on the question at issue. The laws of burglary are in sympathy with the sentiments of entire humanity excepting the burglar. Without these laws there would be no security of life and property. These laws are of great benefit to humanity and do nobody any harm. But the antiabortion laws are stated by the European propaganda to be the indirect

cause of thousands of deaths annually. This fearful loss of female life, as found even in our country by the Michigan committee in 1881, cannot be averted by any contraceptive devices. The knowledge of contraception is of no value at all in the unmarried victim with whom a conception frequently ends in a suicide. In the present stage of sexual morality, no chaste girl will deliberately submit to be ruined, and very few decent men are so utterly conscienceless as to set out deliberately to ruin an innocent girl for life. As a rule, where the mercenary motive is absent, the young people's object is innocent amusement. The climax later is a complete surprise to both of them. Now, all mechanical or chemical contraceptives require preparation, and these surprise cases are not prepared for anything. In fact the party is often in a semiconscious condition so that even onanism is out of consideration. Only recently a young girl of seventeen of the writer's own social acquaintance called on him crying over the cessation of her menses. She went to a theatre with a young man of her own social set. After the performance they went for the usual supper to a well known restaurant. All this was done without the least unchaste thought. Probably they had a few drinks. Anyhow when they woke up the next morning they did not find themselves in their respective homes. No knowledge of contraception would have saved her.

In this analytical study of the subject of birth control in relation to the physician, the writer has endeavored to determine the motives for the modern propaganda for birth control. Of the four reasons, the medical, eugenic, economic, and hedonic, the last two do not concern the physician at all, at least in his capacity as a physician. They only concern the sociologist. The physician's interest in the medical reason is apparent. His interest in the eugenic motive lies in his quality as a hygienist, as every physician is more or less supposed to be. The means to secure limitation of offspring, abstinence, sterilization, contraception, and abortion, on the other hand, all branch off to the domain of medical science. As hygienist, he has to decide whether abstinence is harmful to health or not. Sterilization concerns him in his quality as a surgeon. He will be called upon to perform the necessary operations. Of contraception it may be stated that all means hitherto applied will, in the long run, ultimately cause physical and mental suffering, and the sufferers will apply for medical help. The same may be said of postconceptional destruction which, the writer is inclined to think, is the cause of the decline of the birth rate in all civilized countries. In the majority of cases the physician will be called upon to correct the damage done, no matter by whom.

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12 WEST 123D STREET.

## DUALITY OF VOICE.

## Falsetto Baritone—Falsetto Soprano. Report of Two Cases, Male and Female.

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The general characteristics of the voice in childhood are essentially the same in both sexes, although there are certain characteristics which distinguish boys' voices from girls' voices before the age of puberty. The child's larynx between the age of five or six years and the age of puberty does not develop much, it hardly undergoes any gross anatomical changes, and it does not possess any essential differentiating features so that sex can be determined. Though the larynx of the child is smaller than that of the adult and the vocal muscles are comparatively feeble, the quality of the voice is peculiarly penetrating. Most children possess a principal register, the so called middle voice, which serves their purpose for both singing and speaking. This register ranges from about b to f sharp<sup>2</sup>. It is exceptional for this principal register to exist alone, as there are usually present some pectoral and falsetto tones. In boys the pectoral tones gradually increase up to puberty. After puberty is reached, concomitant with the general systemic changes that occur, pronounced changes of the larynx and voice take place. These are more obvious in the male, whose larynx takes on a rapid growth, especially in the transverse diameter, than in the female, whose larynx, although it grows in the vertical diameter, remains comparatively small and delicate and has a nervous organization which is often highly tensioned. The growth of the larynx causes a sudden enlargement of the glottis, which becomes twice its former size in males, while in females it increases only about half as much.

The larynx through the change in the shape of the thyroid plates, grows forward so that there is greater prominence to the part which is commonly designated as the Adam's apple, this change being less marked and more gradual in the female. Neck measurements indicate that the position of the larynx is a little higher in females than in males. The vocal cords in males during this development become more elongated than in females, and this, plus the change in conformation, explains why the male voice is of lower pitch and usually stronger. The pitch of the voice depends on the number of vibrations the vocal cords make during a second of time, and the number of vibrations depend on the length and width of the aperture through which the air passes plus the degree of tension of the cords.



The longer the cord, the less tension, the wider the glottis, the lower the voice.

The vitality of the genital organs has a decided influence on the development of the voice, it being noticed in both young and old, in the young when the genital organs obtain full vigor and in the old when there is loss of vigor.

The period of mutation of the voice is very irregular in both girls and boys. Girls' voices break less often than boys', gradually becoming fuller and increasing in resonance. Boys' voices, after frequently breaking for a considerable period, finally become lowered about an octave. The period of mutation is sometimes gradual, sometimes rapid. A child may be slightly hoarse for a few days or weeks and then the voice becomes standardized, or it may take a number of years before a permanent change takes place. Paulson found, when investigating changes in children's voices, as modified by age during the period of mutation, that fifty per cent. of children's voices began to quaver at the age of thirteen, seventy per cent. at the age of fourteen, and eighty per cent. at the age of fifteen. During the change he found the throat often swollen but not the vocal cords; he also found voice control was lost but afterward regained.

During mutation the successive changes in the form and size of the larynx take place so rapidly that proper realization of the changing conditions of tension is lost and many bad vocal and speech habits may be contracted. Voices may become coarse or throaty, nasal, aspirate, guttural, growling, or continue in a childish treble; articulation often suffers and pronunciation is slovenly. Objectively, the larynx, irrespective of the vocal cords, sometimes shows a slight hyperemia which in itself is sufficient cause for the raucity of the voice. Often there is a disproportion in growth of the vocal cords and cartilages to which the cords are attached, resulting in an unsteady tension of the cords, which is instrumental in producing a voice that occasionally breaks to childish treble. At this period, also, a misdirection of afferent impulses may result in the abuse and nonuse of certain sets of muscles antagonistic in action that come into play during voice production, causing a partial vibration of the vocal cords, an impairment of resonance, and a misplacement of the larynx, so that it is seen in an abnormally high position. The voice emanating from such a larynx is a high pitched, thin, piping voice—a falsetto voice.

A falsetto voice is a voice often reckoned to the head register, its volume and area being almost as large as the chest register, reaching about  $d^1$  to  $f^2$ . It is an octave above the chest register. It is of a thin, shrill quality, sounding forced or unnatural, and, as its name implies, is a false voice. In brief, it is a child's voice produced by an adult, originating at that period of life when physically the boy or girl is man or woman in everything but voice. This voice suggests a lack of muscular control besides a disturbed balance in the respiratory act. Of the vocal anomalies that occur during or following mutation the persistent falsetto voice is the one most frequently observed. While the condition occurs in both males and females, most

of the cases that come under observation are in males.

The falsetto voice is characteristic of the voice of the eunuch or the eunuchoid. While their voices are practically similar in reference to pitch, ranging between tenor and soprano, they are absolutely dissimilar in reference to origin. Eunuchs are those individuals who for some definite reason have had their sexual glands removed (castration) in early youth, a complicating result of which is nondevelopment of the larynx so that the voice remains high. Eunuchoids are individuals who without being castrated entirely simulate in clinical manifestations the true eunuch type. This condition is due to a developmental disturbance beginning primarily in the sexual glands. One of the symptoms is a change in the pitch of the voice, which becomes high. On account of this similarity the term eunuchoid voice has been used synonymously with falsetto voice. The use of this term has given rise to much misunderstanding which in a way is rather unfortunate for those having a falsetto voice, for a falsetto voice of an adult male who is not a eunuch or a eunuchoid does not depend on imperfect genital development, but in practically all cases is the result of a faulty habit which was contracted by the subject at the time of the change of voice and retained in after life.

The relationship between pubescence, voice, and genital organs has been noticed by lay persons as well as by medical men. From remote antiquity among the Orientals, as also at a later period in Greece, eunuchs were employed; and on account of the unnaturalness of their voices, observation and comment was made. Only until recently in Italy castration of boys was practised in order to hinder the natural development of the voice. These castrated boys were carefully trained vocally, so that when older they comprised the adult soprano singers of the Sistine Chapel. At present there exists a secret religious sect in Russia known by the name of Skopzi, whose members voluntarily undergo emasculation in order to avoid sexual sin or temptation. They are recognized by their falsetto voices. From time immemorial it has been well recognized that a definite relationship exists between the sexual organs of the male and his vocal apparatus. In the female this relationship has been demonstrated only comparatively recently. Since oophorectomy has been done definite voice changes have been noted. Following an oophorectomy the female voice assumes a slightly more masculine timbre without involving much change of pitch.

From the above one can readily understand why adult males who speak in high pitched, childish voices often carry a stigma of doubtful sexuality which is decidedly humiliating and undeserved. Lack of knowledge of the subject has resulted in misleading conclusions. If it were generally known that a falsetto voice may be a purely functional condition, that there may be no pathological involvement of the organs of voice or the organs of generation, and that the condition may be classified as a faulty habit, judgment would not be so readily passed on a person's physical condition by simply hearing his voice.



Various reasons are given for the occurrence of this faulty voice condition. Its cause may be a disproportion in growth or partial development of the larynx. If for some reason the larynx of an adult has failed to develop, the voice of that adult will be childish. In most cases, however, a disproportionate action of the laryngeal muscles accounts for the trouble. A sensitively organized child, especially a boy, is rather surprised and shocked at his initial voice changes when passing through his mutation period. He tries to continue as he was used to hearing himself speak, thereby causing a faulty co-ordination of certain laryngeal muscles, and instead of using the chest register he exerts all powers in the use of the head register which seems to him to be easier, more natural, and more restful. This voluntary effort frequently repeated becomes automatic and thus this faulty habit is acquired. If allowed to remain uncorrected it continues during the rest of one's life. I know a man, sixty years old, who speaks in a high falsetto. He is unmarried and has never cared to undertake any treatment. His voice condition may be the cause of his celibacy. Young men in training for theatrical careers often adopt the head voice, or falsetto, as part of their stage armamentarium; by so doing they can assume either a male or female part. Again, some young men are capable of speaking in either a falsetto or a baritone, and sometimes when they use their falsetto voice extensively, they find to their dismay that they have lost their baritone. This was nicely illustrated in a case which recently came under my observation.

CASE I.—Sydney W., nineteen years old, was referred to me by Doctor Cassidy for treatment. The patient complained of the loss of his low speaking voice. In a thin, high pitched treble he told me that until lately he had a dual voice, that is, he could so alter his voice that he could either speak like a man or a woman, but for the last six months he could only speak in his high voice. He had changed to his woman's voice and could not change back. On questioning him he gave the following history: When about six years old he had measles, and at the age of twelve had severe bronchitis lasting for some time. He was quite positive that he never suffered from tonsillitis or laryngitis and had never had any trouble with his genital organs. At fourteen he commenced to speak in a combination of chest and head voice which of course was typical of a boy at puberty. His mother somehow got the notion that he was speaking entirely too low and rough for a young boy and was constantly reminding him to speak higher. At sixteen he found that he could use two voices, a high voice for home use to save reprimand, and a low voice for outside use.

He was naturally of a shy and diffident disposition, staying at home most of the time, where, of course, he used his high head voice. He also, like his mother, preferred his high voice, thinking that it sounded better than his low rough voice. When away from home he mostly used his low voice because people joked in a personal way about his "lady voice." But unfortunately he was not away from home even during business hours, for his occupation as typist, which he carried out at home, did not require him to go out, meet, and converse with people. One day after having used his high voice for a period of time he found that it was impossible for him to use his low chest voice again. As he expressed it, "My low voice seemed to stick in my chest and did not want to come out." On examination the patient was found to be well developed physically. There was no abnormality of the organs of generation. His nasal mucous membranes showed congestion and some hypertrophy of the lower turbinates. On his pharyngeal mucosa were present two small follicles. The larynx was placed abnormally high. Through the laryngoscope the larynx showed no abnor-

malities. On phonation an overlapping of the posterior half of the vocal cords could be seen which diminished the size of the glottis. The larynx as a whole changed its position, moving higher up in the throat close to the hyoid bone bringing the palatopharyngei into action. It was evident that he had had control of his extrinsic phonatory muscles, that is, he was able voluntarily to raise or lower his larynx by bringing the levators or depressors into play. This partly explained his duality of voice, for at will he had talked high or falsetto, and low or baritone.

Normally the larynx is poised in the correct position for speaking or singing through an equalized tug that goes on between the levator and depressor muscles. If for some reason the pull of the depressors is stronger and the larynx is lowered from its normal position the voice assumes a heavy and unnatural low pitch. On the contrary, if the pull of the levators is stronger and the larynx is raised high in the throat the voice assumes a thin, high pitch. With this there is an abnormal action of the intrinsic muscles of the larynx, the tension between the cricothyroid and the thyroarytenoideus (vocalis) is irregular so that an interference with the complete vibrations of the vocal cords takes place, the cords only partially vibrating. These changes necessarily produce a disturbance of the normal resonance. The voice emanating from a larynx which has undergone such changes is a falsetto.

My patient, through the constant use of his high voice, made permanent the misdirected action of his phonatory muscles. Through the increased action of the extrinsic levator muscles and the diminished action of the extrinsic depressor muscles, the larynx became raised high up in the throat. Through the action of the intrinsic muscles as just mentioned the movements of the true and false vocal cords were interfered with. The free vibratory edge of the true cords became reduced to about half the normal length giving a short string which always produces a high note. Through diminished tension the false cords sagged, reducing the size of the cup shaped space between the true and the false cords designated as the ventricle of the larynx, thereby reverting it to its original boy size, and producing a change in resonance. The basic tones of his voice when reading or speaking was between  $c^2$  and  $e^2$ ; normally he should have spoken in tones about two octaves lower.

Another case that came under my observation was referred to me by Dr. John Horn, of New York.

CASE II.—The patient was a girl nineteen years old who spoke in a rather characteristic fashion. She gave one the impression when hearing her, of a whining child. Her conversation was carried on in a weak plaintive falsetto which was most irritating. Though her voice sounded decidedly strained she never experienced any strain whatsoever when speaking except that she sometimes remarked that she felt as if something were blocking her throat, and if she could only cough it up she would be able to speak well. She was often advised by her friends to cure her cold, but she had no cold to cure. Although rather frail she never had an illness of a serious nature, but occasionally had headaches which she attributed to constipation. There was no abnormality about her menstruation. In general she made no complaint of any kind except of her voice. The position of the larynx was very high and the upper border of the thyroid cartilage was snug up against the hyoid bone. Through the laryngoscope nothing unusual could be noticed. Downward

pressure on the thyroid cartilage caused the larynx to shift its position downward and backward, and when the patient was then told to vocalize a low chest tone was produced. In this case, the diminished action of the depressors was definitely illustrated, for the unequal muscular tension causing the larynx to be so high up in the throat made it impossible to produce chest tones. The basic tones of her voice when reading or speaking was between *g* sharp<sup>1</sup> to *b* flat<sup>1</sup>. Normally she could have spoken in tones an octave lower.

Both cases mentioned readily responded to treatment. The prognosis of all these cases is always favorable unless the condition when in the male is one of eunuchoidism.

When treating these cases a number of factors must be given consideration. The general physical condition of all these patients must be improved. A tonic for the nervous system is indicated. Pathological conditions of the vocal organs requiring surgical measures should be instituted. The patient in the first case cited had hypertrophy of the lower turbinates and pharyngeal granules. A portion of one of his turbinates was removed and the follicles on the pharyngeal wall punctured by means of a finely pointed galvanocautery needle. Massage and electricity play a very important rôle in overcoming the faulty coordination of the laryngeal muscles. The depressors are developed so that the tug between the levators and the depressors becomes equalized and thus the proper laryngeal balance is established. This muscular coordination is further established through definite vocal exercises executed in notes of lower pitch than the falsetto. These exercises are also instrumental in promoting normal action of the vocal cords. Through the carrying out of these different measures the faulty psychical element, which is always present in these cases, is counteracted and the patient's psychical as well as physical anomalies are eliminated.

The treatment does not require an extensive period of time. After my male patient had been under supervision for ten days his voice changed to a baritone of such quality that even his mother conceded its superiority over his former falsetto.

My female patient did not react as quickly. I found it rather difficult to overcome her psychical state because to her ears her voice was agreeable, and it took some time to educate her to recognize the disagreeable qualities in her voice. As soon as she realized this fact the rest was comparatively easy. She now uses a melodious soprano voice when speaking.

205 WEST 103D STREET.

**Massage in Raynaud's Disease.**—Douglas Graham (*Medical Record*, March 10, 1917) from very gratifying results in several cases thinks that when massage is to be of benefit in Raynaud's disease its effects are seen very rapidly, namely, improvement of the circulation, warmth, comfort, and suppleness. Not only can the vitality of the tissues be maintained and improved, but even beginning destruction of tissue may be recovered from. The method used was deep manipulation in a downward direction to aid the arterial current, followed by upward friction to increase the venous and lymphatic flow.

## CONSTRUCTIVE SUGGESTIONS TOWARD THE CONTROL OF SYPHILIS, GONORRHEA, PNEUMONIA, MALARIA, TYPHOID, AND TYPHUS FEVER.\*

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All programs looking toward the control of infectious diseases should be based upon the theory that control for prevention is superior to control for cure. While the development of hospital and dispensary methods plays a part in the elimination of infectious diseases, its importance varies largely according to the prevalence of specific diseases and the efficiency and social reactions of the medical institutions. From the standpoint of preventive control, the curative phases of control are of service only in so far as they effectively serve to eliminate known foci of infection. Were it possible to hospitalize immediately all patients during the incubation period and thus prevent the spread of disease during its incipency, hospitals might afford a more practical solution of the control of infectious diseases. This possibility, however, is obviously limited, and in consequence hospitals and dispensaries now play a subordinate part in the control of syphilis, gonorrhea, pneumonia, malaria, and typhoid and typhus fevers.

The general ineffectiveness of hospitals and dispensaries in attacking the above mentioned diseases indicates that thus far they have played a comparatively small part in the reduction of their morbidity rate, though in such conditions as gonorrhea and syphilis their use would be of paramount advantage. Preventive control is necessary from the medical, economic, and social standpoint. Curative agencies must become instruments for prophylactic service.

In the discussion of prevention for control one immediately seeks the facts common to the group of diseases under analysis. It is patent that the two main elements in a program for prevention must involve personal and social plans. The hygiene and morality of individuals and their homes most assuredly require definiteness and intimate contact and more intensified programs than are involved in the general social measures requisite for municipal sanitation, public education, and social reformation. The methods to be utilized in the control of these diseases, however, may be general in character in so far as they involve the personal and social hygiene which underly all the infectious diseases. While malaria and typhus fevers are actually transmitted by insects, the mosquito and the body louse, and gonorrhea and syphilis are spread through direct personal contact, typhoid and pneumonia similarly present numerous instances in their etiology indicative of the importance of the personal and social factors for their control.

These diseases are responsible for a varied mortality which is inconsequential in the case of gonorrhea but is exceedingly serious in pneumonia. Far more important, however, is the morbidity from

\*Read before the Eighth Annual New York City Conference of Charities and Corrections, May 22, 1917.



those various diseases with the resultant economic invalidism, social degeneration, and racial impoverishment. The direct mortality of gonorrhea and syphilis is exceedingly small, but its indirect results are of paramount importance. Gonorrhea with its hideous trail of blindness, sterility, and surgical mutilations presents a public health problem which is well understood by workers in charities and corrections as well as physicians. Syphilis with its dysgenic effects, including abortions, miscarriages, infant mortality, mental defects, and insanities, yields results which are all but concealed in the consideration of the statistics of its mortality.

In the order of relative importance, according to mortality, one would speak of pneumonia, typhoid fever, malaria, typhus fever, syphilis, and gonorrhea. From the public health standpoint, and indeed from the standpoint of social medicine, syphilis and gonorrhea, as far as New York city is concerned, should be placed practically at the head of the list.

During 1916 New York city was shocked at the occurrence of 9,023 cases of poliomyelitis. There were only 208 cases of malaria and 215 of typhoid fever. Despite the continued campaign against tuberculosis there were 19,297 cases reported during the year. But who realized that there were 20,128 cases of syphilis and 6,220 cases of gonorrhea notified to the health authorities? There was no epidemic; there was no publicity; no excitement; no enthusiastic society seeking to secure their elimination. In corroboration of the statement that this occurrence of gonorrhea and syphilis is not unusual, let me call attention to the fact that during thirteen weeks of 1917 ending April 21st there were 1,535 cases of gonorrhea and 5,642 cases of syphilis. How rare typhoid fever appears with its 234 cases and typhus with its three cases during the same period of time! Even pulmonary tuberculosis with its 736 cases is completely overshadowed.

The first step in modern methods of controlling infectious diseases requires an arousing of the public mind to the importance of the problem to be attacked. There can be little enthusiasm aroused in a fight to combat malaria whose mortality rate has been decreased 86.5 per cent. during the ten years, 1900—1904 to 1910—1914. The discomfort arising from the pest of mosquitoes might start a health department in a war against the varied biting mosquitoes which contribute to personal discomfort though they are not responsible for malaria. The control of venereal diseases demands as great publicity and popular education as was employed by the health department in its recent attack upon pneumonia, influenza, and other respiratory diseases. Suggestions for preventive control must necessarily be brief and therefore must also be incomplete.

In fighting against malaria, in addition to the educational propaganda, there is involved the destruction of mosquitoes through drainage; the protection of the well from the bites of Anopheles through adequate home screening; the elimination of breeding places throughout the community. Add to this, the protection of those infected with malaria from mosquitoes, the establishment of diagnostic facilities for revealing the presence of the plasmodia in the blood, the availability of quinine for those actually ill, and the control of those who have suf-

fered from the disease with a view to preventing the breaking out of latent infection. In this plan the burden of responsibility rests upon the health department, aided by the intelligent cooperation of the medical profession. The elimination of Anopheles would reduce the personal responsibility for the continuance of the diseases almost to the vanishing point.

Since 1896 when Brill described the mild form of typhus fever so frequently called by his name, typhus has been endemic in New York city. The bacillus causing it has been discovered by Plotz, and our knowledge regarding the method of its spread and control has been enriched greatly through the experience during the past bloody months on foreign fields. Hirsch has well said, "The history of typhus is the history of human wretchedness." The program for control involves the exceedingly difficult problem of the elimination of the body louse, *Pediculus vestimenti*, and the head louse, *Pediculus capitis*. These body pests are responsible for much discomfort and disease, and present a herculean task. Thriving in the midst of ignorance and poverty their habitat is readily accessible but none the less elusive. A plan for their control involves the entire problem of home sanitation, higher wages, and education, which may be wisely supplemented by the establishment of municipal laundries and disinfection stations for the proper care of infected clothing. The medical inspection of school children can be utilized, as it is in part, for indicating those homes requiring the most careful attention.

Concerning pneumonia few practical suggestions can be made which do not involve the socialization of communities. We are more familiar with the types of pneumonia and the various bacteria involved than we are with the fundamental facts underlying pneumonic infection. It has been recognized that the discharges from the nose and mouth are the main instruments in the dissemination of the disease. Correct breathing habits are not of maximum service, unless the vitality of the community is enhanced, and healthful conditions are established in the home and public places. The police power of the health department properly has been called into action to relieve the overcrowding of our transportation facilities. Overcrowding, however, must be prevented in churches, schools, theatres, and other private and public places where masses of the citizenry congregate. Streets must be clean and preferably oiled, while ashes require careful handling. Rational ventilation must become a household practice. Every case is a focus of distribution, and disinfection of the infective discharges becomes imperative. Isolation of the patient merits trial when practicable. On the other hand malnutrition calls for attention, and the wider installation of school lunches would offset the dire effects of underfeeding. The increase of social legislation tending to restrict the devaluing influences of modern industries is no less important than is an increase in the living wage to make possible the maintenance of a decent standard of living compatible with vigorous resistance to disease.

So far as typhoid fever is concerned, the general experience in the United States army and elsewhere is thoroughly indicative of the fact that vac-



cination against typhoid fever is as important a health measure as vaccination against smallpox. The free distribution of antityphoid vaccine is to be urged, and the general public should be educated as to its importance, particularly that portion of the public financially able to take a vacation outside of the city limits. Hospitals and private physicians should report the typhoid carriers to permit the extension of control in connection with industrial hygiene. Such registration affords a point of departure in the protection of the community against typhoid carriers engaged in cooking, serving, handling, or producing foods. Pasteurization of milk in the bottles instead of by the holding process would further protect the community from the milk borne epidemics. The general public should be informed when the water supply is polluted and warned to boil all drinking water. It is conceded that food inspection and control must be advanced through state legislation and local ordinances to insure their cleanliness and safety. It is of the utmost moment that the watershed yielding the potable water supply be protected, and the municipality should call to its support every social and medical agency in urging upon the legislature the necessity of modern safeguards against the pollution of the drinking supply of the community.

Gonorrhea and syphilis may be considered as a single item inasmuch as the underlying causes are identical for the two diseases with the exception of their bacteriology. These diseases are accidental social infections arising from direct contact. A negligible proportion of them originate innocently. In the program for attacking these plagues there come to the fore many social problems, especially those related to prostitution. Concerning the question of segregation, legislation, and medical supervision little need be said, save that these methods have not proved effective in decreasing venereal disease and are distinctly opposed to the moral interests and ethical development of the community. Such methods as the use of the Injunction and Abatement Act, the registration and public advertisement of properties utilized for immoral purposes, the enforcement of existing laws and regulations tend to decrease this medium of contagion, but certainly cannot eliminate prostitution. Education, rational recreation, higher wages, early marriage, better homes and privacy, the restriction of dance halls, the control of the sale of alcohol, raising the age at employment, and the improvement of the standards in industry are of the utmost importance in developing an environment which tends to short circuit sexual desire into normal and healthful channels. A campaign of education through the boy scout organizations, the camp fire girls, church societies, mothers' clubs of the community should be accelerated through properly chosen lecturers of the department of health cooperating with workers in social hygiene. A systematic protective education is essential to combat the traditions of the street and the unhallowed misinformation which is largely responsible for the widespread abuse of the sexual function which underlies venereal diseases.

In the face of a mobilization of soldiers it is important to stress the safeguards which must be placed

about adult males unfettered from the restraining influences of home environment. The development of a bureau of recreation will probably be of the utmost advantage in offsetting the temptations of camp life. Despite all endeavors, including the banishment of prostitutes beyond a three mile limit of camps, there will undoubtedly be a large number of infections which will work to the physical degeneration of the men and later will visit afflictions upon the women to whom they may return as, or to become, husbands. From the standpoint of military efficiency the actual prevention of gonorrhea and syphilis is of greater consequence than the ethical aspects of the subject. Along with the constructive program of preventing venereal diseases in the army, consideration must be given to the utilization of the packet designed to prevent infection after exposure. The grimness of war and the necessity of maintaining military efficiency undoubtedly justifies the use of these preventives, although acceptance of this doctrine may cause a shock to those whose minds are dwelling upon the moral phases of venereal diseases without giving adequate consideration to the practical military health problems involved.

While the ethical and moral sides of the venereal problem are the main issues to be met from the standpoint of public health, an earnest endeavor must be made to counteract the existing epidemic of syphilis and gonorrhea. Large as are the figures of reported cases in this city, they underestimate the total number of cases and are particularly lacking in accuracy for gonorrhea. A program for the prophylactic control of these diseases must be constructed on the basis of the recognition of syphilis and gonorrhea as diseases of more serious consequence to the community than practically any other disease with the possible exception of tuberculosis. From the health viewpoint the mode of attack must not involve the stigmatization of the sufferers as moral outcasts or degenerates. Prevention necessarily involves the cure of the victim, who otherwise is a constant menace to the community as a focus of infection. Our hospitals and dispensaries treating these diseases have failed to justify themselves by their results. The percentage of their established cures is disgracefully small, being in the large majority of institutions under fifteen per cent. This means a low grade of efficiency which would scarcely be tolerated in any other field of human endeavor. To counteract these negative tendencies, dispensaries should be obliged to have a standardized equipment suitable to meet the needs of treatment. Hospital facilities should be available for incipient cases, without the necessity of segregation in special hospitals and without penalizing those infected because of the nature of the method of infection. From the standpoint of communal usefulness, hospitals can perform no greater service than by curing luetic and gonorrheic during the stage of greatest curability. It is reasonable to demand such service from all institutions receiving public moneys for caring for public charges. The community should be able to dictate the types of cases requiring hospitalization. If this can be done during poliomyelitis, epidemic, it certainly is within its jurisdiction for syphilis endemic.

The compulsory notification of venereal diseases is imperative for any plan of systematic follow up work designed to facilitate their control. Following upon the registration of patients there should be established diagnostic laboratories, together with development of a system of evening pay clinics. The physicians in attendance at such pay clinics should be adequately remunerated out of the fees collected. At every genitourinary clinic there should be a follow up social worker to secure the regular attendance of the clientèle of the clinic. Under existing conditions the municipality should supply, without cost, the amount of salvarsan or any remedy requisite to insure the public against the continued danger from infected individuals. With the development of the diagnostic and therapeutic clinics full benefit cannot accrue to the community unless indigents and those unable to pay for expensive and intensive medication actually receive it, and this can only be accomplished at the public expense.

A final step, or possibly the first step, to be taken is the utilization of every medium for publicity in order to arouse the public mind to the importance of venereal diseases. Posters, placards, bulletins, lectures, paid advertisements if necessary, are splendid investments for public health and will break down the accursed policy of silence which has permitted these diseases to develop and spread without a satisfactory public counterattack. If the charlatan and quack can flourish on the basis of their well selected publicity there is no reason why the more constructive forces of the community should not avail themselves of similar measures to combat these diseases. Printers' ink is cheaper than salvarsan. The need for legislation to eradicate quackery and fraudulent advertisements is too obvious to require discussion.

230 WEST NINETY-SEVENTH STREET.

## CONSTRUCTIVE SUGGESTIONS TOWARD THE CONTROL OF MEASLES, SCARLET FEVER, DIPHTHERIA, AND WHOOHING COUGH.\*

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The importance of social work in the prevention of the infectious diseases of adult life has been recognized for many years. In fact, the first connecting interest between the field of social endeavor and public health work occurred in connection with the recognition that tuberculosis can be prevented or controlled only if cooperation is afforded by all social as well as public health forces. This coalition is an epoch making one in the history of public health work.

As a natural development, public health work has extended in proportion to its socialization and at the present time the more noteworthy and important developments in the line of prevention of disease owe their effectiveness very largely to the recognition that disease is in great measure the result of maladjustments of our social and economic life. In this

evolution, it must be admitted that the more common types of infectious diseases of childhood have received comparatively little attention. It is of interest to consider that practically all health boards possess their present almost unlimited police powers and to a great extent their legislative powers because of the early recognition of the need of controlling the spread of infectious diseases. The inception of health boards came as a result of this necessity and for many years all public health functions were directed to this end. General sanitation was considered of value only as an adjunct in limiting possible epidemics. Many health departments still use this function as the main reason for their existence, but modern public health work has developed its ideals and functions far in advance of this corrective form of work, and its attention is now focused mainly upon broad preventive measures concerned with the prevention of disease in the individual, such as the development of measures for the hygiene of childhood and the prevention and control of industrial hazards and diseases of adult life.

There is no opportunity within the limits of this paper to do more than mention the significant change that has taken place in public health work during the past twenty years. It may be said, however, that this change has altered our entire conception of the functions of public health authorities and their responsibility to the public. Public health education, the recognition of the importance of social welfare work, and the understanding that the members of the community must be educated into cooperation in the enforcement of the health laws rather than to be ordered to enforce them, have resulted in a program of preventive medicine which has made a distinct contribution to the welfare of mankind. Possibly in no other lines have health boards made so little advance as in the control of the common infectious diseases of childhood. The difference between the methods employed in connection with these diseases and the methods used in general preventive health work is fundamental. This may be illustrated by calling attention to the practical methods used in these two fields of work.

In preventive health work, action is always taken in advance of the possible occurrence of any disease or insanitary condition. In other words, in the prevention of infant mortality, every effort is made to see that the mother is instructed in the care of her own health and the care of the health of her baby as soon as the child is born or even into the prenatal period. Former efforts which were directed toward treating sick babies resulted in little or no reduction in the infant mortality rate. Preventive work, directed wholly toward keeping the baby well and reducing sickness by this method, has resulted in a marked decrease in the baby death rate. The elimination of industrial hazards so that workmen may not become tuberculous or may not suffer from any of the so called "occupational diseases" is another instance of true preventive health work. To a certain extent, the campaign for the reduction of tuberculosis partakes of true preventive features; on the other hand, it allies itself with corrective health work in that a large number of the activities directed toward the limitation of its spread start with the

\*Read before the Eighth Annual New York City Conference of Charities and Corrections, May 22, 1917.



reported case. The latter fact is the one that is of greatest importance in our consideration of the problem of the common infectious diseases of childhood. Here the methods used at present in public health work show little or no change from those in vogue twenty years ago. The control of contagious diseases still starts with the reported case. This might be called "after the fact" work. Emphasis is placed upon limiting the spread of infection after the focus has already been discovered. It bears a certain analogy to the treatment of the sick babies mentioned above. It represents almost the only purely corrective phase of public health work which persists at the present time.

The preventive work which has been done in regard to the control of contagious diseases is mainly that which is associated with school medical inspection. This has made an important contribution to the subject and is, I feel sure, the avenue through which most future effort in this direction must come. A study of the tables showing the incidence in ten thousand population, the mortality in ten thousand population, and the case fatality in a hundred cases reported of diphtheria, scarlet fever, measles, and whooping cough, in New York city for the years 1906 and 1916 inclusive, show a reduction in the incidence rate in diphtheria, scarlet fever, and measles, with a marked increase in the incidence rate of whooping cough. The mortality rate in ten thousand population from whooping cough has varied little in these ten years, but the case fatality from whooping cough has decreased from 16.8 to 4.7 per cent. of reported cases. The mortality from diphtheria in ten thousand population has decreased from 4.5 to 1.8, while the case fatality has been reduced from 12.9 to 7.6 per cent. of reported cases. In scarlet fever, the mortality in ten thousand population shows a reduction from 1.2 to 0.2 and the case fatality percentage of reported cases has been reduced from 6.2 to 1.6. In measles, we find a reduction in the mortality in ten thousand population from 2.75 to 0.87, but the case fatality percentage of reported cases shows little deviation, ranging from 2.9 in 1906 to 2.2 in 1916. It is recognized that the case fatality percentage of reported cases is not an accurate method of computing the case fatality rate for these diseases, particularly measles and whooping cough, owing to the failure to report many cases of these diseases. Attention is also called in the tables to the extreme variation from year to year in the incidence of measles and scarlet fever. In the case of diphtheria, a study of the incidence does not show that there is any reason for congratulations upon a definite decrease in the occurrence of this disease. While it may be acknowledged that case fatality in these common infectious diseases of childhood is fairly low, still at certain age groups, notably in infancy, the mortality rate from whooping cough or from bronchopneumonia as a sequela of measles, is a serious menace to infant life.

The sequelæ also must be considered. The possibility of tuberculosis occurring after whooping cough or, to a lesser extent, after measles, heart disease occurring as a sequela to diphtheria, and injury to the kidneys or chronic ear trouble as a result of scarlet fever, means an impairment of the

vitality of children which, considering the almost universal prevalence of these diseases at certain age groups, may be taken to constitute a very serious danger to the general health. When one considers that scarlet fever is probably the most common cause of deafness, is it not significant that during 1914, of the total number of applicants for enlistment in the United States Army who were rejected for physical causes, the second highest cause of rejection, with a ratio of 89.97 per cent., was diseases of the ear, including defects of hearing, while the fourth highest cause was heart disease, with a ratio of 63.26 per cent. Surely, these two facts alone are significant.

Bacteriology has made a definite contribution in the past ten years to the prevention of infectious diseases. The discovery and use of antitoxin in diphtheria, of course, antedates this period. Its value has been demonstrated in the lowering of the death rate, but the incidence of diphtheria has shown little or no decrease in frequency. During late years important contributions to our knowledge of these diseases include the discovery of the Bordet-Gengou bacillus as the cause of whooping cough, the discovery of the virus of poliomyelitis and the value and application of the Schick test, with the use of the toxin antitoxin in the production of immunity from diphtheria. In these lines we see brilliant hopes for the future. What is needed now is full application of our present knowledge of preventive health work upon this problem of the more common infectious diseases of childhood.

1. We need the same broad education of the public that we have employed in our efforts to control tuberculosis and in our child welfare work. We will not control the contagious diseases of childhood without the cooperation of the public. To obtain this cooperation a broad campaign of public health education must be carried on. People should be informed definitely as to the extent and dangers of these diseases. Moreover, they should be told explicitly how they may help to control them. The idea that all children must inevitably contract these contagious diseases should be combated. Fear of hospital treatment must be met and removed. The importance of isolation must be taught not only in cases where disease already has occurred but as part of the general health program.

2. The schools will in the future, as they have in the past, play an important part in the prevention of these diseases. As other methods of controlling measles and scarlet fever have not changed for many years and as the only new feature which has been introduced into the situation is the prevention through school medical inspection, it is reasonable to attribute the decrease in the incidence of these diseases to this type of preventive health work. As the success of our campaign for the control of contagious diseases rests upon their early recognition and the understanding that the majority are most infectious during the early periods, the school is destined to play the most prominent part in our campaign. All sick children should be excluded on suspicion. No sick child should ever be allowed to attend school, no matter what the cause may be. Prompt isolation of all sick children for a sufficient



time to determine whether or not a contagious disease has developed will work little hardship and will prevent the spread of any infection. Schools should not be closed when cases occur among children in attendance. A proper system of school medical inspection affords the very best opportunity of detecting these diseases in their incipency, with the consequent immediate isolation which is so necessary. Dismissing children who have been exposed to disease and allowing them to be unsupervised at home is one of the surest methods of spreading any infection.

3. At the present time in New York city immediately upon receipt of the birth certificate, an official copy of the certificate, together with a letter of advice on baby care, is sent to the mother. The record of the child's age is important for many reasons. On entering school and in obtaining working papers it is required. For establishing the date of birth for military service, for proper inheritance, and for many other reasons, it is essential. Such a certificate, therefore, should be kept with the child and used throughout childhood and in adult life. This certificate should be made part of a small booklet which should be sent out in the same manner as at present immediately upon receipt of the birth certificate. Included in this booklet should be space for proper entry of the occurrence of any contagious disease or any other important record which has to do with the school progress or the physical welfare of the child. The book can be used in school for data of the physical condition as well as date of entrance and date of graduation. The private physician in attendance could make the entry of any case of infectious or other disease, or this entry could be made by the inspector or nurse of the Department of Health. Such a record would furnish invaluable information to the school and general health authorities. In case of the occurrence of an infectious disease in a school child, it would not be necessary to supervise or isolate those who have already had the disease, thus lessening the amount of required supervision.

4. It is difficult to estimate the exact relation of insanitary and unhygienic conditions in homes to the production of disease. It would seem, however, that such conditions bear a near relation to the occurrence of infectious diseases. Clean up campaigns should not be sporadic but should be continuous. Here public health education is again essential, and social service agencies are of the utmost value.

5. In diphtheria we have the promise of possible active immunization of all children by the use of the toxin antitoxin injections. All school children should be subjected to the Schick test to determine whether or not they are naturally immune to this disease. If not, the toxin antitoxin injections should be given. This procedure should be part of the campaign of public health education as it must necessarily depend upon the consent and approval of the parents in each instance. One of the most important points in the spread of diphtheria is undoubtedly the diphtheria carrier. It has been shown that about one per cent. of all children have diphtheria bacilli of a virulent type in their throats or nasal passages. These children are apparently well

and yet are capable of transmitting the disease. The use of the Schick test and the toxin antitoxin injections would render the carrier a negligible factor.

6. The most important preventive means in scarlet fever is early diagnosis. Here the school is the most important agency. With the realization that this disease, as well as the other exanthemata, spreads its infection only by contact with the body discharges, complete isolation is essential.

7. It is necessary entirely to readjust our point of view with regard to whooping cough. The "whoop" which has been considered the danger signal, showing the limitations of the period of infection, has been found to be of value in the beginning of such period but not in its duration. In this country, the Bordet-Gengou bacillus has been demonstrated in the bronchial secretions for a period of only two weeks after the first "whoop" has occurred. Other investigators believe that the danger of the transference of the disease ceases with the beginning of the "whooping" stage. The time to consider the disease dangerous, then, is the incubation period, when there is a generalized bronchitis, and in the early days of the "whoop" period. The period of quarantine need not extend beyond two weeks after the appearance of the "whoop," but the exclusion from school of all children with bronchial colds should be insisted upon. Separate clinics for whooping cough should be established. The use of ferryboats as day camps for this purpose is one of the best means of segregating children suffering from this disease, as well as affording them open air treatment. The use of some badge of distinction for these children has been tried but has not been found advisable. However, such children should be barred from all public conveyances or public places.

8. Measles, the most acutely contagious and widespread of the infectious diseases of childhood, is the one about which least is known. When it is recognized that the infection is not air borne, but comes from contact with body discharges, the value of isolation is readily seen. Necessity for early diagnosis is again the main feature. School medical inspection offers the opportunity of early exclusion from school and isolation of all children with coryza, which is usually the first symptom to be noted.

9. Knowledge regarding the prevention of poliomyelitis is still far from complete, but there are certain methods which are of value in the prevention of this disease. First are those which have to do with general sanitary conditions, such as prevention of the handling of foodstuffs by persons who have been in contact with cases of poliomyelitis, and the cooking or thorough washing of all foodstuffs during times when the disease is prevalent. While it is not at all certain that insects may carry the disease germs, the use of screens is advisable and care in this regard should be practised as rigorously as it should be in malaria or typhus fever.

The disease is in all probability transmitted chiefly by direct contact with the patient or by carriers and it is probable that the infectious material is taken into the body or transmitted from a person through the nasal and throat secretions. To a lesser extent, the bowel discharges may be considered infectious.

For this reason absolute personal cleanliness is necessary. The habit of washing the hands before each meal and certainly after contact with any patient ill with this disease is essential. The hands of all persons should also be thoroughly washed before the handling of any foodstuffs. Care should be taken to prevent droplet infection and those in attendance upon persons ill with this disease should be particularly careful not to infect their hands with the body discharges of the patient.

Adults of the household may continue their vocations, provided, of course, the patient is properly isolated. It is well for everyone who comes in contact with the disease and, indeed, for all persons during a time of epidemic, to keep their mouths and throats in as cleanly and wholesome a condition as possible. Here dental hygiene and the use of simple antiseptic mouth washes may be of the greatest importance.

10. Methods for individual prevention of infectious diseases have mainly to do with matters of personal hygiene. The majority of the diseases here considered find their point of entry into the human body through the nose and throat, and the discharges from the noses and throats of sick persons or healthy carriers are the means of spreading the infections. It would logically seem, therefore, that more detailed attention should be paid to the hygiene of the mouth and nose. The teaching and practice of oral hygiene should be applied to every child in the community. There is reason to believe that decayed teeth and unclean conditions of the mouth may be a factor of extreme importance in the occurrences of these diseases, therefore universal preventive dental hygiene is one of the important means of prevention. For the same reason, personal cleanliness should be emphasized. The practice of having children wash their hands before each meal should be insisted upon and should be taught in the home and in the school. Economy in the provision of proper washing facilities in schools is to be deprecated. Such facilities are of the utmost importance. The value of the use of nose and throat sprays in the prevention of the infectious diseases of childhood is still a matter of investigation. With our present knowledge we are safe in saying that, properly manipulated, the use of some mild antiseptic solution for washing the nose and throat regularly is to be recommended. Such a solution should be very bland and mild, such as a normal salt solution. Attention is also called to the necessity of teaching children the proper use of the pocket handkerchief, and the possible danger from droplet infection from any unrestricted coughing or sneezing.

#### MEASLES.

Year.	Incidence per 10,000 population.	Mortality per 10,000 population.	Case fatality per 100 reported cases.
1906.....	92.8	2.75	2.9
1907.....	38.5	1.69	4.4
1908.....	85.6	2.17	2.5
1909.....	68.9	2.17	3.1
1910.....	73.8	1.63	2.2
1911.....	51.8	1.34	2.6
1912.....	77.0	1.25	1.7
1913.....	55.6	1.21	2.1
1914.....	48.4	1.05	2.2
1915.....	70.0	1.15	1.6
1916.....	38.5	0.87	2.2

#### SCARLET FEVER.

Year.	Incidence per 10,000 population.	Mortality per 10,000 population.	Case fatality per 100 reported cases.
1906.....	18.9	1.2	6.2
1907.....	36.6	1.9	5.0
1908.....	54.0	2.0	5.4
1909.....	26.0	1.7	6.3
1910.....	39.5	1.9	5.0
1911.....	32.0	1.5	4.7
1912.....	25.1	1.2	4.8
1913.....	20.6	0.9	4.7
1914.....	20.8	0.8	4.0
1915.....	18.1	0.8	2.9
1916.....	10.4	0.2	1.6

#### DIPHTHERIA.

Year.	Incidence per 10,000 population.	Mortality per 10,000 population.	Case fatality per 100 reported cases.
1906.....	35.4	4.5	12.9
1907.....	35.4	4.0	11.4
1908.....	36.7	3.9	10.7
1909.....	32.6	3.7	11.4
1910.....	35.3	3.5	10.1
1911.....	27.4	2.6	9.5
1912.....	26.7	2.2	8.3
1913.....	27.9	2.5	9.2
1914.....	32.1	2.7	8.7
1915.....	27.9	2.3	8.4
1916.....	24.1	1.8	7.6

#### WHOPING COUGH.

Year.	Incidence per 10,000 population.	Mortality per 10,000 population.	Case fatality per 100 reported cases.
1906.....	5.2	.8	16.8
1907.....	4.5	.9	20.4
1908.....	2.6	.4	15.9
1909.....	5.0	.8	14.5
1910.....	4.2	.6	14.5
1911.....	0.5	.7	11.9
1912.....	4.2	.5	13.4
1913.....	6.8	.8	11.9
1914.....	7.1	.7	7.3
1915.....	12.4	.7	5.9
1916.....	13.3	.6	4.7

33 WEST NINETY-SIXTH STREET.

### SINUS THROMBOSIS FOLLOWING FRACTURE OF THE SKULL, WITH SUBSEQUENT ACUTE MASTOIDITIS AND ERYSIPELAS.\*

#### Operation, Recovery.

By WILLIAM WESLEY CARTER, A. M., M. D.,  
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Aside from the interesting features of this case, the writer feels that it is important to direct attention to this class of injuries, very dangerous in their nature and sometimes extremely obscure in their symptomatology, which may, as in the present instance, involve those parts in which we are especially interested.

CASE.—The patient was a well developed man, forty-three years of age, a waiter by occupation. His family history had no bearing on his present condition. He denied specific infection, and was a moderate drinker. Two years ago he was struck over the head with a blackjack, but recovered entirely from the injury. On February 13th, while waiting for a trolley car, he was struck by a truck. He was brought to Gouverneur Hospital in an unconscious condition. Examination: Patient unconscious, skin over right eye swollen and sclera of this eye ecchymotic.

\*Read before the Otolological Section of the New York Academy of Medicine, May 11, 1917.

Pupils were unequal, the left being quite small, and did not respond to light; the right is dilated. Colles fracture of the right wrist. Profuse hemorrhage from right ear. A clinical diagnosis of fracture of the skull was made. X ray examination showed a linear fracture of the skull in the right temporal region. The right frontal sinus was obscured, probably being filled with blood. Three days after admission patient's mental condition became clear. Hemorrhage from the ear continued. On February 18th, five days after admission, I was asked to see the patient on account of the persistent hemorrhage from the ear. I advised irrigations with hot boric acid solution, to be followed by a solution of adrenalin dropped in the ear; also ice bag to the side of the head. Within twenty-four hours the hemorrhage ceased. The patient's condition was apparently satisfactory until March 6th, twenty-one days after injury, when he complained of very severe pain in his right ear, from which the hemorrhage had occurred. This pain extended down the side of his neck. The temperature, which had been normal since admission, began to rise and reached 105° F. The urine showed a large amount of albumin and some hyaline casts. Blood culture negative. Blood count: white cells, 11,550; polymorphonuclears, seventy-six per cent. There was no tenderness over the mastoid bone, but the tenderness over the upper two thirds of the sternocleidomastoid was exquisite. The muscle was considerably swollen. The patient could not move his head, was in great pain, and begged piteously for relief. Thinking of a probable sinus thrombosis, I decided to operate, though there were no classical symptoms of mastoiditis present.

The mastoid antrum and all of the mastoid cells, which were large and extensive, were found filled with clotted blood. In view of the swelling and tenderness in the neck and along the course of the jugular vein and the fact that the sinus showed almost black through its thin bony covering, I uncovered the sinus. It was dark blue in color and on indenting it with a probe it did not resume its normal shape. Evidently it was filled with a clot. I made an incision into it; there was no bleeding. I then uncovered about one inch of it and with a pair of bayonet forceps I withdrew from the direction of the torcular a firm clot about three inches in length which reached perhaps as far as the torcular. Free bleeding immediately occurred. The clot was composed in its outer half of fibrin, showing, I presume, that clotting had occurred slowly and had proceeded from within outward. After plugging the distal end of the sinus I succeeded in removing a similar clot from the direction of the bulb. So firm was this clot and so loosely adherent to the sinus walls, that it showed when removed the curve of the sigmoid sinus. In my exploration of the sinus and the adjacent bone I could discover no fracture. I then exposed the jugular vein, and finding that there was no clot below the entrance of the facial vein, I tied it. Cultures made from the clots removed from the sinus proved them to be sterile. Shortly after the operation the temperature went to 106° F., but in three days it fell by lysis to normal. The patient was relieved of his excruciating pain in the neck and became rapidly convalescent. At times he showed signs of mental aberration and he complained of headache. I attributed these symptoms to disturbed cerebral circulation.

On March 23d, two weeks after operation, the patient complained of pain in the left ear. Paracentesis was followed by a purulent discharge—streptococcus. Two days later tenderness and swelling developed over the mastoid. Temperature was 105° F. Mastoid operation was performed on March 28th. The mastoid cells were filled with pus. Culture showed a streptococcus infection. Two days after the operation erysipelas developed around the mastoid wound, this spread over the side of his head; temperature 105° F. Erysipelas was under control in five days, and since this time the patient has been slowly recovering, and he expects to leave the hospital in a few days.

69 WEST FIFTIETH STREET.

## NONTUBERCULOUS CASES IN A HOSPITAL FOR ADVANCED CONSUMPTIVES.

BY JACOB KRAMER, M. D.,

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Mistakes in diagnosis are more or less common in every clinic, especially in those in which autopsies are frequently available. The man who makes no diagnostic errors is generally the one who has very few patients. That mistakes are less frequent in private practice is undoubtedly due to certain conditions into which I shall not enter here. However, treating a case of lobar pneumonia for bronchopneumonia, paratyphoid for typhoid, or achylia gastrica for "dyspepsia," is as a rule harmless; but errors in diagnosis of pulmonary tuberculosis are usually of grave importance. Sending a quiescent case of tuberculosis, a case of incipient tuberculosis, or a case of chronic bronchitis to a hospital for advanced consumptives is of serious import to the patient concerned and to his family, if only because the stigma of tuberculosis will always be attached to him.

The problem of pulmonary tuberculosis as regards diagnosis has always been attacked from the viewpoint of the incipient and even by some from the pretuberculous stages. This is necessarily so, as with our present knowledge of the subject, we know that we can get the best results in the treatment when we get the case in the earliest stage. Upon perusing the reports and statistics of various sanatoriums, we find that among patients admitted in the first stage of the disease over fifty per cent. are discharged arrested cases.

In our anxiety to arrive at a diagnosis of early tuberculosis, many patients have been sent away to sanatoriums as tuberculous, who on further examination and study and after the application of the finer tests for differential diagnosis, have been found to be nontuberculous, thus involving a great and useless expenditure of time, money, and energy. In most cases homes have been broken up, the children sent to institutions, or the families became totally dependent upon the local charities. This condition is extremely aggravated when the presumably tuberculous wage earner has been sent away to great distances as to Colorado, California, etc. In the vast majority of these cases the patient acquires phthisiophobia and becomes a confirmed neurasthenic, attributing his various aches and pains to pulmonary tuberculosis. He either does no work at all, or looks for light work with the accompanying light remuneration. These people often travel from sanatorium to sanatorium, not only in their own State, but from one State to another.

Errors in diagnosis in incipient pulmonary tuberculosis are quite frequent and we expect them; but we are apt to think that the diagnosis of tuberculosis in its advanced stages is a very simple matter, and therefore at times may be careless, forgetting that there are a great many other conditions in the chest giving rise to physical signs simulating those of tuberculosis. The reasons for this are various. The history of the case is not carefully studied; the sputum is not examined, and the patient is sent to



a hospital for advanced consumptives to end his few remaining days, simply because of some vague symptoms and physical signs. That this occurs not only with general practitioners, but with physicians who should be experts in the diagnosis of chest conditions, will be evidenced by the clinical histories of the following cases which were admitted to the Montefiore Home and Hospital with diagnoses of advanced pulmonary tuberculosis. These cases are only a few examples of many which we encounter in our hospital work.

CASE I.—A. G., female, forty-five years old, widow, admitted April 11, 1916. The family and previous history revealed nothing of importance. The present illness dated back thirteen years, when she had her first pulmonary hemorrhage. Since then she has had about twenty hemorrhages, but in spite of that she felt fairly well until a year before admission, when she began to complain of a slight dry cough, pains in various parts of the chest, anorexia, and constipation. She attended a tuberculosis clinic for about four months and was then sent to the Montefiore Home, evidently because tuberculosis in the advanced stage was established to the satisfaction of the clinic physicians. The physical examination of the chest shows impaired resonance over both apices anteriorly and posteriorly; no adventitious sounds were ever elicited, except at one examination there were signs suspicious of a small cavity at the right supraspinous fossa, but this was never confirmed subsequently. Her heart showed no abnormalities. The pulse, temperature, and respirations were normal. The systolic blood pressure is 120, and the diastolic 80. The urine was negative, and also the sputum on six examinations.

This patient who presents no physical evidences of active pulmonary tuberculosis, is sent to a hospital for advanced consumptives, thus putting a stigma upon her in the eyes of her family and friends which it will be difficult for her to remove. She also has taken up a bed which could have been used with much more profit by patients who are sick and in need of hospital care.

CASE II.—B. S., female, ten years of age, admitted September 13, 1916. The mother had died of pulmonary tuberculosis at the age of twenty-nine, when the patient was ten weeks old. When two years of age patient had tuberculosis of both knee joints and also of the right hand; she was operated upon several times for this condition. The child gave a history of frequent colds; she had been coughing since July, 1916, but had no other symptoms pointing to tuberculosis of the lungs. The physical examination of the chest showed a high pitched percussion note at the right apex, but the auscultatory findings show nothing abnormal. The heart was normal. The pulse and temperature were also normal. The urine was negative.

Pulmonary tuberculosis is not often seen in children who have had glandular or osseous tuberculosis. Active pulmonary tuberculosis in children is comparatively infrequent, and it is certainly seldom seen in the advanced stages. This child, showing no signs whatsoever of any active disease in the chest, was sent to a hospital for advanced and hopeless cases of tuberculosis. We should be extremely careful before making a diagnosis of advanced disease in the young, and should be absolutely certain before we send them to live in a hospital filled with terminal cases.

CASE III.—L. G., female, fifty-seven years of age, admitted June 10, 1914. The family and previous personal history was negative except for an attack of gastritis one year before admission; following this attack, she began to complain of a slight cough, expectoration, and a feeling of oppression in the chest; she had no other symptoms. Went to a clinic and was told that she suffered from advanced

pulmonary tuberculosis, and was advised to apply to the Montefiore Home. The physical examination of the chest revealed dullness at both apices and bronchial breathing at both supraspinous fossae. No râles were heard. The sputum was negative for tubercle bacilli upon twenty-two examinations. A guinea pig injected with her sputum showed no tuberculous lesions at autopsy. The urine and the Wassermann reaction of the blood were negative. The temperature and pulse were normal. The dullness at the apices was undoubtedly due to the fact that the patient was markedly stooped; her chest was of the rachitic type and showed numerous large veins over the anterior surface, probably due to intrathoracic pressure dating back to childhood.

A woman with a history of one year's illness and with the above mentioned physical signs should certainly not be sent to a hospital for advanced cases. No matter what the findings in the chest may be due to they do not show an advanced active lesion.

CASE IV.—L. K., male, fifty-one years old, admitted June 12, 1914. The family and the previous personal history was negative. The present illness dated back to one year before admission, when he began to cough, lose weight and strength, had night sweats and pains in the right chest. These symptoms gradually increased so that in a short time he was forced to give up his work. Never had hemoptysis. Physical examination of the chest disclosed consolidation of the right upper lobe with cavity formation anteriorly and a pleural rub at the right base posteriorly; upon a few occasions signs of cavity were suspected at this base. The left side showed nothing abnormal. In spite of the fact that he absolutely denied any venereal diseases, upon four different occasions the blood gave a four plus Wassermann reaction. But the administration of salvarsan and mercury had no apparent effect upon the lesion. The sputum upon twenty-four examinations was negative for tubercle bacilli. The temperature and pulse have been normal.

This case shows lesions bronchiectatic in origin, probably due to syphilis, in spite of the fact that there was no apparent improvement upon antilietic treatment. The absence of any variations in temperature, the normal pulse rate, and the negative sputum, all point to the nontuberculous character of the lesion. This should teach us that we should not hasten to make a diagnosis of advanced pulmonary tuberculosis when the physical signs of cavity formation are demonstrated.

CASE V.—E. R., male, sixty-five years, admitted June 10, 1916. The family history was negative. The patient had an attack of pneumonia five years before his admission; was confined to bed for ten weeks and was left with a cough and a pain in the chest underneath the sternum. He attended a clinic and was advised to apply to the Montefiore Home. Examination showed a man of medium size and of fair nutrition; the spinal column presented a marked kyphoscoliosis with the convexity to the right. There was a distinct retraction at the lower half of the chest posteriorly, with inspiratory retraction of the intercostal muscles; the resonance was impaired over the same area and a mixture of large and medium sized moist râles were audible. Similar râles were heard over the right base, which also bulged with the convexity of the spine. The heart was normal in size and a cystolic murmur was heard at the apex, which was not transmitted, probably hemic in origin. The temperature and pulse were normal. The urine was negative; the sputum failed to show the presence of tubercle bacilli upon eighteen examinations.

This patient was discharged to another service of the hospital as a case of bronchiectasis with an old thickened pleura at the left base. Admittedly it takes time and careful observation to differentiate between signs in the chest due to pulmonary tuberculosis and those due to bronchiectasis; but it is fair that this should be done at the clinic before the pa-

tient is sent to the hospital as an advanced consumptive.

CASE VI.—M. H., male, sixty-three years, admitted May 8, 1910. The family history was negative; patient had been married for forty years; his wife has had no children and no miscarriages. Had pneumonia twenty years ago. His present illness dated back six months, when he became acutely ill with chills, fever, and severe pains in the left chest; this was diagnosed as pneumonia. He was in bed for three weeks when he began to complain of pains in the right chest; the cough and expectoration continued. Six weeks after the beginning of his illness he began to have blood tinged sputum and pain and weakness in his left arm; the latter complaint persisted throughout. About three months ago he noticed a small growth over the spine in the lower dorsal region, which has been gradually increasing in size. The chief complaints on admission were debility, frequent small hemoptyses, pain in the left upper extremity, and in both sides of the chest.

The examination showed a man of medium size, markedly dyspneic; his voice was very husky. There was edema down to his lower extremities; from the thighs down there was extreme emaciation; the edema was more marked in the right side. The neck and face were cyanotic, the fauces and uvula were edematous. The cervical, axillary and inguinal glands were not palpable. The heart sounds were distant but there were no murmurs. The lower border of the liver was on the level with the umbilicus and was rough and hard. The entire right chest, except the apex, gave a flat note to percussion, both anteriorly and posteriorly; the apex was resonant. Bronchial breathing was heard over the upper lobe on the right side and the breath sounds were absent at the base. The left chest was hyperresonant anteriorly and posteriorly; no changes on auscultation. Over the ninth and tenth dorsal vertebrae there was a tumor the size of a pigeon's egg; it was of cartilaginous consistency, moved freely over the underlying tissue, and the skin was slightly adherent to it. The pulse and temperature were normal, the respirations averaged 26 to the minute. The systolic blood pressure was 102, and the diastolic 65. The urine and sputum were negative. The blood showed a secondary anemia; the white cell count was 12,200. The Wassermann blood test and the complement fixation test for tuberculosis were both negative. Upon the above findings the diagnosis of intrathoracic tumor was made.

Course of the disease: The patient gradually became more and more debilitated; the edema increased; the flatness over the right chest became more pronounced, although the right apex remained constantly resonant. The liver increased in size and hardness, and many large nodules could be felt over the anterior surface. On five different occasions between twenty-four and forty-five ounces of a sero-sanguineous fluid were withdrawn from the right pleural. The patient died on June 28, 1910, of ashenia. The autopsy confirmed our diagnosis; a carcinoma of the right lung and pleura was found with multiple carcinomatous nodules in the liver.

Here we have a case of carcinoma of the lung, which on careful physical examination was not difficult of diagnosis, but on account of the tendency of ascribing all abnormalities within the thorax to tuberculosis, this patient was sent to a hospital for advanced pulmonary tuberculosis as a case in the last stages of the disease.

Neurasthenia was the name applied some time ago to cases which were difficult or impossible of diagnosis. With the present reign of phthisiophobia, it seems that these cases are often put under the classification of pulmonary tuberculosis. This is especially so if the patient complains of a slight cough in addition to his other vague symptoms. In my experience as physician in tuberculosis sanatoriums, both in New York and in the Middle West, I have found that a large proportion of patients are kept who are either nontuberculous or show no signs of any activity in the lungs. Many case of nonactive tuberculosis are kept in the sanatorium "taking the cure," doing

little or no work for from six months to a year, until they become overweight and lazy, and are not good for anything upon returning to their normal environment. No attempt is evidently made to differentiate between the latent and the active case of pulmonary tuberculosis on the one hand, and between tuberculous and nontuberculous pulmonary affections on the other.

We must bear in mind that dullness on percussion and changes in breathing may be caused by conditions other than tuberculosis. In making a diagnosis, the history, temperature and pulse are of the utmost importance, and often mean more than the physical signs. Upon superficial consideration, the problem of the diagnosis of advanced pulmonary tuberculosis apparently presents no difficulties; but if we pause to consider the many conditions in the chest which may simulate it, we will readily see that each case must be carefully studied before we commit ourselves to a definite diagnosis. I have seen chronic bronchitis, pleurisy with effusion, empyema, pulmonary abscess and gangrene, carcinoma, and syphilis of the lung, diagnosed as advanced pulmonary tuberculosis. The ease in demonstrating the physical signs in conditions simulating advanced tuberculous lesions often leads us into errors which could be prevented if we took more care in their interpretation.

The cases above cited could be multiplied many times in our service at the Montefiore Home, and I am certain that the same is true of many of our institutions caring for advanced cases of pulmonary tuberculosis.

I wish to express my gratitude to Dr. M. Fishberg, attending physician to the Montefiore Home and Hospital, for his many valuable suggestions, and also to Dr. S. Wachsmann, medical director, for permission to publish this paper.

1695 BATHGATE AVENUE.

## FATALITIES IN ATHLETIC GAMES AND DEATHS OF ATHLETES.

By ROBERT E. COUGHLIN, M. D.,  
New York.

Nine hundred and forty-three lives were sacrificed on the fields of athletic sport for a period of ten years ending with but not including the year 1916. Baseball heads the list with 284 fatalities; football is second with 215; auto racing third with 128; boxing fourth with 105. Seventy-seven cyclists and fifty-four jockeys lost their lives; fifteen wrestlers perished on the mat; fourteen persons lost their lives playing golf; nine were killed at bowling, and one died while playing lawn tennis. Total deaths collected during 1905 were 128; 1910, 206; 1915, 150. There were seventy-eight fatalities directly due to games and contests during 1905; 129 during 1910; sixty-eight during 1915. During 1905, 1910, and 1915, respectively, there were the following number of fatalities in football, twenty-eight, thirty-three, twenty-one, prevailing injuries being fracture of the skull, dislocation of the vertebrae, broken neck, internal injury; in baseball, twelve, twenty-four, fourteen; boxing, six, twenty-three, nine, prevailing injuries being overexertion,



fracture of base of skull, heart blow. Deaths by disease during 1905, 1910, and 1915, respectively, were as follows: heart disease, eight, eight, nine; typhoid fever, four, six, two; tuberculosis, seven, three, one; pneumonia, seven, two, four; Bright's disease, five, two, two; appendicitis, four, one, four; apoplexy, one, one, one; suicide with mental disease, two, none, two; meningitis, nine, none, one; deaths by disease but not classified, thirty-one, forty-eight, thirty-nine.

Other diseases which caused death in 1905 were: suppurative tonsillitis, splenic anemia, senility; in 1910, peritonitis, goitre, tabes, hemorrhage, empyema, cancer, insanity, operation, arteriosclerosis, paralysis, complications, liver disease, septic wound; in 1915, erysipelas, indigestion, complications.

In 1915 thirty-two athletes at the front lost their lives in action: Rugby players, four; all around, five; football players, two; golfer, one; pugilist, one; polo player, one; lawn tennis player, one; cricketer, one; bicyclist, one; various, fifteen.

Other causes of death not mentioned in 1905 were: Gymnastic feats, three; auto driving, two; hammer throwing, bike coasting, handball, polo playing, wrestling; in 1910, basketball, four; dancing, three; polo playing, two; weight lifting, two; lawn tennis, wrestling, swimming, high kicking, aviators, twenty-nine; in 1915, gymnastic stunts, basketball, long distance running, sprinting, golf, polo, pole vaulting, motor cycling, dancing, wrestling.

In 1916 there were fifteen deaths directly due to football. In most cases the victims were members of high school, semiprofessional, and "prairie" elevens. Only one was a college player. Two of the players suffered broken necks, but a majority died of internal injuries. In 1915 four players were fifteen years or under, one being only eleven years old. Four were seventeen years old, while others ranged to twenty-one years. In 1910, nine were physically fit college men, ten were high school and grammar school boys, while eight were occasional players of the game.

In 1905, seventeen were high school players, all immature boys of eighteen or under. Three were physically fit college men, while the others were occasional players.

No brief is necessary in a consideration of this subject as figures very often speak for themselves. Accidents will always happen, but providence is always on the side of the physically fit. This should be our watchword in our present crisis more than ever before. The survival of the fittest comes to the fore again with added suggestiveness.

Let us have games, athletics, athletes, baseball, pugilism, golf, polo, rowing, swimming, tennis, cricket, running, sprinting, basketball, cycling, weight lifting, wrestling, dancing, skating, aviation stunts, walking, jumping, bowling, all around performances, even football, but every means should be used to make our young men physically fit to survive athletic contests without suffering injury to their constitutions. In this way we may hope to make them the ideal soldiers of the future.

428 FORTY-SEVENTH STREET, BROOKLYN.

## Correspondence

### MEDICAL MATTERS IN WASHINGTON.

*Additional Hospital Accommodations Required for the Insane—Increased Hospital Facilities for the Navy—Ambulance Ships Needed—Division of Sanitation for the Navy.*

WASHINGTON, June 19, 1917.

A serious problem has been presented to the Army medical authorities in the taxation to its utmost capacity of the Government Hospital for the Insane at Washington. This institution will probably be unable to care for the large number of those destined to suffer with mental aberration due to trench warfare and other incidents of the service. In most cases it has been found that such patients under proper conditions may be wholly restored to health and to duty after a brief period of treatment; and, since the hospitals maintained by the army are not well equipped for the care of insane, it is highly desirable, of course, to have these persons treated in institutions where they can have the benefit of the special provisions made for the mentally deranged. Accordingly, the Secretary of War has authorized the surgeon general of the army to make arrangements with private institutions for the care of those of the military establishment suffering from mental disorders other than the more violent cases and those that cannot be accommodated at the Government institution.

It is expected that increased hospital facilities of more or less temporary character that are being provided for the Navy will be ready for use by September 1st. These additional facilities are being provided at New Orleans; Pensacola; Key West; Charleston, S. C.; Norfolk; Washington; Philadelphia; Newport; naval training station, North Chicago; Las Animas, Colo.; naval training station, San Francisco; Bremerton, Wash.; San Diego, Cal.; Portsmouth, N. H., and at the new marine corps post at Quantico, Va., at an aggregate cost of about \$2,000,000. At most of these places, the hospitals are intended to take care of the sick of the newly enlisted personnel. In addition to these emergency service arrangements, civil hospitals at New York, Philadelphia, and Boston will accommodate the overflow.

One of the problems to which attention is being given by the Secretary of the Navy and the Surgeon General is the acquisition for the naval service of vessels that may be converted into hospital and ambulance ships. The latter type is preferred to meet the exigencies of the service, following the practice of the British in utilizing vessels for the transfer of sick and wounded from ships at sea to hospitals on shore, rather than attempting to maintain afloat a large number of ships with complete hospital equipment.

Delays in the appropriations of funds by Congress for ships that might be bought or chartered for use as ambulance ships have been a serious matter for the Navy Department. Vessels that once were obtainable and could have been converted for the purpose have been acquired by the War Department, and some difficulty is apprehended now in getting ships that will meet all the requirements.



In any event, it will take months to equip vessels that can be obtained for transportation of sick and wounded. The *Solace*, the only hospital ship in the navy at the outbreak of the war, is being employed constantly in trips between the fleet and Norfolk.

Surgeon General William C. Braisted, of the navy, and the medical officers immediately under him are receiving much praise from the naval authorities for the successful manner in which they have handled the enormously increased work of the bureau of medicine and surgery of the navy during the past few months. Reports to the bureau from the various naval hospitals indicate that the normal rate of sickness from two and one half to three and one half per cent. is maintained in the navy aside from the epidemic rates, which have shown an unusual increase, particularly at the naval training station at Norfolk, where, among other diseases, mumps has been more or less prevalent. No apprehension, however, is entertained concerning the epidemic, as the situation is well in hand. The scattered cases of meningitis that have occurred in various places are rapidly disappearing.

In the bureau of medicine and surgery there has been established a new division of sanitation, with Surgeon Joseph R. Phelps, of the navy, in charge. This new branch, among other things, will take charge of the increased volume of sanitary statistics. Attached to it will be seventeen officers of the Public Health Service, two of whom will be on duty in the bureau, and one on duty in each naval district as sanitary inspector. It is planned also to send one of these sanitary officers abroad, and to detail others for duty at the larger naval training camps.

#### CHICKAMAUGA TRAINING CAMP FOR MEDICAL OFFICERS.

*Twelve Hundred Recent Arrivals—Accommodations for 2,500 Provided—Sirensous Training Schedule Laid Out—Lieutenant Colonel Henry Page, N. C., U. S. A., in Command.*

FORT OGLETHORPE, GA., June 13, 1917.

The medical officers' training camp in connection with the Fort Oglethorpe division encampment is not different from the other cantonments on this historic field. The camp or cantonment is situated in an open field east of the post, in the Government reservation just outside of that ground made historic by the battle of Chickamauga, fought in November, 1863, and which has given Chickamauga a conspicuous place in the country's history. The camp is composed of thirty-six frame buildings or cantonments, similar to those in the twenty or thirty other camps located on the battlefield for regulars and reserve officers in training; each of these buildings will accommodate seventy-five men. Besides, there are accommodations for from 200 to 500 recruits, the Tennessee field hospital unit, and the Tennessee ambulance company of the National Guard of Tennessee. These two units are only temporarily quartered at the camp and are being used for the purpose of instruction until the United States camp is fully organized.

This camp is to include both student officers and enlisted men. The orders issued by the War Depart-

ment set out a detailed schedule of a week's work in the camp when it is fully organized. This schedule is similar to the schedule used in all of the training camps for reserve officers and combines strict military discipline as to conduct with work.

The work of building the cantonments is not yet complete and probably will not be for more than a fortnight, but the officers are on hand and are working out the details so as to be ready for their scheduled duties. The camp is under command of Lieutenant Colonel Henry Page, commandant; Major Roger Brook, assistant commandant; Major Raymond C. Turck, adjutant; Captain A. D. Parce, quartermaster and ordnance and mess officer; Major S. L. Owen, camp sanitary officer; Major R. L. Carswell, provisional director of field hospital; Captain Mahlon Ashford, director of ambulance company; Captain C. D. Cowles, surgeon in charge of camp infirmary, vaccination, and vaccination records; Captain Eugene C. Northington, assistant captain in charge of instructions of regimental detachments; Captain Fred M. Fogle, assistant quartermaster; Captain H. S. French, assistant quartermaster.

Recruits to the number of 1,200 have already arrived and by July 1st it is expected that there will be a total of 2,500 in the camp. These will be formed into four field hospitals and four ambulance companies, six regimental detachments, and sanitary organizations. The enlisted men, as fast as they arrive, are being organized in provisional field hospital companies of 160 men, provisional mule drawn field hospitals of 162 men, provisional motor ambulance companies of 238 men; and provisional mule drawn ambulance companies of 300 men. The assistant commandant has charge of the drill and instruction and it is his duty to assign instructors therefor. All officers are required to attend lectures to qualify as quiz masters. Under the orders of the War Department, directors of unit and the assistant camp surgeon are designated as heads of the departments, as the head is understood in colleges. The course of study consists of a basic course, which is the foundation course for all prospective officers who must qualify at this camp. The course of special instruction outlined requires that each officer be thoroughly familiar with his organization property, the care and management thereof, and the uses for which it is intended. At the end of the first week's instructions the officers and instructors are authorized to make promotions and demotions from each class and this will continue throughout the entire course. At the termination of the course those passing satisfactory examinations will become officers from whom selection will be made for assignment to the new army. Recommendations for such assignments will be determined by the class standing of the student officer and of his suitability for service. This will involve a good deal more than mere learning, for some of the students of high intellectual capacity are deficient in the personal qualities which would fit them for the command of men.

Enlisted men of the medical corps are also being trained here and the standing which they make will determine whether or not they will be recommended for promotion to the grade of noncommissioned officers or will continue to serve as privates.

# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal

and The Medical News

*A Weekly Review of Medicine*

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A. R. ELLIOTT PUBLISHING COMPANY,

Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single copies, fifteen cents.

Remittances should be made by New York Exchange, post office or express money order, payable to the A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JUNE 23, 1917.

### THE ABDOMINAL VISCERA IN WAR SURGERY.

The frequency of abdominal wounds even in civil practice lends peculiar interest to the gleanings from this field in war service. The growing recognition of the necessity of quick, and radical action in abdominal injuries has quickened this branch of surgery. The result is an increasing knowledge of the extent, involvements, and prognosis of the variety of these injuries.

Much valuable detail is already available concerning the wounds of each individual viscus, as reported from the work of Cuthbert Wallace at the front (Wallace: War Surgery of the Abdomen, *Lancet*, April 14-28, 1917). It would naturally be assumed that the small intestine was most liable to injury. It does in fact receive injury in about one third of the cases. The wound may involve it alone, or the stomach, colon, or most frequently the bladder may be implicated with it. Shock and hemorrhage usually cause death; if the patient still survives, peritonitis sets in. There is frequently multiple perforation of the small intestine. Injuries here call for complete exploration without delay.

The colon is affected in a manner peculiar to its structure. There are fewer perforations because

of the absence of coils. It is, however, frequently found injured by bone spicules which have penetrated its walls. Infarction also occurs. There is a heavy mortality due to acute sepsis, which arises from retroperitoneal wounds. These occur with great frequency because of the absence of mesentery over much of the intestine.

There are many types of wound found in the stomach, depending upon the nature of the projectile and the course it has taken. Severe hemorrhage is likely to occur, which with shock may cause death. Here also peritonitis ensuing later may cause death. Therefore operation is here strongly indicated and should be undertaken by a radical exploration through a paramedial incision. Suturing of the wounds may be very difficult, yet excision is not recommended unless the wounds are very ragged. Gastroenterostomy may be necessary in extreme cases.

Prognosis is unusually favorable in injuries of the liver and operation is not indicated unless other organs are involved. The spleen apparently can be removed without serious result, and Wallace suggests that the number of soldiers now pursuing ordinary vocations without this organ might furnish instructive data regarding the influence of its absence upon blood production. Injuries to the bladder are usually due to or aggravated by fracture of the pelvis. Shock, hemorrhage, and later sepsis constitute the sources of danger. Many complications may occur with injuries of this organ. The spleen, liver, and colon are often involved in wounds of the kidneys. Injuries to the kidney consist of rupture, perforation, scores, furrows, avulsion of poles, and hemisection. In perinephritic hematoma it is usually sufficient to provide a drain for intraperitoneal hemorrhage or ablation for secondary hemorrhage, which is frequent. Nephrectomy may sometimes be necessary. Hematuria is usually present, though it does not as a rule manifest itself at once. When death occurs it is due to shock and hemorrhage.

Injury to the hollow viscera is more serious and causes the greater number of fatalities. Either hollow or solid viscera may be directly ruptured by the projectile or seriously damaged by splinters of indriven bone. The hollow organs are also sometimes damaged by indirect violence, a phenomenon which the author suggests as worthy of consideration in abdominal injuries encountered in civil practice.

Of course mortality in abdominal wounds and the outcome of operative treatment is largely de-

pendent upon the accompanying injuries. Still the decided reduction in the mortality in these cases is the first consideration in favor of extension of operative treatment. The detailed knowledge gained in form and seriousness of wounds to the individual viscera, method of exploration and treatment, and relative prognosis is of no less value in the further course of military surgery and in civil practice as well. Wounds of the abdomen are always frequent, but knowledge of them has remained obscure and surgery cautious. War presents drastic conditions and from them progress may draw its practical lessons.

#### STANDARDIZING MEDICAL AND SURGICAL SUPPLIES.

On April 15th, 250 manufacturers of supplies used by the medical department of the army appeared by invitation at the office of the Medical Section of the Council of National Defense. After an address from the Surgeon General, Dr. F. F. Simpson, and others outlining the purpose of the meeting, the manufacturers organized in nine different groups representing the different classes of goods. Each group chose an executive committee to confer with the officials regarding the goods made by the members of the group.

The Secretary of War as chairman of the Council of Defense appointed a committee on standardization to select a minimum number of articles essential to the conduct of the nation's medical activities. This committee appointed subcommittees, consisting of medical officers of the army, the navy, the Public Health Service, and the Red Cross, and of civilian practitioners of the highest type, representing the several specialties in medicine, to work in conjunction with the committees appointed to represent the manufacturers.

The first public result of the work of these subcommittees is the publication of an illustrated list of surgical instruments which have been formally approved by the subcommittee on surgical instruments. The illustrations selected show desirable types of instrument, but others varying slightly from these designs will be accepted in order that dies now in existence may be made use of, thus securing the maximum production. The publication of this list will serve a most valuable purpose both for army surgeons and for civilians, as the instruments illustrated may be taken as representing the best types. From an administrative point of view the publication of this list will be most helpful, as it will facilitate the purchase and distribution of instruments. Each instrument is numbered as well as named, so that there will be no possibility of

misunderstanding in ordering and distributing the instruments. Similar lists will be issued shortly by the committee on standardization covering every class of articles, apparatus, and equipment necessary to the conduct of the medical department of the army and the navy. We congratulate the Council upon the excellent work being done by this committee.

#### THE EFFECT OF HYPOPHYSECTOMY AND EXTRACT OF THE HYPOPHYSIS ON THE URINARY SECRETION.

Experimental work on the hypophysis is of relatively recent date, the first work having been undertaken in Italy by Caselli, Della Vedova, Vassale, and Sacchi, while Paulesco, of Bukarest, later resorted to researches along the lines of the Italians, but did not reach any more conclusive results. In France the best work on the question is Thaon's Thesis (Paris, 1907), being the continuation of his former researches on the hypophysis in tuberculous subjects.

These experiments are difficult on account of the deep situation of the gland, and following them there is always intense shock, and the frequent communication with the buccal cavity which results from the operation gives rise to infection, the animal dying from meningoencephalitis, so that results are rare and disturbed by other lesions or the evolution of an infectious process. Ablation of the gland is often incomplete, a portion of it remaining adherent to the sella turcica, and these fragments are enough to perpetuate the action of the gland and thus spoil the experimental results. Vassale and Sacchi experimented on a large number of animals, but most of them quickly died; one lived for thirty-seven days, while another completely recovered, but in the latter instance autopsy showed that the hypophysis had not been completely removed. These writers divide into two classes the phenomena observed, the first being those which are always present, and among them psychical depression, convulsions, anorexia, emaciation, and death generally preceded by coma. In the second category they include a series of accessory symptoms such as polydipsia and polyuria, the urine having a low specific gravity and alkalinity and absence of albumin and sugar. They conclude that death must result when the functions of this gland are abolished by total destruction of its substance.

Caselli, although less fortunate in his experiments, was able to note the same general symptoms with acceleration of the pulse, diminished respiration, convulsions and the presence of glycosuria, but he ascribed the latter symptom to trauma of the surrounding cerebral structures and not to destruction of the pituitary body. Pirrone came to conclusions



contrary to those of Vassale and Sacchi and he never found any change in the urine after hypophysectomy. Paulesco, who had studied the anatomy, physiology, and pathology of the hypophysis, undertook a large number of hypophysectomies, both total and partial, and comprising either the nervous lobe or the glandular lobe. As far as the former is concerned, its part is limited functionally and it has no physiological or pathological reaction, the only apparent connection that it has with the central nervous system being a short tract uniting it to the infundibulum.

Total ablation of the glandular lobe consequently is equivalent to a total hypophysectomy and the animals died within twenty-four hours of the operation. The acute insufficiency of the hypophysis does not give rise to any particular or characteristic symptom. In a second series of experiments the cortical substance was only removed partially and the animals all recovered without showing special symptoms, particularly as far as the urine was concerned. Finally, in a third series, Paulesco was able to perform total ablation of the cortical substance with the same results as in total hypophysectomy. The urine remained unchanged. These results only show that little was learned as to the effect on the urinary secretions by hypophysectomy, while the results obtained by various physiologists are too uncertain for one to form an exact conclusion as to the influence of the hypophysis on the urinary apparatus. If it has any influence whatever, it is very small.

Pariset carried out extensive researches on the action of pituitary extract on the cardiovascular system. By destruction of the hypophysis there is acceleration of the pulse and hypotension. Pariset made the counterpart of the experiment, and the results obtained were in perfect accord from this point of view. After numerous experiments, De Cyon came to the conclusion that the hypophysis fulfilled two functions. The first is that of regulating the intracranial pressure vasomotor alteratives of the thyroid gland under the influence of the pneumogastric. The second is of a clinical nature and consists in the elaboration of certain substances possessing a tonic action on the cardiovascular system. Mairret and Bosc experimented with pituitary extract in man and animals. The ingestion or injection of the gland extract aggravated the condition of their patients, while in animals a slight increase of the temperature with polyuria was noted.

In his essays at treatment of arterial hypotension, Pariset had obtained results concurring with those of hypophysectomy. The heartbeats diminish, arterial tension increases about one to two centimetres, the total quantity of urine reaches 1,500 to 2,000 c. c., and this result is maintained after cessation of the

treatment. Pariset is of opinion that it is the extract of the infundibular portion which above all acts in producing a dilatation of the renal vessels and an increase of the secretion of the tubuli contorti. He concludes that the intravenous injection of one c. c. of a one per cent. extract produces an effect quite as diuretic as drugs employed for producing diuresis. These results are interesting, but it should be recalled that they were obtained in subjects presenting serious cardiac lesions and that the polyuria thus induced by a tonic cardiovascular action does not appear to be due to a nervous or renal element. From all these results it would seem that the increased force of the heart and the existence of a copious diuresis persist after cessation of the treatment.

#### ROUTINE WASSERMANN TESTS.

Although much has been written and more spoken concerning the value of the Wassermann reaction, yet the fact remains that this test is not employed as frequently as it should be. The more thorough the histological examinations the more certain does it become that there are many conditions in which the treponema is present. In earlier days the parasymphilitic lesion was considered not as syphilitic but in some vague way as secondary to the disease. This belief gradually lost ground after the discovery of the causative agent, but it was slow to die. It has not yet been relinquished entirely by all.

More and more of the nerve disturbances, central and otherwise, were found to be results of this infection. The occurrence of the organism within the walls of aneurysms and in the other portions of the circulatory system called attention to the rôle played by syphilis. As these findings became more firmly established, the necessity of a method of diagnosis became evident. The result was that the Wassermann reaction was used with increasing frequency and in consequence many an obscure case was cleared up. Every laboratory worker, however, realizes that the general practitioner does not properly avail himself of this valuable aid to diagnosis. As a rule he is not only willing but apparently prefers to rely upon his clinical findings. It is easier, and then there is not the embarrassment of having to admit to the patient that the original diagnosis was wrong. Bryan and Hooker, in a recent article in the *Public Health Reports*, give some interesting data. Between February and October, 1916, out of 312 cases admitted to the Boston Marine Hospital, seventy-seven, or 24.7 per cent., gave a positive Wassermann in reaction. There were in addition eleven cases that on account of anti-syphilitic treatment gave a negative reaction. If

these be added to the positive it gives a percentage of 28.2. Before February, 1916, the Wassermann test was used in doubtful cases, but not as a routine procedure. During this time 2,863 cases were admitted and 468 Wassermann tests made, of which 191 were positive, a percentage of only 9.1. During the five years from 1907 to 1911 there were only 4.3 per cent. of cases treated in the United States Public Health Service that were diagnosed as syphilis. During this period the Wassermann test was seldom, if ever, used. It is very evident from the above data that syphilis is much more prevalent than even generally considered, and that a routine Wassermann test would reveal many cases that otherwise would pass unrecognized.

### CASUALTIES IN THE BRITISH MEDICAL SERVICE.

Theoretically, the military surgeon is a noncombatant and therefore is in no danger. Practically, this is far from being the case. The reports, however, of the high mortality among the medical staff of the British Army which have received currency in the lay press and credence among medical men are grossly exaggerated. A Washington newspaper recently published the statement: "Colonel Goodwin says that over six thousand officers have been lost in this war" by the Royal Army Medical Corps. In his recent address to the graduating class of the Cornell University Medical School, Colonel Goodwin quoted this statement in order to specifically deny it. He said: "This is totally untrue. Our total medical force is only 12,000. . . . During three months last year fifty-three medical officers were killed and 185 wounded. These figures will give you an idea of the casualties among our medical officers."

It is most fortunate that we have a correction of these exaggerated statements from so competent an authority as Colonel Goodwin, who, as a member of the Royal Army Medical Corps, has spent the last three years at the front, and who is a member of the British Commission to the United States. Colonel Goodwin is a Companion of the Order of St. Michael and St. George and has won the Distinguished Service Order, and his statements may be taken as authoritative.

### SEVENTEEN THOUSAND MORE DOCTORS NEEDED.

The Surgeon General of the United States Army authorizes the statement that 17,000 more doctors are needed for the Army and that most of them are needed now. An effort will be made to place each physician volunteering where his special qualifications will be most useful. Foreign service, which

offers attractions to most volunteers, will eventually fall to most of the corps. The first duty, however, will be the examination of recruits and their care during training. General Gorgas says that the United States will need a larger proportion of medical men than either France or Germany for two reasons: first, because of the total lack of military training among the new recruits, and, second, on account of the need for helping the Allies. General Gorgas further says that "in Germany when the army has a need for doctors the government orders the doctors to join the colors. This Government is loath to follow that example." This expression, which is used in the *Official Bulletin*, published by the Government, may reasonably be taken as an intimation that unless the members of the medical profession volunteer more generally than they have so far done, it may become necessary for the Surgeon General to recommend that the draft be applied to medical officers.

### WHERE RABIES COMES FROM.

A study of all cases of rabies occurring in the city of New York by the health authorities leads them to the conclusion that much of this infection is brought into the city from other towns. The *Bulletin* of the Department of Health in its issue for June 9th publishes an interesting series of tables showing the cases of rabies reported along the line of the New York, New Haven, and Hartford Railroad, the New York Central Railroad, in other sections of New York State, and in northeastern New Jersey. These statistics indicate that the disease appears to be approaching New York city along the line of the New York, New Haven and Hartford Railroad and that Buffalo has for some time been a centre of infection from which the disease has spread to neighboring towns. The increasing number of cases reported in these areas shows the necessity for muzzling dogs, a necessity which does not seem to be as well recognized outside of New York city as in the city itself.

### Obituary

E. FRANKLIN SMITH, M. D.,  
of Richmond Hill, New York.

Dr. Edward Franklin Smith, of Richmond Hill, died at his home, 8418 Oxford Avenue, on Friday, June 15th. Doctor Smith was well known as a contributor to medical journals, and was at one time on the editorial staff of the *Medical Record* and the New York correspondent of the *Journal of the American Medical Association*. He was born in Brooklyn fifty years ago and was educated at St. James's Academy and at Bellevue Hospital Medical School. He was the first professor of physiology at Fordham University Medical School, and was for many years associated with the Board of Health. Doctor Smith was a member of the New York County and State Medical Association, the New York Academy of Medicine, and many other societies. Both the profession and medical journalism have lost a distinguished worker.

## News Items

**Psychopathic Hospitals.**—It is announced that a Psychopathic Hospital of 110 beds will be established at each of the training camps now in process of construction.

**The Belgian Physicians' Relief Committee.**—Dr. F. F. Simpson, treasurer of the committee of American physicians for the aid of the Belgian profession, reports that so far \$7,961.26 has been received and \$7,310.04 expended for 3,252 standard boxes of food. Further subscriptions are invited.

**Colonel Goodwin in Philadelphia.**—Colonel T. H. Goodwin, R. A. M. C., a member of the British Commission which accompanied Mr. Balfour in his recent visit to this country, will be the speaker at the meeting of the Philadelphia County Medical Society, to be held on the evening of July 25th.

**Women's Medical College of Pennsylvania.**—Dr. Clara Marshall has retired as dean of the Women's Medical College of Pennsylvania after serving in that capacity for thirty-nine years. Dr. Martha Tracy, professor of physiological chemistry and hygiene, has been appointed acting dean pending the selection of a permanent officer.

**Medico-Chirurgical Buildings for Naval Hospital.**—Plans are being made to convert the buildings of the Medico-Chirurgical College and Hospital, on Fairmount Parkway, Philadelphia, into a naval hospital and maintain it as such for the duration of the war. There will be accommodations for about two hundred and fifty patients. The hospital will be under the management of the Red Cross Society.

**A Tuberculosis Mission for France.**—The International Health Board of the Rockefeller Foundation has appropriated \$100,000 to pay the expenses of a commission consisting of Dr. Livingstone Farrand, president of the University of Colorado, and two assistants, who will visit France and organize and carry on a propaganda for the education of the people in the prevention and cure of tuberculosis.

**A Chair in Military Surgery at Harvard.**—At the annual banquet of the Massachusetts Medical Society, held at the Copley-Plaza Hotel, Boston, on the evening of June 12th, Dr. Philemon E. Truesdale, of Fall River, delivered an address in which he called for a fund of \$100,000 to establish and maintain a chair of military surgery at Harvard University. He said that the plan had been approved by Surgeon General Gorgas and by the medical department of Harvard.

**The British Recruiting Mission.**—Captain T. Morrison, Canadian Army Medical Corps, who has joined the British Recruiting Mission, served for two years in the line as battalion adjutant with the Canadian troops in France, but was transferred last October to the medical corps. In addition to the New York physicians mentioned in the JOURNAL last week, Dr. R. W. McIntyre and Dr. Rowland G. Freeman have volunteered their assistance in the work of examining the troops.

**Oral Hygiene.**—Dr. Alfred Fones, of Bridgeport, Connecticut, has been appointed chairman of the Oral Hygiene Committee of the Dental Section of the Council of National Defense. He will instruct and train 1,000 Red Cross nurses, who will then be sent to the sixteen different training camps in the country to do preliminary work toward putting the teeth of the soldiers in good condition. They will clean the teeth and make a report for the guidance of the dentists.

**The Association of Cardiac Clinics.**—An organization was effected of physicians working in the special cardiac clinics of New York at a meeting held at the Academy of Medicine on February 14th, when the following officers were elected: Chairman, Dr. R. H. Halsey; vice chairman, Dr. H. V. Guile; secretary, Dr. H. E. B. Pardee, who, together with Dr. Charles H. Smith and Dr. William Lowman, will constitute an executive committee. At a later meeting a series of classifications was adopted and a number of recommendations made to the different clinics. The city has been divided into districts so that patients will not have to go far to find a clinic and the visits of the social workers will be facilitated.

**County Hospitals for Tuberculous Patients.**—At the last session of the legislature a bill was passed which has just been signed by Governor Whitman, which provides that every county in the State having a population of 35,000 or more which has no tuberculosis hospital must provide one on or before July 1, 1918. This will involve the erection of such hospitals in twenty counties.

**Harvard Medical Unit in France.**—A London correspondent of the New York *Tribune* cables that the Harvard Medical Unit which was organized to care for a base hospital with 400 beds has been placed in charge of a hospital having 1,300 beds, with an expansion limit of 1,900. After the battle of Messines the hospital was filled to its utmost capacity and has since been receiving from three to four hundred patients daily. The work for the hospital staff has received the highest commendation from the British Army Medical Corps.

**State Society of Iowa Medical Women.**—Dr. Laura House Branson, of Iowa City, was elected president of this organization at the annual meeting held in Des Moines, Tuesday, May 8th, succeeding Dr. Lily Kinrier, of Dubuque. Other officers were elected as follows: Dr. Jeanette F. Throckmorton, of Chariton, vice-president; Dr. Ida G. Rhodes, of Cedar Falls, secretary, and Dr. Nelle Noble, of Des Moines, treasurer. At the annual banquet, Dr. Jeanette Throckmorton acted as toastmaster and addresses were given by Dr. Lenna L. Means, Dr. Jennie Ghrist, and Dr. Georgia Stewart.

**A War Hospital for St. Luke's.**—The plans have been filed with the Building Bureau of New York for the construction of an emergency war hospital by the corporation of St. Luke's Hospital. The building will occupy the block front on the east side of Amsterdam Avenue between 113th and 114th streets, just west of the main hospital building of St. Luke's. It will have a frontage of 200.8 feet on Amsterdam Avenue and seventy-eight feet on 113th and 114th streets. It will be two stories in height and will contain six wards, each of which will accommodate from twenty to thirty beds. The estimated cost is \$50,000.

**Massachusetts Medical Society.**—At the recent annual meeting of the Massachusetts Medical Society the following officers were elected: President, Dr. Samuel B. Woodward, of Worcester; vice president, Dr. George P. Twitchell, of Greenfield; secretary, Dr. Walter L. Burrage, of Boston; treasurer, Dr. Arthur K. Stone, of Boston; librarian, Dr. Edwin H. Brigham, of Brookline; orator, Dr. Myles Standish, of Boston. The society authorized the purchase of \$5,000 worth of liberty bonds and voted in favor of prohibition during the war, the establishment of a chair in military medicine, and the erection of a military hospital at a cost of \$15,000.

**A Training School for the Naval Hospital Corps.**—The New York College of Pharmacy, Columbia University, has tendered the use of its building for the summer to Rear Admiral Braisted, surgeon general of the United States Navy, for the establishment of a training school for Naval Hospital Corps men, and the offer has been accepted. The course will be under the direction of Professor Dickman, and a part of the faculty will be furnished by the College of Physicians and Surgeons, the medical department of Columbia University. It is expected that the students, who will be enlisted by the intercollegiate bureau, will be college graduates. Accommodations will be provided for 300 students.

**Hospital Units for Nervous and Mental Diseases.**—As stated in our issue for May 26, 1917, the National Committee for Mental Hygiene has created a subcommittee on furnishing hospital units for nervous and mental disorders to the United States Government, the project having been approved by Surgeon General W. C. Gorgas of the U. S. Army. This subcommittee, of which Dr. Pearce Bailey, of New York, is chairman, is authorized to secure the services of alienists and neurologists to be commissioned in the Officers' Reserve Corps, Medical Section, and to serve in the neuropsychiatric units which are to be attached to the base and other hospitals of the military services of the United States. Further information will be given, and application forms sent to physicians qualified in this branch of medicine, on application by letter or in person to the National Committee for Mental Hygiene, 50 Union Square, New York city.



**Boston University Commencement.**—Degrees were conferred upon 392 students at the annual commencement held on Wednesday, June 6th, the largest graduating class in the history of the university. There were seven Bachelors of Science, twenty-four Doctors of Medicine, and two Bachelors of Surgery.

**To Care for the Practice of Military Surgeons.**—At the beginning of the war the New York County Medical Society appointed a committee composed of Dr. Edward L. Hunt, Dr. Charles A. Elsborg, Dr. Lewis A. Coffin, Dr. John Douglas, and Dr. Wilbur Ward, which drew up a plan for caring for the practice of doctors who enter the military service. It was recommended that individual arrangement as far as practicable be made by the absentees before leaving. Where this is not done the society will endeavor to supply a locum tenens who will receive fifty per cent. of the fees collected, a financial statement being prepared each month. They further agreed that any member of the society who cared for a patient of any doctor absent on military service should turn over fifty per cent. of any fees collected to the absentee. Checks have been received to aid the families of the men at the front as follows: From Dr. Edward B. Cragin, \$10,000; Dr. Walter B. James, \$10,000; Dr. John F. Erdman, \$5,000; Dr. Seth Milliken, \$1,000, and Mr. J. William Clark, for an unspecified amount. The County Medical Society intends to raise a fund of \$100,000 for this purpose.

**A Branch Naval Medical College.**—Owing to the overcrowded condition of the Naval Medical School at Washington, D. C., Rear Admiral Braisted has opened a six weeks' intensive course at the Jefferson, the Naval, the Medico-Chirurgical, and the Philadelphia hospitals, with the following Philadelphia physicians as instructors: Surgery, Dr. J. C. Da Costa; operative surgery on the cadaver, Dr. M. B. Miller; medical and physical diagnosis, Dr. Judson Daland; laboratory, Dr. H. A. Hare; psychiatry, Dr. W. W. Hawke; ophthalmology, Dr. T. B. Holloway; associates, Dr. A. C. Morgan, Dr. Guy Hinsdale, Dr. F. J. Dever, Dr. William H. Robertson, Dr. Clarence N. Smith; advisory staff, Dr. Diehl, medical director; Dr. Dunn, lieutenant commander Naval Hospital; Dr. R. A. Bachman, military hygiene and tropical medicine.

**The American Orthopedic Unit.**—Dr. Joel E. Goldthwait, president of the board of directors of the Robert B. Brigham Hospital, Boston, whose arrival in England was noted in our issue for June 9th, was accompanied by the following specialists in orthopedics, who will be assigned to duty in the various base hospitals in England and France: Dr. Carlton R. Metcalf, Concord, N. H.; Dr. W. G. Ewing, Washington, D. C.; Dr. Walter I. Baldwin, San Francisco; Dr. Roy Abbott, San Francisco; Dr. A. R. MacAusland, Boston; Dr. De Forest Willard, Philadelphia; Dr. H. W. Orr, Lincoln, Neb.; Dr. Sidney Cone, Baltimore; Dr. Mitchell Langworthy, Chicago; Dr. Murray S. Danforth, Providence, R. I.; Dr. C. F. Eikenbary, Spokane, Wash.; Dr. H. A. Durham, New York; Dr. James C. Graves, Spokane, Wash.; Dr. Rhoades Fayerweather, Washington, D. C.; Dr. F. C. Kidner, Detroit, Mich.; Dr. L. C. Spencer, Baltimore; Dr. R. W. Billington, Nashville, Tenn.

**Promotions and Appointments at the Rockefeller Institute.**—The Board of Scientific Directors of the Rockefeller Institute for Medical Research announces the following promotions and appointments:

Associates: Dr. John Northrop, experimental biology; Dr. Herbert Taylor, pathology and bacteriology; Mr. Glenn Cullen, chemistry; Dr. Henry T. Chickering, hospital.

Assistants: Dr. Leonard Cretcher, chemistry; Dr. Harry Graybill, department of animal pathology; Mrs. Mary Andrews, experimental biology; Dr. Ernest Stillman, hospital; Dr. Juan Lopez-Suarez, chemistry.

Fellows: Miss Ida W. Pritchett, Pathology and bacteriology; Mr. Earl Clark, chemistry.

The following new appointments were announced: Dr. Peter Oltzky, assistant in pathology and bacteriology; Dr. J. Howard Brown, assistant in the department of animal pathology; Miss Marion S. Taylor, fellow in the department of animal pathology; Dr. John A. P. Millet, assistant in pathology and bacteriology; Dr. George W. Wilson, fellow in pathology and bacteriology.

**Texas Medical Association.**—The fifty-first annual meeting of this association was held in Dallas, May 9th and 10th, under the presidency of Dr. J. M. Inge, of Denton. Dr. S. P. Rice, of Marlin, was elected president, and other officers were elected as follows: Dr. W. F. Cole, first vice-president, Orange; Dr. F. Hugh Painter, second vice-president, Corpus Christi; Dr. F. K. Proctor, third vice-president, Sulphur Springs; Dr. T. T. Jackson, San Antonio, Dr. C. M. Alexander, Coleman, trustees; Dr. J. H. Florence, council of legislation and public instruction, Houston; Dr. W. D. Jones, council of medical defense. Next year's meeting will be held in San Antonio.

**Georgia Medical Association.**—The sixty-eighth annual meeting of this association was held in Augusta, May 18th, 19th, and 20th, under the presidency of Dr. Jarvis G. Dean, of Dawson. Dr. Eugene E. Murphey, of Augusta, was unanimously elected president, and other officers were elected as follows: Dr. A. D. Little, of Thomasville, first vice-president; Dr. E. C. Thrash, of Atlanta, second vice-president; secretary-treasurer, Dr. W. C. Lyle, of Augusta, reelected. Next year's meeting will be held in Atlanta. At the annual banquet which brought the meeting to a close Dr. Thomas D. Coleman acted as toastmaster.

**Memorial Tablet to Dr. L. Bolton Bangs.**—On the afternoon of Tuesday, May 29th, a bronze memorial tablet to the memory of the late Dr. L. Bolton Bangs was placed in the foyer of the New York Post Graduate Medical School and Hospital, and unveiled by the board of directors and the faculty with appropriate ceremonies.

The inscription on the tablet reads:

To the memory of  
L. BOLTON BANGS, M. D.

October 4, 1914.

From 1889 to 1894 Professor of Genitourinary Diseases in this School and Hospital, a member of its Board of Directors and Treasurer of the Corporation.

To his memorable services in that office the completion of this building is largely due.

He made the study of medicine and surgery his avocation, and by his life exemplified its highest ideals in culture and ethics. To the furtherance of postgraduate instruction he enthusiastically devoted his skill, his knowledge and his scholarly attainments.

This tablet is erected by the Board of Directors and the Faculty in grateful recognition of the man, the physician, and the teacher.

"In his honor, unassailable; in his simplicity, sublime."

Addresses were made by Dr. Frederic E. Sondern as president of the school and hospital, Dr. Clarence C. Rice, Bishop Courtney, and Dr. James Pedersen.

**Ambulances Donated.**—The Alumni of the College of the City of New York have subscribed funds to send an ambulance unit to France within the next two weeks.—St. George's Church of this city is organizing a Protestant Episcopal League to raise funds for the purchase and maintenance of ambulances.—The New York Athletic Club has opened a subscription for funds to provide a special ambulance corps, the personnel of which is to be composed of members of the club.—The Brook Club, of East Fortieth Street, has sent two ambulances to France and expects to send a third.—The Society of Pennsylvania Women in New York has contributed \$4,200 to the American Ambulance in Paris.—Mrs. Belmont Tiffany has presented three ambulances and equipment to the Fifth Avenue Branch of the New York County Chapter of the American Red Cross.—Samuel Feiber, who has resigned from his firm to devote all of his time to patriotic work, has presented two motor ambulances to the Patriotic Service League of the Nineteenth Congressional District of New York.—The Brown University Christian Association has presented funds for two ambulances and a fund for a Brown Bed in the American Hospital in Paris.—The American Dental Trades Association of the United States and Canada, in its annual session at Atlantic City, voted to present an ambulance to the government and to assume the cost of its maintenance.—The Atlanta, Ga., Temple of the Mystic Shrine has undertaken to organize and finance a Red Cross ambulance unit.—The New York Millinery Trade has already sent fifteen ambulances to France, and the organization of every branch of the trade has been undertaken with a view to sending thirty-five ambulances from each of the larger cities of the United States.

# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

### THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By LOUIS T. DE M. SAJOS, B. S., M. D.,  
Philadelphia.

(Continued from page 1112.)

In preceding issues the relative inexpensiveness, among the cardiovascular stimulants and tonics, of the strychnine salts and of powdered digitalis leaf was emphasized, and the costliness of caffeine and the allied alkaloid theobromine under present drug market conditions referred to. In connection herewith it may be remarked, however, that the comparative cheapness of digitalis as compared to caffeine applies mainly to the oral use of these drugs, the latter agent being only about three times as expensive as the cheapest digitalis preparation available for hypodermic use, viz., the tincture. For stimulation by the mouth or rectum, it might be supposed that by the use of the crude drug, coffee, in the form of the usual beverage, expense might be saved on the principle that an alkaloid still embodied in a crude drug is less costly than after it has been extracted therefrom. In this instance, however, the principle does not hold, for pure caffeine, even at present prices, is practically no more expensive than an equivalent amount of coffee. The advantages of the latter over caffeine from the expense standpoint are limited, therefore, to the additional stimulating effects of the oily constituents of coffee and the warmth imparted by the beverage when taken very hot.

Turning to other circulatory remedies not yet mentioned, we may note in passing that atropine sulphate, employed in its special province of depressing the terminations of the vagus in the heart and thereby accelerating the cardiac rate, is under present conditions no less than twenty times as expensive as a circulatory remedy, dose for dose, as strychnine sulphate. The direct stimulant actions of atropine on the vasomotor centre and the heart muscle are now known, moreover, to be only very moderate in degree, and the striking influence of strychnine in activating reflexes in general is only in small part possessed by atropine.

Camphor, considered of some value in collapse when administered hypodermically in sterile olive or other vegetable oil, has practically doubled in cost since before the war, and though still among the relatively inexpensive stimulant measures, is decidedly more costly to use than strychnine. Figuring on a two grain dose of camphor, the latter is, dose for dose, not far from three times as expensive as strychnine, and when the cost of the necessary olive oil, which is greater than that of the camphor, is added, it becomes nearly eight times as expensive as strychnine.

Among other stimulants which, like camphor, probably act in large part in a reflex manner are certain ammonium compounds. These are among

the remedies which have undergone little or no increase in price as a result of the war. For internal use the widely employed favorite, aromatic spirit of ammonia, however, is relatively expensive, costing nearly as much, dose for dose, as atropine and, correspondingly, about fifteen times as much as strychnine sulphate given hypodermically. By extemporaneous preparation of this spirit from its separate constituents, viz., seventy per cent. alcohol containing nine per cent. of ammonia water, 3.4 per cent. of ammonium carbonate, and minute amounts of aromatic oils, its cost could be cut down almost to one half of the usual price. Still less expensive, though less agreeable and perhaps slightly less efficient, would be a simple aqueous solution of ammonium carbonate and ammonia in the percentages in which they occur in the aromatic spirit. Such a solution, with or without addition of a few drops of aromatic oils, would cost but one fortieth to one thirtieth as much as the aromatic spirit at its prevailing market price, or about one half as much as the inexpensive strychnine injection. Again, if it is desired not completely to dispense with the reflex stimulant and peripheral vasodilator effects of alcohol, the latter might be combined with the ammonium compounds and oils, as in the official aromatic spirit, but in a reduced amount, e. g., twenty per cent. of alcohol instead of seventy per cent. The alcohol being by far the most expensive constituent of the aromatic spirit, the cost of any preparation of this type varies practically with its alcohol content, and an extemporaneous product containing twenty per cent. of alcohol would thus cost but about one seventh as much as the official aromatic spirit at its market price. A small percentage of alcohol, say five per cent., would, irrespective of its pharmacological action *per se*, be useful to afford proper solution of the aromatic oils, which are believed to play a part in the reflex stimulant effect. Finally, under certain conditions, chiefly in male adults, stimulant ammonia medication can be reduced to its simplest expression by the use of the official ammonia water alone, fifteen minim doses of this fluid, to be dropped in half a tumblerful of water before ingestion, costing about the same amount as an equal number of doses of strychnine for hypodermic use. Probably the effects of this measure would be less lasting than if ammonium carbonate, which yields ammonia in a more gradual manner, were used instead. Thus, pure, translucent ammonium carbonate could be given in a five grain dose, yielding the same amount of free ammonia as is contained in fifteen minims of ammonia water. Dissolved in a half tumblerful of water, the carbonate would cost, dose for dose, only about fifteen per cent. more than the diluted ammonia water, and, correspondingly, about the same as strychnine.

(To be continued.)

**Ozone in the Treatment of Experimental Peritonitis.**—O. Laurent (*Bulletin de l'Académie de médecine*, May 1, 1917) points out that, in spite of early surgical intervention, the mortality of abdominal wounds involving the intestine has remained very high, and reports forty-five experiments in rabbits in which various disinfectant agents were tested, following introduction of colon bacillus cultures or a watery emulsion of feces, rendered toxic by exposure to the air for one or two days, into the peritoneal cavity. Much the most promising agent proved to be ozone, generated electrically from oxygen. After making a buttonhole incision into the peritoneal cavity, from five to fifteen cubic centimetres of the fecal suspension were injected, and fifteen to thirty minutes later, the abdominal cavity subjected to the action of ozone for fifteen or twenty minutes. Five to ten litres of the gas were in each case used, each insufflation causing temporary meteorism. The results, which betokened a considerable attenuation of the toxicity of the morbid products through the effects of the ozone, together with distinct retardation of the progress of the infection, seemed to justify intraperitoneal ozone treatment as an effectual auxiliary of laparotomy in infected abdominal wounds. The ozone tube could be passed through the drainage opening at the close of the operation and the gas allowed to flow in for about fifteen minutes.

**Present Status of Pituitary Extract in Labor.**—Joseph J. Mundell (*Journal A. M. A.*, June 2, 1917) analyzes reports of 5,245 cases of labor in which this drug was administered. One of the most striking points presented is that the contents of one ampoule—one mil—is much too large a single dose and that this should be reduced to one third of a mil, which may be repeated at intervals of thirty to fifty minutes if necessary. The first dose is usually decidedly more effective than are the subsequent ones. The field of usefulness for this drug is sharply limited, although it includes a considerable number of cases. It may be stated as for the relief of secondary inertia in the late second stage of labor in multiparous women with a history of previously unobstructed labors, normal presentation, cervix fully dilated, head moulded and through the brim, membranes ruptured, and perineum relaxed. In such cases its use frequently avoids a low forceps operation. An anesthetic should be given when the action of the pituitary extract begins, and one should always be prepared to complete delivery with forceps. All use of the drug in labor without the fulfillment of these prescribed conditions is associated with more or less danger to both the mother and the child, but especially to the latter. The drug does not induce the prolonged uterine contraction that follows ergot and is inferior to the latter for the control of post partum hemorrhage. Pituitary extract should never be used in normal labor and it is dangerous in primiparæ. It should never be employed in the absence of an accurate diagnosis and recognition of the conditions present. Its use should invariably be preceded by accurate pelvimetry. The administration of doses as large as one mil at once has probably been responsible for a number of serious accidents which have followed its use. In the

total number of cases here analyzed there were twenty of rupture of the uterus, twelve occurring in the last year among a total of 1,293 cases in which the drug was used. This gives a frequency of this accident of one in each 106 cases. The danger to the fetus is very considerable unless all of the prescribed conditions are met. This danger seems to have increased during the past year, probably owing to the more reckless use of large doses. During 1914 there were twenty-seven fetal deaths in 3,952 cases, or one in 146 cases, while during 1916 there were thirty-four fetal deaths in 1,293 cases, or one in every thirty-eight cases. In addition to this large proportion of fetal deaths the occurrence of dangerous fetal asphyxia is even more frequent. From this examination it is quite obvious that pituitary extract has a place in labor, but that its field of safe usefulness is very sharply limited and any transgression is fraught with considerable danger. William Wertenbaker, in the same issue of the *Journal A. M. A.*, records two cases of spontaneous uterine rupture, each from the administration of a single dose of one mil of pituitary extract to a multiparous woman apparently fulfilling all of the indications just laid down. One of the cases resulted in the death of both mother and fetus, the other in the death of the fetus and recovery of the mother after laparotomy and hysterectomy.

**Intramuscular or Subcutaneous Injection of Neosalvarsan.**—L. W. Harrison, C. F. White, and C. H. Mills (*British Medical Journal*, May 5, 1917) state that they treated two parallel series of cases of syphilis, the one with intravenous injections of salvarsan or its substitutes, the other with deep subcutaneous or intramuscular injections of neosalvarsan or its substitutes. Since the results of the substitutes for salvarsan or neosalvarsan were the same as those of the originals no distinction was made. The results were measured by clinical and laboratory observations, including the frequent use of the Wassermann reaction, and showed that the subcutaneous or intramuscular method was distinctly more efficient than the intravenous in both primary and secondary stage cases. Slightly better results seemed to follow the intravenous method in the tertiary cases. The complete removal of the spirochetes from superficial lesions was as prompt and certain after hypodermic as after intravenous administration and the former was decidedly the more effective in producing a negative Wassermann reaction. Aside from greater therapeutical efficiency the intramuscular route had the following advantages over the intravenous: 1. Being simpler of execution it was more generally applicable by the general practitioner. 2. The drug was more slowly introduced into the circulation, more slowly eliminated and, therefore, kept the tissues at an effective level of saturation for a longer time. 3. The alarming and unfavorable side actions were almost wholly absent. For the effective elimination or amelioration of the pain of the injection neosalvarsan is best given subcutaneously or intramuscularly in the form of a solution of 0.6 gram in one mil of four per cent. stovaine, to which one mil of creocamp cream is added and the whole well shaken. The solution should be prepared in the syringe.



**Mercuric Chloride Poisoning.**—H. B. Weiss (*Journal A. M. A.*, June 2, 1917) reports a method of treatment which has proved entirely successful in twenty-seven out of twenty-eight cases of poisoning with mercuric chloride of varying degrees of severity up to the most extreme types. It is based upon the well recognized effects of mercury on the organs and tissues and aims at the elimination of the drug and the prevention of the fatal nephritis and uremic poisoning. When the patient is first seen the stomach is washed with one quart of milk and the whites of two eggs followed by water. Ninety grams of magnesium sulphate in 200 mls of water are left in the stomach. A thorough soapsuds enema is then given. If there was no vomiting from the poison, or if medical aid was not reached for three hours after its ingestion, from 1,000 to 1,500 mls of Fischer's solution is given intravenously. Then the patient is given from six to eight glasses daily of an "imperial drink" of the following composition:

Potassium bitartrate, .....	4.0;
Sodium citrate, .....	2.0;
Sugar, .....	4.0;
Water, .....	250.0;
Lemon or orange juice to taste.	

A liberal diet without excess of proteins is allowed and the taking of an abundance of water is urged. The administration of both the Fischer's solution and the imperial drink is controlled by the reaction of the urine, which should be made distinctly alkaline to an alcoholic solution of methyl red. In one patient only were there any complications from the poisoning after this treatment. It differs from the Lambert and Patterson method in not requiring frequent gastric and colonic lavage. After the urine has been made alkaline the imperial drink is to be continued for ten or twelve days.

**Heliotherapy in Abdominal Tuberculosis.**—J. H. Elliott (*Canadian Medical Association Journal*, May, 1917) states that he has had experience with three types of abdominal tuberculosis which responded to heliotherapy, viz., tuberculous enteritis, tuberculosis of the ileocecal and appendix region, and tuberculous peritonitis with ascites. An illustrative case of each type is reported. The treatment was carried out in a large city with no particular climatic advantages, outside of the long days of midsummer with many hours of sunshine, and the bracing effect of keen bright winter days which are uncertain in both occurrence and duration. The treatment may be carried out indoors or out of doors; in the former case the patient is placed in a hospital bed of the proper height, in the latter in the Adirondack recliner, or a similar chair is used. Treatment is begun by exposure of the feet to the direct sun for ten minute periods twice a day, once in the morning and once after the rest hour in the afternoon. On the following day the abdomen is similarly exposed, and the exposure of the arms and legs is progressively increased by ten minutes each day, by five minutes morning and afternoon. By this method a progressive pigmentation of the skin is secured. Cloudy days interfere with the treatment, but benefit is probably derived from simply exposing the body to the air. Screens may be arranged about the patient to insure privacy and to

break the force of unpleasant winds. When the sun is hot the head is to be shielded from the direct rays of the sun and smoked glasses are used to protect the eyes. It has been noted that on a cool, clear day the sun burns more intensely than on a hot humid one, so if care is not observed blisters may result. Sometimes a sponging with alcohol taken after exposure increases the feeling of well being and lowers the pulse rate if it is increased. Patients must be warned against the danger if insulation, symptoms of which may appear and prove unpleasant if not dangerous, if too rapid increase is made in the exposure periods. This would seem to be a valuable addition to simple rest cure in the open air, and good results can be secured either at home or in the hospital.

**The Study of Blood Coagulation before Surgical Procedures.**—P. E. Weil (*Presse médicale*, April 12, 1917) recommends special study of the coagulability of the blood before operations as a safeguard against severe hemorrhage, which is favored by low coagulability, and against thrombosis, which is favored by hypercoagulability. A history of persistent hemorrhage or of phlebitis in the patient himself or his antecedents should be sought, and coagulation studied not only by direct observation of the various stages of the process in a small tube, but by Bloch's sodium citrate and calcium chloride method, which determines precisely the coagulating power of the blood, and by Duke's method of experimental bleeding, by which the natural tendency to hemostasis, which often differs markedly from the coagulation time, is ascertained. In the latter procedure a small stab is made in the lobe of the ear and the blood dependent from it collected every half minute on blotting paper until bleeding stops—normally in two and a half to three and a half minutes. Low resistance of the capillaries to temporary hyperemia may also be detected by placing a band around the arm, as for venesection; in purpura, peliosis rheumatica, and hepatic disease such constriction frequently induce punctate hemorrhages within two to five minutes. As for the preparatory treatment, where there is slow coagulation *in vitro* and low coagulability, generally without increase of the bleeding time, subcutaneous injection of twenty to forty c. c. of blood serum will, at least in acquired hemophilia, remedy the condition within twenty-four hours, so that operative hemorrhage need not be feared. In true familial hemophilia, operation should, if possible, be deferred for a year's time, during which repeated serum injections should be given. In other cases, in which the coagulation time is slightly lengthened but clotting is faulty and the bleeding time is distinctly increased, as in acute or chronic purpuras and other hemorrhagic states, twenty to thirty c. c. of whole human blood should be injected subcutaneously forty-eight hours before the operation. Hepatic conditions require similar treatment. Calcium chloride is an inferior substitute for the whole blood. In several cases of phlebitis and uterine fibroids, a shortened coagulation time—one or two minutes—was observed. Such excessive coagulability is of inconsiderable practical importance. Inhalation anesthesia should be avoided in these cases, as it may excite thrombosis; blood

serum or coagulant remedies should not be used in the event of hemorrhage, rest and purely vasomotor agents being substituted. An attempt may be made to reduce the coagulability by giving twelve to eighteen grams of citric acid or sodium citrate daily, well diluted; the blood may also advantageously be diluted by saline or glucose hypodermoclysis or enteroclysis; in the future hirudin may likewise prove serviceable.

#### Treat the Gallbladder Like the Appendix.—

Richard Ward Westbrook (*Long Island Medical Journal*, May, 1917) advocates practically the same form of treatment for gallbladder infections as is now the practice in acute appendicitis. He contends that the operation of drainage of the gallbladder gives a higher mortality and does not so successfully eradicate the disease as does the immediate removal of the organ. This is largely due to the fact that infections of this viscus are seldom due to spread up the bile passages with primary involvement of the mucosa, but are almost invariably blood borne and located in the wall of the organ. The removal of the bladder has many advantages from the surgical aspect and seems to have few disadvantages, the most important of which would seem to be the absence of this viscus if it should subsequently become necessary to drain the bile ducts. While the removal of the gallbladder seems to be the best treatment in the majority of cases of acute or subacute cholecystitis, or even in the chronic forms of the disease, it must be emphasized that the operation should not be made a routine one but its choice should be based upon the judgment of the surgeon in the face of the findings in each case.

**Combined Arsenical and Quinine Treatment of Malaria.**—Armand Gautier (*Bulletin de l'Académie de médecine*, April 24, 1917), after referring to recent reports of the not infrequent ineffacy of large doses of quinine in preventing malarial recurrences and of the untoward local results of subcutaneous quinine injections, calls attention to facts brought out by him over ten years ago, viz., that organometallic arsenic salts, in particular sodium dimethylarsenate (arrhenal), when administered hypodermically in doses not exceeding 0.08 to 0.1 gram, will check at the second or third injection inveterate malarial fevers which have resisted long continued medication with quinine, even in large doses. These facts were long ago confirmed by different observers in Madagascar and Algeria. The arsenicals always strikingly reinforce quinine action. As little as 0.5 gram of quinine hydrochloride, given in conjunction with 0.05 to 0.1 gram of arrhenal, will cure the most rebellious forms of fever. In cases of pernicious malarial fever, it is prudent to give a whole gram of quinine, combined, however, with only the usual amount of the arsenical; if necessary, the quinine may be given intravenously. Combination of arsenobenzol with quinine, as practised by Ravaut and De Kerdel, seemingly has no advantage over the dimethylarsenate combination. The latter has the advantage, over ordinary quinine administration, of obviating local pain and necrosis where the two remedies are given subcutaneously, either together or separately. The general toxic effects of large doses of quinine are also avoided,

viz., anorexia, vomiting, diarrhea, anemia due to methemoglobinuria, auditory disturbances, otitis interna, and edema. The two drugs should be so given as to enter the blood together by six or seven doses before a paroxysm. The specific action of mercury is likewise greatly reinforced by organic arsenicals. Through this mixed method the dose of mercury in chronic forms of syphilis can be reduced and the unpleasant accompaniments of continuous mercurial treatment in large doses obviated. The arsenicals, whether reinforcing quinine or mercury, probably act indirectly through activation of phagocytosis, and not by direct sterilization of the blood, as Ehrlich thought. In the blood of malarial subjects receiving only arrhenal, disappearance of crescents or other forms of the malarial organisms into digesting phagocytes can be seen microscopically.

**Pastes.**—Douglas W. Montgomery (*Journal of Cutaneous Diseases*, August, 1916) discusses this method of application in dermatology. Pastes are mixtures of powder and fat; they have the properties of absorbability, porosity, and so take up discharges and favor drainage. They also act as a protection and serve to bring various medicinal substances such as antiseptics in intimate contact with the part. Pastes may be removed every day by the use of either benzine or olive oil. They are of value in oozing, wet eczemas, patchy papular eczemas, also in erythematous eczemas. A paste of great value in infantile eczemas is as follows:

R Naphthalene, ..... 3iv;  
Zinci oxidi, } .....  
Pulvis amyli, } ..... āā 3iv;  
M. et fiat ung. Use locally.

Another paste of great value in the treatment of superficial inflammations such as plant poisoning is:

R Acidi salicylici, ..... gr. x;  
Amyli, .....  
Zinci oxidi, .. } ..... āā 3ii;  
Glycerin, ..... 3iv.  
M. et fiat ung. Use locally.

It makes a preparation of the consistency and color of white paint and holds its constituents tightly to the skin. A shake mixture, very useful for the relief of itching, is as follows:

R Liquor carbonis detergenis, ..... ℥v;  
Amyli, ... } .....  
Talc, ... } ..... āā 3ii;  
Glycerin, } .....  
Aque, ... }

Glycerin, because of its hygroscopic nature, when incorporated into preparations, leaves the skin damp and clammy, a sensation to which those having eczema are often particularly susceptible. In cold, damp weather, it may be inadvisable to spread this over a large surface. To protect parts from injury and from air in certain eczemas associated with leg ulcers, the gelatin pastes are of value. The formula for gelatin paste is as follows:

R Gelatin, ..... 46  
Gelatin oxid, ..... 28  
Glycerin, ..... 12  
Water, ..... 114

200.00

This preparation is made and heated in a water bath and spread by means of a brush or a tongue depressor.



**Management of the Chronic Dyspeptic.**—Charles Sumner Fischer (*Medical Record*, March 31, 1917) is of the opinion that the failure to make a patient gain when the treatment and diet are in scientific conformity with the chemical and physical findings of the case is frequently due to a neglect of the psychological aspect of these cases. Perfect control on the part of the physician coupled with complete confidence on the part of the patient must exist, and to obtain this cooperation it is frequently necessary to exercise a certain amount of analytical transference.

**Mastoiditis and Its Complications Requiring Operation.**—Jesse W. Downey (*Annals of Otolaryngology, Rhinology, and Laryngology*, December, 1916) emphasizes the fact that a discharging ear is always a menace. It may exist for years without producing any ill effects, and yet the same person may die within a few days from an acute exacerbation, with the extension of the infection to the meninges or brain. Mastoid tenderness or fever should not continue after three days of free drainage in a case of acute suppurating middle ear. Under appropriate treatment, the discharge should cease, at least, within ten days. Persistence of symptoms beyond this time usually means an infection of the mastoid cells. A persistent, pulsating discharge, which is profuse in spite of frequent cleansing of the external auditory canal, indicates involvement of the mastoid antrum. Sagging of the posterior wall of the external canal, tenderness over the mastoid, existing longer than three days, and localized over the antrum and increasing from day to day, is significantly pathognomonic. Blood examination is a decided help in obscure cases, as high leucocytosis is not found in an uncomplicated mastoid infection.

**Treatment of Cervical Adenitis.**—Isador W. Kahn (*Medical Record*, April 21, 1917) divides these cases into five classes: acute, simple chronic, tuberculous, syphilitic, and Hodgkin's disease. In the acute cases the cause must be sought out and removed whether it be in the scalp, nose, mouth, or nasopharynx, and the glands should be given inunctions of iodine ointment or of oleate of mercury or applications of ichthyol. Pain may be relieved by an ice bag or a hot poultice, and when suppuration occurs incision should be done after the abscess has pointed. Potassium iodide may be given internally in cases which do not suppurate. In the simple chronic cases the cause must also be removed if possible, and while local treatment is of little avail, change of climate is advisable and internally the syrup of iodide of iron, Fowler's solution, iodide of potash, or codliver oil emulsion may prove useful. If three months of active treatment show no response operation must be continued. In the tuberculous class, while the palliative treatment should be tried, the radical method is the best where practicable. Syphilitic cases of course require the usual antisyphilitic measures, the older methods being preferred to salvarsan in children with late hereditary lesions; the glands themselves usually need no special attention. Hodgkin's disease is only temporarily relieved whether treated by arsenic in full doses internally, or by radium, x ray, or excision, and it seems that a fatal termination is inevitable.

**Pertussis Vaccine.**—Paul Luttinger (*Journal A. M. A.*, May 19, 1917) records his experiences with the use of this vaccine in the clinic and includes the reports from a large group of other physicians who employed the same vaccine in private and institutional practice. He believes that this vaccine is of both curative and prophylactic value; that for curative purposes it should be given during the first and second weeks of the paroxysmal stage; and that if so given, in proper doses, both the duration and severity of the disease is diminished. For a child of one year or over the initial dose should be 500 million, followed at forty-eight hour intervals by doses of one billion and two billion organisms. If, after an interval of five days, some paroxysms still continue, a dose of four billion should be given, followed in three days by eight, and after another three days by ten billion organisms. If the paroxysms become more violent after the first three doses a second series should be given at the end of a week, beginning with two billion.

**Surgical Treatment of Penetrating Cranio-encephalic Wounds.**—E. Halphen and J. Le Grand (*Paris médical*, April 28, 1917) insist, on the basis of recent military experience, that even in the most severe cases of tear of the dura, with extrusion of brain matter and extensive contusion exhibiting bone splinters, clots, and foreign bodies, recovery should never be despaired of. Something in the way of surgical treatment should always be attempted. Sometimes shaving and cleansing reveals an unexpectedly small bony and dural injury, even though the brain is freely exuding. The aims should be to shut off the cerebral wound from contact with the air and the infected external wound. All loose substances and contused muscle are removed, and likewise freely the deliquescent brain matter until apparently sound nervous tissue is reached. A sufficient myectomy is absolutely essential. To provide for shutting off the depths of the wound from the air, the deeper exploration is preceded by the cutting of a broad flap concentric with the wound, with pedicle preferably below, down to the bone. Before thoroughly freeing the deeper tissues of bone fragments, the brain tissue, after any necessary opening of the dura, is gently removed, as advised by Cunéo, with a curette down to a level at which the tissue is uninjured. Examination of the resulting depression with the finger may then lead to the discovery of a diverticulum in which a foreign body is lodged. Such a body, however, should not be removed unless superficial, even if it can be felt with a hemostat or grooved director, or, at least, it should be left for removal at a second operation, through normal tissues instead of through the wound itself. The wound is then carefully cleansed in its entirety and hemorrhage arrested by lavage with hot saline solution under slight pressure, as by a cautery bulb. Where oozing now ceases the flap should be simply applied and the wound completely closed. If not, a long strip of iodoform gauze is inserted, and the flap again completely closed over it, its removal being undertaken only on the third day. In many cases a rapid complete cure is obtained through these procedures, as was shown in ninety-five cases in which they were carried out.



# Miscellany from Home and Foreign Journals

**Dysentery with Rheumatoid Manifestations and Conjunctivitis.**—O. Crouzon (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, December 7, 1916) states that in a recently observed extensive epidemic of dysentery, with absence of amebæ and dysentery bacilli but with frequent presence of a paracolon organism, rheumatic manifestations and conjunctivitis were so striking as complications as to lead finally to a systematic inquiry for diarrhea where the patient, in the combined presence of the two conditions, failed to complain of it. Dysenteric rheumatism has long been known, having been described even by Trousseau. In the present series of cases the knees, tibiotarsal joints, and sometimes the elbows and shoulders were the articulations affected. Effusion sometimes lasted several weeks and led to muscular atrophy. Conjunctivitis, however, is a complication not hitherto described. It may appear either before or after the rheumatism, or be present without it. In the latter case it appears at the close of the tenth day of dysentery; when associated with rheumatism—generally in the most severe dysentery cases—it appears about the fifteenth day. The conjunctivitis is not due to infection by the hands, as it is bilateral from the start, does not awaken any mucopurulent discharge, and seems always negative bacteriologically. It involves especially the conjunctiva of the lower lid, and passes off completely, without treatment, in six to ten days. Only four cases of isolated conjunctivitis were observed, but many slight cases occurred. In but one case were keratitis and iritis superadded. The condition appears to be a rheumatic or metastatic conjunctivitis similar to the conjunctivitis of simple acute rheumatism, of which the author has recently seen two cases, or to the metastatic conjunctivitis of gonococcal rheumatism recognized by Christmas, Wassermann, and Morax. Knowledge of conjunctivitis and rheumatism as manifestations of dysentery is manifestly of importance for the detection of "fruste," germ carrying cases of this disease and the early institution of prophylactic measures.

**Significance of Excessive Blood Urea in Cardiac Patients.**—O. Josué and M. Parturier (*Presse médicale*, May 3, 1917) point out that in the clinical interpretation of blood urea estimations in the presence of heart weakness serious errors may be fostered. The rather generally accepted rule that the kidneys are normal where the blood urea is below 0.5 gram a litre and impaired where this figure is exceeded is faulty in cardiac cases. As a matter of fact, there may be noted in lost compensation an increase of blood urea due simply to diminished renal excretion, in the absence of actual renal disease. During the period of oliguria, Ambard's constant yields no precise information on the condition of the kidneys, and after diuresis has been excited, the blood urea and Ambard constant return to normal. If, however, the kidneys actually are diseased, the diuresis brought on by digitalis, while low-

ering the blood urea, will not reduce it to the normal, and especially, the Ambard constant will remain high. Stages of increased blood urea due to a relative oliguria are also observed in such patients, and repeated tests are therefore advisable if an exact idea of the degree of renal impairment is to be had. Oliguria without increase of blood urea may be observed in cases of lost compensation coupled with marked diminution of the ureogenetic function of the liver. When diuresis is established the blood urea decreases further in such cases. Thus, low blood urea indicates hepatic impairment; but if it be coupled with a high Ambard constant, renal impairment also exists. Many temporary increases of blood urea in renal disorders or infectious diseases are caused by these affections alone, but heart cases are particularly predisposed to high blood urea, oliguria resulting directly from the weakness of the myocardium. The observation of a high blood urea in heart disease in no way contraindicates the administration of digitalis in adequate doses; in fact, these observations only serve to shown even more clearly the necessity, above all, of inducing diuresis in heart cases with lost compensation.

**Diagnostic Groups of Chronic Gastric Disease.**—William Fitch Cheney (*Journal A. M. A.*, May 19, 1917) points out the many difficulties encountered in practice in trying to make cases of chronic gastric disease fit into restricted diagnostic classes. From a study of a large number of cases over a period of five years he finds it possible to separate five classes within the group, each of which is fairly well defined. The first is gastric cancer and the most definite of all. This is usually fairly readily diagnosed from the history, physical examination, and gastric analysis, but it should never be excluded without the evidence of a careful x ray investigation. The second group is that of gastric and duodenal ulcer, in which the diagnosis should rest upon careful clinical history, physical examination, gastric analyses, x ray plates, and fluoroscopy. Unless the greatest precautions have been taken the discovery of occult blood in the stools is of no value, but under such conditions it must be regarded as an important finding. Recovery of blood in small amounts or in occult form by means of the stomach tube is of no value at all. The history of periodicity of symptoms and the relief of pain by the taking of food are among the most important evidences of ulcer. Too much importance should not be given to the degree of acidity found on analysis, as this may vary within wide limits. The x ray evidence is the most important of all, when taken in conjunction with the symptomatology. The third group is that of chronic gastritis and is not marked by any truly characteristic symptoms. The most characteristic diagnostic feature is the occurrence of large amounts of very thick, tenacious mucus in the vomitus or test meal. Reflex symptoms may be the only ones complained of in these cases and one should therefore be on his guard. The fourth group is that of gastropotosis, in which the diagnosis is usually fairly simple.

**Typhoid Bacteriuria.**—Tanon and Dumont (*Presse médicale*, May 3, 1917) report the results of investigations on the urine of 1,500 cases of typhoid fever, proved to be such bacteriologically as well as clinically. Only twenty-nine specimens yielded positive results, the typhoid bacillus being found in eleven, the A paratyphoid organism in fifteen, and the B paratyphoid in four. The specimens were examined in the second week of complete apyrexia. No clinical evidences of renal or vesical involvement were observed in any case, and leucocytes in the urine specimens were very few. The ratio of two per cent. thus determined is taken to show that the danger of carriers is not as marked in the case of typhoid fever as has sometimes been asserted. Treatment, moreover, proved promptly effective in most of the cases of urine infection in this series. Hexamethylenamine being given in the dose of 1.5 grams a day from the time the infection had been discovered, the bacteriuria disappeared in a week to ten days in all but three cases, in which it persisted for a month. In two of these three cases the typhoid bacillus was noted; in the third, the A paratyphoid organism. But one case was not eventually freed of bacteriuria, remaining a true germ carrier. Hexamethylenamine medication in all typhoid and paratyphoid convalescents is recommended.

**Gonococcal Meningitis.**—A. Blind and R. Ricard (*Paris médical*, April 21, 1917) point out that in all cases so far reported of meningitis complicating gonorrhea the former has been chiefly spinal and appeared in the second or third week. In a new case they report, however, the condition began, on the day following coitus, with a violent chill followed by headache, backache, and later rigidity of the neck and spinal column, Kernig's sign, exaggerated knee jerks, and positive Babinski, somnolence, severe cephalalgia, vomiting, and fever. The urethral discharge appeared only on the third day after the beginning of the disturbance. Lumbar puncture yielded, under moderate pressure, a clear fluid with a few lymphocytes but no bacteria. Marked improvement in the nervous symptoms immediately attended the onset of the urethral discharge, the gonorrhea running its usual course thereafter. The initial condition is believed to have been a gonococcic septicemia, as shown by the chill and fever. The germ, reaching the meninges, soon found conditions there unfavorable to its development and passed to the more appropriate urethral mucosa. Here the catarrhal inflammation induced acted as a fixation abscess and relieved the general sepsis and meningeal irritation, free elimination of toxic material and active phagocytosis taking place in the urethral focus. The apparent absence of gonococci from the cerebrospinal fluid does not invalidate the view that the case was one of gonococcic meningitis, for the organism has been missed by various investigators even in clearly gonococcic involvements of joints and other serous membranes. Neither is the almost complete lack of cellular indications of disease in the cerebrospinal fluid an objection, many cases of manifest histological meningitis at autopsy having been noted where the cerebrospinal fluid had, as in the present case, shown merely a slight lymphocytosis.

**X Ray Diagnosis of Pregnancy.**—E. Albert-Weil (*Paris médical*, April 21, 1917) mentions as having interfered with the use of the x rays in the diagnosis of pregnancy the fact that a special technic is required for this purpose. The rays used must be of medium hardness, marking six or seven with the Benoist radiochronometer, and the apparatus must permit of very brief exposures. The fetal bones being but slightly calcified in the earlier months of pregnancy, plates showing fetal parts before the fifth month have not as yet been obtained. Cases in which the x rays formed the only basis of a diagnosis of pregnancy have been very exceptional, for after four and a half months the fetal movements and auscultation of the fetal heart more easily permit of a decision. Yet where a woman denies pregnancy or it is necessary to determine as early as possible if she is pregnant, radiography may be of great service even in the beginning of the fourth month, as illustrated in the author's case of a girl of fifteen, of very limited intelligence and hardly answering questions, who was brought to the clinic merely because of absence of menses for four months. The abdomen was slightly prominent, but the breasts were poorly developed and auscultation for the fetal heart and uterine sounds completely negative. Bimanual palpation gave no clear information and the hymen was intact. X ray examination revealed a fetal head clearly projected over the maternal sacrum and right iliac fossa, and vertebral rings coursing down in a series to the shadow of the pubis. Confronted with the plate, the girl admitted having had intercourse.

**Variations in Weight of the Tuberculous under Sanitarium Treatment.**—J. Henderson Smith (*British Medical Journal*, April 21, 1917) analyzed the records of weight of all patients in one institution for a period of six years. Of a total of 312 weeks, 285 showed a gain and only twenty-seven a loss, taking all of the patients together, though it seemed probable that some patients out of the whole number could have been found to have lost in any one week. The weekly average to a patient was found to have varied from a loss of over 0.4 pound to a gain of 1.4 pound. In some weeks it was found that all, or nearly all, of the patients would gain while in others the majority would lose weight. Taking all of the observations together it was found that each patient gained about half a pound a week during his stay in the sanitarium. It was also found that the average gain for a patient was 1.4 pound during the first week; 1.09 pound a week for the first four weeks, and about 0.4 pound a week during the ninth to twelfth week. There was noted a decided seasonal variation in the curve of weekly average gains, the lowest average gain occurring in February, the highest in June. The period of greatest gains occurred during the six months from May to October, the remaining months representing the period of least gain. It was found, however, that there was no obvious relation between the weather and the average weekly gains, although the six months of greatest gains fell during the period of most sunshine, highest temperature, and greatest rainfall. The climatic influence seemed, however, to be indirect.

# THE AMERICAN MEDICAL ASSOCIATION

## Sixty-Eighth Annual Meeting

Held at New York City, June 4 to 9, 1917

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### SECTION IN PRACTICE OF MEDICINE.

June 8, 1917.

**A Study of Chronic Arthritis.**—Dr. FRANK BILLINGS, of Chicago, reviewed in this paper the etiology, the anatomical changes, and the management of several hundred cases of chronic arthritis of an infectious nature, divided into three groups: progressive polyarthritis, peri-arthritis associated with myositis, and spondylitis. The etiological factor was usually a strain of streptococcus, not necessarily virulent, but the same morbid anatomy was produced sometimes by the gonococcus; in fact, it was to be hoped that before long instead of using the term "arthritis deformans," the bacterial type of infection would be specified. It was peculiar in that it was usually hematogenous. The joints were of vulnerable structure, in relation to the character of the tissues, which invited infection more than any other tissue of the body, and the interference with the blood supply made the character of the infection different from that of other tissues. A characteristic of infection through the bloodstream was destruction of vessels; there were hemorrhages and changes occurred in the nutrition of the joint resulting in retrograde metabolism. In the advanced stage the best one could do in treatment was to arrest progress, but in the early cases one might expect improvement and cure under proper management. The focus of infection should be found and removed with care and judgment, the circulation of the blood restored, and improvement in the general condition promoted. Patients treated with autogenous vaccines were carefully watched and the results recorded and checked against results in patients treated by other means. Patients with arthritis could not have the source of infection removed and then be turned away; they must be watched for months, the average time spent in the hospital being seven months. When they learned how to carry out the treatment, they did well, but this took time. Out of the total number of patients treated, most of them had reported practical recovery. There had been twenty deaths in the series, the causes being in most cases nephritis, acute appendicitis, streptococcemia, cholecystitis, erysipelas, and acute progressive anemia.

Dr. E. C. ROSENOW, of Rochester, Minn., had realized ever since his early association with Doctor Billings, that these patients with chronic arthritis needed help more than any other class and though they willingly cooperated for relief, they tested the mettle of the physician who undertook their treatment. Though most physicians felt that little could be done for these conditions, Doctor Billings's efforts had shown that they could be helped and in some instances cured. The line of treatment was

right, particularly in that the fundamental necessity was the prompt removal of the foci of infection, but it should be remembered that they needed aftercare. The physician observing closely and persevering in treatment would reap the same brilliant results that had rewarded Doctor Billings.

Dr. JAMES J. WALSH, of New York, deplored the tendency to faddism; one should avoid attributing all painful conditions to inflammation resulting from a focus of infection. Everybody with muscle trouble did not have myositis. Of course many foci of infection really existed in the teeth and considering this it was astonishing how strong was the fad for the toothbrush which was doing an immense amount of harm. Riggs's disease was becoming extremely common, more so than was realized.

Dr. HENRY A. CHRISTIAN thought that three features of Doctor Billings's paper should be emphasized particularly. The first was the possibility of danger in the extraction of too many of these infected teeth at one time. All physicians had seen patients in whom there was general septicemia following this procedure. The second was the difficulty in treating these patients when the foci of infection were removed late in the process after organic changes had been brought about in the joints. It was important to get these patients early. The third was the need for satisfactorily following up the treatment after the removal of the foci of infection. A good plan for hospital treatment was to organize groups or classes of these cases, to which the patients would return from time to time to report and in which they underwent some form of treatment, besides getting a little personal interest in each other and the stimulation that came from group treatment. This plan had worked admirably with chronic cases.

In closing the discussion, Doctor BILLINGS said that Doctor Walsh's remarks about the tendency of physicians to follow fads was true, but what the speaker had tried to bring out and what Doctor Christian had emphasized, was the necessity first to examine the patient thoroughly, note the symptoms, get at the cause, and then in infectious cases remove the cause. After that, treatment should be followed that would if possible restore the tissue involved; this might be done if the organic changes had not been destructive in character. As many of these patients could not remain in the hospital for the length of time necessary, Doctor Christian's idea of classes was a good one, or institutions might be founded for the special treatment required. These cases really did not belong to the general practitioner.

**Bence-Jones Proteinuria.**—Dr. SYDNEY R. MILLER and Dr. WALTER A. BAETJER, of Baltimore, Doctor Miller reading the paper, reviewed the literature on the description of these bodies as well



as that relating to the pathological features of the condition known as multiple myelomata with which the Bence-Jones proteinuria had previously been supposed to be specifically associated. By reason of the rarity of multiple myelomata it had been assumed that Bence-Jones proteinuria was equally scarce and many cases had been missed because of this belief. However, statistical study had shown that only eighty per cent. of the cases of multiple myelomata showed Bence-Jones proteinuria. It had further been found that the substance in question might appear in cases where no evidence of bone tumors existed. It was impossible, therefore, to assume that multiple myelomata and Bence-Jones proteinuria were inseparable. Attention had been called to the fact that, probably through failure to observe when the precipitate appeared in the acetic acid test, detection of the substance frequently failed. The purpose of this presentation of the subject was chiefly dependent on the observations made in the past eighteen months with reference to the excretion of this substance in two groups of cases in which there was no evidence of bone involvement and the bone marrow was normal. The first group were strong, healthy individuals with good renal function but very high blood pressure; the second group included individuals clinically nephritic with hypertension but under the age at which myelomata occurred.

These patients had impressed the authors with the belief that the first group study would probably result in evidence that the Bence-Jones proteinuria was an endogenous metabolic anomaly. The criteria by which its presence was accepted were described, and unless it was faulty or there were other substances simulating the Bence-Jones, these bodies were more common than was supposed. The etiological meaning of this substance in young persons with high tension was yet in question; it was not toxic when injected into animals, and the circulation of the protein in the blood could not be demonstrated. It was possible that it might represent a stage in the development of nephritic high tension.

Doctor BECK said that there was no doubt that many of these cases were overlooked. He himself had had cases belonging to the group with slight renal changes. The macroscopical appearance of the precipitate should make one suspicious in examining for Bence-Jones proteinuria. It was present in little particles, differing in appearance from any other protein and always adherent to the side of the test tube.

Doctor CHRISTIAN said there was no doubt that these Bence-Jones bodies collected in the urine apart from cases of multiple myeloma. The tendency had been when this substance was found to make this diagnosis. Multiple myeloma was a not uncommon disease; every physician had probably seen three or four cases; he himself had seen eleven and had made a study of the histology of the condition. The proteinuria occurring often in myeloma cases that at autopsy revealed a slight lesion in the kidney was a striking fact. Another queer thing was that apparently a considerable amount might be in the urine while it did not seem to be present in the circula-

tion. Recently the speaker had had a case in which the bodies were demonstrated in the blood serum, but in many cases it had not been demonstrated in the blood circulation or in the bones. This subject was important. One should find this substance in a group of cases and study the accompanying conditions. This study of Miller and Baetjer should stimulate other similar studies because it threw light on renal function very important in the question of nephritis, particularly in prognosis.

In closing, Doctor MILLER explained that he had omitted to mention in reference to the Bence-Jones proteinuria associated with nephritis the belief that the Bence-Jones substance was never found in an individual whose renal epithelium was normal. Another point was that the bones might be riddled in structure and not show on the x ray findings so that one should not rely on the x ray in association with the Bence-Jones proteinuria.

#### **The Dietetic Treatment of Nephritis, Controlled by the Chemical Examination of the Blood.**

—This paper by Dr. ARTHUR F. CHACE and Dr. A. R. ROSE, of New York, read by Doctor Chace, led to the following conclusions: A scheme of dietetic treatment for nephritis had been formulated and tested on advanced cases of interstitial nephritis. This treatment was based on the more recent advances in the field of nutrition which were briefly reviewed. So far the results from the treatment had been encouraging. The cases used in the test had been followed, not only by the usual clinical observations at the bedside, but also by frequent chemical examination of the blood. The determination of creatinine and urea nitrogen afforded an excellent and convenient means of gauging the kidney's capacity to eliminate nitrogenous waste products and noting the response of the nephritic to treatment. The plan provided a diet adequate in calories, protein, mineral elements, and food accessories. To attain this, a variety in the menu had been insisted upon. This insured a happier and more contented attitude on the part of the patient, the inclusion of all the requisite vitamins and the complementing of biologically incomplete proteins. At least one hot dish was provided each day by giving a bowl of cream soup. Green vegetables were given to bring the iron intake in excess of fifteen milligrams per diem. The sum total of the day's ash constituents should be decidedly alkaline in reaction and rich in calcium. Foods high in phosphorus were discriminated against, though not strictly barred, as were also foods of striking flavors. The day's energy requirement should add up to at least 2,000 calories and the protein should not exceed sixty grams.

**Nephritis from the Standpoint of Urea Excretion.**—Dr. FRANKLIN C. McLEAN, of New York, read this paper, which embodied the conclusions drawn from a series of studies in relation to the function which had to do with urea elimination in the various forms of nephritis and vascular disease. Urea retention, in the sense of a relatively increased concentration in the blood, was the result of increased resistance to the excretion of urea through the kidneys. The relatively increased concentration of urea in the blood overcame the in-

creased resistance to excretion and the organism was thereby maintained in nitrogenous equilibrium. The laws formulated by Ambard in regard to urea excretion applied in the condition of urea retention under a widely varying range of conditions, as a nitrogen intake and excretion. The numerical value of Ambard's constantly changed in urea retention, but the relation of the variable factors to one another remained otherwise unchanged. The occurrence of a high concentration of urea in the blood was not necessarily accompanied by symptoms suggestive of uremia.

**Nature and Treatment of Chronic Parenchymatous Nephritis (Nephrosis).**—Dr. ALBERT A. EPSTEIN, of New York, said that the use of high protein diet in the treatment of nephritis was contrary to established rules, but the procedure was really in stricter compliance with both pathological and clinical indications than the methods heretofore employed. There was no evidence that protein food was *per se* deleterious to the kidney. Protein did not affect the albuminuria in nephritis in one way or another. Large quantities of protein, however, were necessary to restore the tissue waste and to replenish the depletion of the protein constituents of the blood. In practice the use of high protein diet in the type of case under discussion led to improvement in general nutrition. This was evidenced by an increase in the protein content of the blood serum and by reduction of lipoids. Transfusion of blood, preceded by copious venesection, inhibited the degenerative changes in the kidneys that were produced, for instance, in mercurial poisoning. The replacement of diseased blood, such as was found in these cases, with healthy blood was a beneficial therapeutical measure. Improvement in the nutritional state of the patient was associated with the restoration of normal physicochemical conditions in the blood by virtue of which a proper exchange of fluid between the tissues and the blood was reestablished. This led to the elimination by the kidneys of retained material and various organic and inorganic salts.

Dr. EUGENE F. DU BOIS, of New York, said it was a mistake not to realize that the ordinary nephritic required a sufficient number of calories to keep him from the deficiency diseases. The nitrogen excretion and intake could be balanced by the proper kind of food and it should be remembered that the psychical effect of food was of value in arranging these diets.

Doctor CHRISTIAN said the chief value of these papers was that they presented facts, not theories. The idea of the relation of the urea in the urine to that in the blood was valuable because it had taught that sometimes when there was considerable accumulation of nitrogen substances in the blood the kidney was quite capable of doing very good work. Also that even when the quantity in the blood was small the renal condition might be worse than could be gathered from studies of the blood factors alone. In the question of nephritis the important thing was the toxic element that produced the symptoms. Here one was so far dealing with an hypothesis and that inhibited study of the condition itself. Yet if the diets were carefully controlled and their effects observed on the known substances, a nearer ap-

proach was made to what was going on with the unknown substances. The existence of the substances producing these symptoms would some day be discovered and then diets could be prescribed with more certainty, as well as drugs that would influence the formation, accumulation, or secretion of those substances. Until then, the study of cases accurately observed by numerical measures of all sorts would help to bring about the solution of the problem. General observation alone had relatively little value. In regard to the paper of Doctor Epstein, the cases he dealt with were the unusual forms of nephritis. The results obtained in that group might or might not be applicable to the usual chronic interstitial type. It did not appear that he had particularly observed that group. The tendency was to limit too much the protein intake of ordinary types. Many patients improved by being allowed more protein than they previously had.

Dr. LOUIS FAUGÈRES BISHOP said he thought the section was to be congratulated on the reports of the work that had been done on nephritis because it had brought to a definite point many things about which there had been much that was indefinite. In studies conducted in an agricultural institution in New Jersey, the feeding of animals in relation to the nitrogen outgo was observed in relation to the intake. Urea determinations were of no value without observations of the intake. The determination of the amount of retained urea in the blood was of great clinical importance. Like Doctor McLean, the speaker recognized that the so called chronic nephritic had a general disease. This was in accord with facts. Too much attention was paid to the kidney, which was only part of the general disease. The nephritic must be observed over a long period of years, and the possibilities of study of anaphylaxis would throw some light on the subject, but he did not think one should go over the whole subject of nephritis and neglect the consideration of food idiosyncrasies. The specific effect on nephritis of some article of diet to which the individual had an idiosyncrasy should not be overlooked. Doctor Bishop cut out all proteins and then allowed as much of the particular protein as was wanted, but the qualitative relations were preserved. The point was to treat the patient as well as the disease and that could only be determined by experience. Adequate feeding was very important but after all a simple matter.

(To be concluded.)

#### SECTION IN OBSTETRICS, GYNECOLOGY, AND ABDOMINAL SURGERY.

June 6, 1917.

**The Value of Blood Pressure Observations in the Practice of Obstetrics.**—Dr. J. MORRIS SLEMONS, of New Haven, Conn., stated the following conclusions: 1. The normal values for pregnancy were determined by observations upon 500 cases, and the curve presented an upward trend from the beginning to the end of gestation. Pressures of 140 to 150 millimetres Hg represented the upper limit of normal. 2. Blood pressure determinations proved an excellent means for the early detection of toxemia of pregnancy and pressures



above 150 millimetres Hg must be regarded in this sense. 3. Blood pressure occasionally served to distinguish the albuminuria of pregnancy from pyelitis. 4. It provided a method for measuring the efficiency of treatment employed in active eclampsia. 5. The ultimate prognosis in cases of eclampsia and similar toxemias might be most satisfactorily based upon the rapidity with which the blood pressure becomes normal in the puerperium. In seventy-five per cent. of the cases this occurred within two weeks and in that event the recurrence of albuminuria in a subsequent pregnancy was extremely unlikely; in ten per cent. of the cases the blood pressure remained high six to eight weeks, indicating serious renal damage and, therefore, a great likelihood of the return of the complication in a subsequent pregnancy; in fifteen per cent. of the cases slight hypertension persisted four to six weeks, and in this event it was uncertain whether or not the renal damage was permanent. 6. Blood pressure observations were especially useful when patients were carrying the double burden of a chronic valvular heart lesion and a toxemia. 7. As blood pressure determinations were essential for the estimation of the work the heart was doing, probably it would be by this means that we acquired ultimately a more rational method of deciding the question of the induction of labor in cases of valvular heart disease.

Dr. FRANCIS ASHLEY FAUGHT, of Philadelphia, said that preliminary records of the blood pressure before pregnancy were advisable in this work. Personal studies had shown in pregnancy an average systolic pressure of 119 millimetres Hg, diastolic 78, and pulse pressure, 41, these figures corresponding almost exactly to the recognized normal 3:2:1 ratio of the three types of pressure. The pulse pressure tended to lessen during pregnancy from an average of 44 millimetres in the second month to one of 38 millimetres in the last week of gestation. This resulted directly from a rise in the diastolic pressure. The general view that a low systolic pressure at the close of pregnancy implied a weak heart had been shown by Slemmons to be untrue. The speaker questioned, however, whether a rise in pressure in pregnancy always indicated a dangerous toxemia. Some cases with pressures remaining low during pregnancy developed a marked toxemia some days after labor without any accompanying rise in pressure.

**Has the New Born Child with Sutured Cord a Better Start in Life?**—Dr. FREDERICK J. TAUSIG, of St. Louis, presented a comparative report of the weight and temperature curves in two series of babies each numbering 225, the cord in one series being amputated by the Dickinson suture ligation method, and in the other ligated in the customary manner. No antiseptics except alcohol had been employed in the latter series, and plain gauze was used alone as a covering. A favorable impression of the suture method had been formed, and no complications had followed. Among the ligated cases, hemorrhage necessitating secondary ligation had occurred in two instances. No death from infection arose from contact with either series; the real danger of infection arose from contact with the hands. In eighty-five of the 225 suture babies

a rise of temperature had developed in the first ten days after birth, whereas among the ligation babies only fifty-one had had fever. This difference was probably due to the absence of capillaries in the cord, whereas in the skin surrounding the root of the cord, in which sutures were passed in the Dickinson procedure, capillaries were present. On the other hand, the freedom from discharge, granulomas, etc., were advantages in favor of the suture method. In none of the suture cases had a free discharge developed, whereas in the ligation series thirty-eight had had discharge, with a distinct odor in five instances. In forty cases the cord had not dropped off until the tenth to the fifteenth day. The rapid healing following the suture method was advantageous where circumcision was to be performed soon after birth. The weight curve in the ligated cases had dropped somewhat lower by the fifth day than in the sutured cases, though later in the ligated cases the weight had caught up quickly with the suture cases. In general, the rapid healing in the suture cases was favorable to a gain in weight. On the whole, one could conclude that, with due asepsis, the suture method would not greatly increase the ratio of umbilical infections. Umbilical hernia was not prevented by this procedure. The suture method caused a certain amount of initial shock and was applicable only in hospitals.

Doctor BOYD, of Philadelphia, stated that the suture method undoubtedly had advantages, but that the older method must still be generally taught because the suture procedure required for its performance the services of interns, the supervision of the obstetrician himself, etc.

Doctor BACON, of Chicago, advocated tying the cord at the level of the skin, thus avoiding the disadvantages of ligation at a point one half to one inch away from the skin surface.

Doctor TAUSIG, in closing the discussion, repeated that the field of the suture method was limited to maternity hospitals. In such hospitals, however, it was of great value in saving time and eliminating the severe infections which occasionally followed ligation.

**The Sacroiliac Joints in Obstetrics and Gynecology.**—Dr. JENNINGS C. LITZENBERG, of Minneapolis, insisted that in patients complaining of backache too little attention was paid to the back itself. That movement in the sacroiliac joints occurred in pregnancy had been amply proved. The ill effects of pregnancy in these situations varied from a slight discomfort to pain such as to prevent completely all body motion. Many women looked upon backache as a necessary accompaniment of pregnancy. The constant discomfort gave rise to nervous symptoms which, however, could be relieved through the agency of maternity corsets. Traumatic injury of the sacroiliac joints occurred very easily during pregnancy, but strapping brought marked relief under these conditions. The increasing weight of the abdomen in pregnancy strained the muscles of the back and threw the sacrum forward; hence the backache. Every pregnant woman should wear a suitable support for the prevention of this symptom. Backache was too commonly termed gynecological in origin. Pelvic symptoms might be due to sacroiliac trouble or on the other



hand the latter might be primary. Each of these conditions made the other worse and both had to be relieved. There might occur pelvic symptoms in the complete absence of pelvic trouble. Much backache during menstruation was sacroiliac, and wearing a sacroiliac belt gave prompt relief. The lesions might be either truly sacroiliac or merely occur in some nearby structure other than the joint. In simple backache adhesive straps or an elastic belt would be useful at first for diagnostic purposes. The belt might be applied over the ordinary corset. In all pregnant women the combined support of a sacroiliac belt and a maternity corset was advisable.

Doctor REYNOLDS, of Boston, held that chronic backache might be due to either one of two separate conditions somewhat similar to their pathology and treatment: 1, looseness of the joints 2, an exudate into the origins of the erector spinae, the result of overstrain. Almost all pelvic backaches proved to be due to the latter cause. A peculiar crouched position in walking was characteristic of these cases. Where the condition was slight, removal of the cause cured the backache; where it had been of long standing, an operation alone would fail, but the added use of belts or corsets would yield a prompt cure. Examinations both of the pelvic organs and of the back should be made regularly, and all doubtful cases referred to an orthopedist before operative intervention.

Doctor LITZENBERG closed the discussion by stating that when adhesive straps were used they should, to afford the necessary support, be passed below the iliac spines and above the trochanters and brought together in the centre. An apparatus with a high corset back was even preferable to an ordinary maternity corset in these cases.

**Cæsarean Section Scars.**—Dr. ALFRED B. SPALDING, of San Francisco, stated that a conservative estimate of the frequency of rupture of a Cæsarean scar was probably about once in 200 confinements succeeding the Cæsarean operation. Findley had collected from the literature sixty-three cases of rupture. The speaker reviewed the rupture cases reported, respectively, after various types of Cæsarean section. There was not enough evidence to prove that the normal syncytial cells might so attack the uterine wall as to lead to rupture. The wall might, however, be thinner at the placental site than elsewhere. The well healed Cæsarean scar was practically the same as the normal uterine wall, and furthermore, the placenta might act as a splint for a faulty scar. As for the method of rupture, it was probable that the bag of waters could separate the tissues between stitch holes in the uterine wall and thereafter cause rupture of the entire scar on the principle of the water wedge. Hydramnios and the insertion of bags might likewise lead to rupture in this way. More than ten per cent. of Cæsarean section scars were defective, chiefly through imperfect healing of the endometrium. At the placental site, the syncytium was thus given an opportunity to invade the uterine wall, or syncytial tissue might have become included in this wall. The placenta could lead to rupture through retroplacental hemorrhage. The prognosis of rupture in extraperitoneal Cæsarean section was better than that of the classical opera-

tion. On the whole, the indications for Cæsarean section should not be taken to include cases that might be equally well treated by induction of labor, pubiotomy, or vaginal hysterotomy. Of the four histological sections exhibited from the uteri of women who had been subjected to Cæsarean operations, one showed complete rupture in labor with breech presentation; the scar was seen to have been infiltrated with placental villi. Sections from the remaining unruptured specimens showed in one instance perfect union without thinning of the scar area; the second, thinning to less than one half the normal uterine thickness, without implantation of placental tissue; and the third, attenuation of the uterine wall to the peritoneal coat with placental infiltration of the scar.

Dr. JOSEPH R. LOSEE, of New York, in studying a number of cases of rupture, had found the site of the scar sometimes thick and at other times thin. Infection doubtless played a part in weakening the scar. Use of a continuous suture might assist in the prevention of rupture. The placenta had no effect on the scar in subsequent pregnancies unless the scar was already weak. Ruptures invariably took place directly through the scar. In pregnancies following Cæsarean section a careful watch of the condition of the uterus should always be kept.

Dr. ASA B. DAVIS, of New York, maintained that rupture was sometimes due to excessive tension in inserting the sutures, the tension being thought necessary to secure a sufficient coaptation of the uterine tissues. Probably no single fault of technic was, however, alone responsible for ruptures.

Dr. JAMES A. HARRAR, of New York, pointing out that the integrity of the scar was always an unknown factor, asserted that in order to reduce this uncertainty, it would be well to avoid the classic Cæsarean operation wherever there existed a tendency to infection. A contracted uterus with its wall one and a quarter inches in thickness should be sutured firmly, but where the thickness was only half an inch or less, the suturing should be done much more loosely, to prevent tearing through when the organ underwent contraction. One should avoid taking too wide a bite in the visceral peritoneum, as this technical error led to gaping of the deeper layers of the uterine wound, a situation where deficiencies of healing usually occurred through infection or for some other reason.

Dr. NATHANIEL R. MASON, of Boston, referred to experiments made by Williams in 1910 in which uterine scars were tested by suspending weights on the tissues till rupture occurred, the uterine muscle had always ruptured before the scars. Any technical deviation from Säger's original methods of suturing favored imperfection of the uterine scar. There had been too much rapid operating in these cases. The entire uterine muscle must be included in the sutures, and it was advantageous to place a deep suture through the muscle above and below the angles of the uterine wound.

Doctor BANDLER, of New York, thought more careful comparison of the results of various methods of suturing was advisable. He no longer used chromic catgut in these cases, the uterine muscle being too delicate to withstand it. Nor did he use

chronic gut even in perineorrhaphy, as it cut through the muscle tissues. Cæsarean section was best done in clean cases, and preferably in cases not previously examined manually. In suturing, the uterine lining must be carefully protected. He administered pituitrin at the time of making the incision, and used No. 2 iodized catgut, usually double, beginning half an inch below the lower end of the incision and passed in like a subcuticular stitch. The suturing was so done as to shut off the lining of the uterus entirely from the wound. Small doses of ergot were given for several days to keep the uterus the same size as when the sutures had been passed.

Dr. E. GUSTAV ZINKE, of Cincinnati, maintained that any form of suture might give success. The essentials were: 1, operating in an aseptic wound; 2, thorough apposition; 3, covering the wound completely with peritoneum. A second Cæsarean section was necessary only where the condition that had originally required it persisted. If it did not, e. g., in cases where the operation had been performed because of eclampsia or placenta prævia and if conditions in general were favorable one might take the chances of nonoperative treatment. The patient must then, however, be in a hospital and carefully watched.

Doctor SPALDING, in closing the discussion, pleaded for a limitation of the growing list of indications for Cæsarean section. This applied especially to such indications as being two or three weeks over-time, or a breech presentation in which the procedure might not have proved necessary. Cæsarean section in the soft uterus of eclamptics was a bad procedure. In placenta prævia one should, before deciding on Cæsarean section, find out whether the condition was of the lateral variety.

**Premature Separation of the Normally Implanted Placenta.**—Dr. ARTHUR H. MORSE, of New Haven, Conn., stated that the frequency of this accident was about once in two or three hundred pregnancies. The condition was likely to cause death in the mother in one third to one half the cases and of the infant in ninety to ninety-five per cent. The decision as to conservative or radical treatment was based on the degree of uterine distention, the pains, and the general condition as reflected in the pulse and the extent of the anemia. A case was referred to in which supravaginal hysterectomy had become necessary. The causes of the premature separation were not clear. Experiments had shown that it was not due to simple distention of the uterus. Recently a case of uterine fibroids with twisted pedicle of one of the tumors had been observed in which the histological appearance of the growth was strikingly like that previously noted in the uterine distention experiments. Similar hemorrhages had occurred throughout the twisted myoma because of interference with the circulation through it. Additional experiments had then been performed in rabbits, ligation of the uterine veins being observed to cause enormous engorgement of the vessels of the organ, together with placental separation and hemorrhage without the placenta. The uterus thus affected behaved like a structure with a twisted pedicle. The identity of

an interference with venous return from the uterus as the underlying cause of premature placental separation was supported by the fact that this accident occurred much oftener in multiparous than other women, manifestly because of the greater relaxation of the abdominal wall in these cases and the consequent greater mobility of the uterus, which predisposed to venous obstruction in this organ.

Dr. JAMES W. MARKEE, of New York, stated that among 100,000 cases of pregnancy observed at the New York Lying-in Hospital, including both outdoor and indoor services, there had occurred 254 instances of placental separation, or one case in 393. Among indoor cases the ratio had been one in 170; among the outdoor, one in 1,085. This difference was accounted for by the fact that the indoor group comprised many ambulance, last resort cases. Among 152 cases of marked hydramnios, premature separation had occurred only three times. Nor was toxemia probably the underlying cause of separation. The accident had been twice as frequent in multiparæ as in primiparæ. Of the infants, sixty-one per cent. had succumbed. The treatment consisted in rupturing the membranes and allowing the muscles to shut down on the bleeding vessels. Morphine was of service for the attendant shock. If no improvement followed, Cæsarean section was indicated. Sixty-eight of the 254 patients had been able to deliver themselves, with two maternal deaths.

**Ectopic Gestation.**—Dr. LOUIS J. LADINSKI, of New York, in the interval between 1907 and 1912 has reported 110 and 200 operations respectively. Since then he has operated in seventy-five additional cases. The signs and symptoms of ectopic gestation might be divided into two groups, those of the ruptured and the unruptured. The diagnostic signs and symptoms in the unruptured type were amenorrhea or some irregularity of menstruation; a feeling on the part of the patient that she was pregnant; pain which was sharp, lancinating, and paroxysmal in character not only referring to the affected side but particularly to the ovarian region; bleeding from the uterus usually beginning about the sixth or seventh week; the presence of a distended tube on one side; enlargement of the uterus, its consistency, however, being that of the nonpregnant organ. The most reliable sign of uterine pregnancy was the elastic area found in the median line of the anterior wall of the body of the uterus above the junction of the body with the cervix. In tubal pregnancy, while the uterus was enlarged, the elastic area in the anterior wall was never present except where the disintegration of the decidua did not take place before the removal of the gravid tube. In that case there was absence of bleeding and the decidua was subsequently expelled in the form of a cast of the uterus. In this series of 380 cases there had been but three decidual uterine casts. Two negative signs of great importance were the exclusion of uterine pregnancy and the absence of elevation of temperature. The leucocyte count and the hemoglobin test were of no value in the unruptured variety. After rupture there might be an increased leucocyte count and reduced hemoglobin percentage.

It was a fairly safe rule to suspect ectopic gestation in every patient who had amenorrhea which was followed by irregular bleeding and pain on one side. In ruptured tubal pregnancy the additional local and constitutional signs of internal hemorrhage attendant on rupture were pathognomonic of the condition. The symptoms caused by rupture depended for their severity on the extent of the rupture and displacement of the ovum and the amount of internal hemorrhage, and ranged and merged from a state of syncope to that of shock, collapse, and occasionally unconsciousness. The anemia, blanching of the mucous membranes, thirst, air hunger, shallow and rapid respiration, feeble pulse, and subnormal temperature varied according to the degree of the hemorrhage and the resisting power of the patient. Locally the abdomen was distended and tender, and palpation elicited a fluid wave. Bimanual vaginal examination, as a rule, revealed a soft boggy tumor on one side or the other. When the gravid contents became entirely detached and floated in the peritoneal cavity, or when perforation took place during the early months of pregnancy, especially in the isthmal type, no localized pelvic tumor was palpable, and the only evidence of rupture was the presence of free fluid in the pelvic and abdominal cavities. Exploratory vaginal section for diagnostic purposes, except in pelvic hematocele and hematoma, was absolutely uncalled for in ordinary tubal pregnancies and was an unnecessary procedure. The only rational treatment of ectopic pregnancy was operative. It was undeniably a fact that both the mortality and morbidity of this disease were greatly increased by delayed operation. In this series of 385 operations there were only four deaths and these have been reported in detail in previous reports. In one of these, death followed a simple salpingectomy in an unruptured tubal pregnancy; the other three were undoubtedly due to delayed operation. Hemorrhage from a ruptured tube must be regarded in the same light as hemorrhage from any other source and should be checked as quickly as possible regardless of the severity of the shock. Doctor Ladinski believed that if the operation was performed with ordinary skill and rapidity, the additional shock was so slight that it could not possibly be held responsible for a single death, especially if infusion or transfusion were resorted to as soon as the abdomen was opened. Every patient in profound shock operated upon by him recovered; no patient was refused the benefit of operation as long as there was a cardiac beat. The technic employed was practically identical with that employed by him in his first operation twenty-one years ago. He did not subscribe to the doctrine of deferring operation and trusting to chance, the inevitable result of which was to diminish rapidly the margin of reserve strength of the patient. He did not see the wisdom of the rule of watching the patient to see if she improved or lost ground with the view of putting off the operation if the patient improved, and operating if she grew worse. If the patient's condition improved without operation, there

could be no question that she would be better off because of the operation, but to wait until the patient grew worse meant the unnecessary loss of very valuable and precious moments and possibly the sacrifice of life. He had no hesitancy in saying that the operation for tubal pregnancy was attended by no greater surgical risk than opening the abdomen for other conditions, and shock was assuredly no contraindication to the immediate operation for ruptured tubal pregnancy.

(To be continued.)

#### SECTION IN NERVOUS AND MENTAL DISEASES.

June 6, 1917.

**Hysterical Lethargy.**—Dr. DAVID I. WOLFSTEIN, of Cincinnati, read this paper describing a case of fatal hysteria, or functional exhaustion, organic disease having been excluded. The patient was a middle aged female who exhibited stuporous periods, at first transitory, then becoming permanent until the disease ended in pneumonia. No gland disturbance could be detected, there was no vascular disease, and no uremia. The facts pointed to complete functional exhaustion of the centres of the brain, though the underlying factor must have been physical, probably some toxemia.

Dr. HUGH T. PATRICK, of Chicago, thought that the facts presented in this case pointed to a toxic origin of the condition, except the fact that she could be roused, which was not usual in toxic disease. However, in brain syphilis the patient could be roused from stupor and so could a man in an alcoholic coma. He had seen a similar case in which there was disturbance of the endocrinal glands.

Dr. C. R. BALD, of St. Paul, said that a condition need not necessarily be called hysterical because its etiology was not understood. Doctor Wolfstein's paper was very well presented, but the title was open to criticism. He had seen a similar case, a woman of sixty who suffered a bad fall and later suffered at intervals from unconscious attacks; she was cured by a suboccipital decompression.

Dr. JOSEPH COLLINS, of New York, said there were many reasons why this case should not be called hysteria. In the first place, hysteria did not develop after the age of fifty years unless from trauma. Doctor Patrick had analyzed this case correctly. Perhaps there was arteriosclerosis, but not enough to produce motor or sensory disturbances. It might be that the case was toxic in origin, or the alkalinity of the blood might have changed.

Dr. D. S. BOOTH, of St. Louis, had had a similar case in which no organic lesion could be discovered nor were there any results from complete laboratory and clinical examinations, and at autopsy the findings were negative.

Dr. TOM WILLIAMS thought the nomenclature was of small consequence to the value of comparing notes on these cases which came to everyone from time to time. He remembered a young man with a stuporous condition with intervals of wakefulness and it was thought he had pituitary deficiency. He died, and at autopsy nothing could be found. Another case was that of a young woman with attacks of this kind with hemiplegia and definite organic signs in aphasia and paraphasia and permanent



spastic condition of the right foot. After operation for appendicitis the attacks cleared up and she became perfectly well. This was undoubtedly of toxic origin.

Doctor GOSLEIN, of Trenton, said that autopsy showed a physical basis for these conditions that sometimes occurred in dementia præcox or hysteria. One case he remembered diagnosed as an hypophyseal tumor showed as the only physical sign a bitemporal limit of the field of vision.

**The Neurasthenic at the Threshold.**—Dr. FRANCIS R. FRY, of St. Louis, said that the neurasthenic was not taken seriously. The physiological condition of the patient should be thoroughly understood before an attempt was made to understand the mental side. The neurasthenic was absorbed in his sensations and never possessed a mental equilibrium, but there might be some physiological basis for this. Toxic metabolic products and their effects needed careful consideration. There should be an orderly argument in considering the neuroses from neurological and clinical sources.

Dr. HUGH T. PATRICK said that many cases of neurasthenia were exhaustion neuroses; some were too abnormal to be explained simply by fatigue; in some there was constitutional inferiority, and in some an abnormal state of emotions. The diagnosis of hysteria should be made very seldom and that of psychosis very often.

June 7, 1917.

**Early Recognition of Multiple Sclerosis.**—Dr. LEO M. CRAFTS, of Minneapolis, Minn., said that multiple sclerosis was considered one of the most common organic diseases of the central nervous system by European observers. It was comparatively infrequently recognized in this country and was undoubtedly often overlooked. Etiologically nothing was definitely established. It was impossible to conceive how present attributed causes could act continually or recurrently, as they did not show like behavior in any other conditions. The question of endogenous or exogenous origin was still open. It was probably autotoxic, a vice of metabolism. Histopathology indicated a gliosis destroying the myelene sheaths, axis cylinders largely persisting. The classical picture of Charcot was not often seen and there were wide variations in symptom groups. Spontaneous remissions were the most striking single characteristic. Trauma and the puerperium had a marked influence in aggravating the process and causing recurrences. The minimum picture necessary for a positive diagnosis was the combination of one characteristic cerebral and one spinal symptom. Doctor Crafts gave an analysis of twelve cases under recent observation and concluded with a word on prognosis and treatment.

Dr. E. D. FISHER, of New York, said the differential diagnosis between multiple sclerosis and hysteria was sometimes difficult; many cases apparently of the latter turned out to be the former. The etiology was probably of toxic origin. A peculiar characteristic of the disease was that the degeneration did not act, as in myelitis, with continuous degeneration, but with remissions. It was probable there was no cure; no treatment would affect the

sclerosed tissue and, as far as was known, no new formation was possible. All that could be done was to alleviate some of the symptoms.

**Progressive Muscular Atrophy: Charcot-Marie Tooth Type.**—Dr. GEORGE WILSON, of Philadelphia, read this paper. This condition was described in 1886 by Charcot-Marie as a muscular atrophy, often familial, starting in the feet and legs and later involving hands and forearms. It was found to be an hereditary disease, affecting more males than females, although the females transmitted it to their offspring. The disease had a long progressive course and one case was cited of a man who had it for forty years before it disabled him sufficiently to make him stop work. Some of the clinical features were a characteristic clubfoot and a peculiar flattening of the muscles of the leg. The perineal group of muscles were especially involved. It was surprising in a disease in which atrophy played such a marked rôle that the anterior horns often escaped, although there was often marked neuritic degeneration. All these diseases were definite myopathies, and though varied in type all included pathological changes in the muscles and nerves. The patients could not be cured.

**Metabolism of Muscular Dystrophy.**—Dr. SIMON PHILIP GOODHART, of New York, presented the result of a long series of observations at the Montefiore Hospital. The studies were pursued with the cooperation of Dr. N. W. JANNEY and were directed toward analyzing changes in the metabolic condition in these cases. A special diet kitchen was used and the blood and urine were taken in the morning to avoid the influence of feeding. A dysfunction of the ductless glands was found in every case, which might indicate the etiological factor as endocrine disturbance. Underdevelopment of the bone with osseous changes was present in every case. There seemed to be no relation to color in the incidence of the disease, but as regarded sex, more males were affected, though it was transmitted through the females to their offspring. Therapeutics should be based upon glandular extracts. It was not yet apparent which gland or glands were affected, but no direct connection with involvement of the pineal gland could be discovered by x ray evidence.

Dr. N. W. JANNEY, of New York, said that the fact should be emphasized that in other endocrinal disturbances this same metabolic picture was found.

Dr. L. M. CRAFTS, of Minneapolis, said that this study was particularly valuable in consideration of the interest these muscular dystrophies were receiving, abroad as well as in this country. The scholarly presentation of applied facts did more to help in the outlining of treatment for these conditions of obscure origin than the hypothetical theories of countless investigators. There was undoubtedly endocrinal disturbance in these cases.

**The Difference between Syringomyelia and Amyotrophic Lateral Sclerosis.**—Dr. EDWARD D. FISHER, of New York, presented this case. The patient was a male, thirty-five years of age, with negative personal history. He fell in a football game and after the injury developed progressive symptoms of syringomyelia. Operation was later

advised and the cord opened. No tumor was found, but a general gliosis. The lesion was probably due to hemorrhage into the cord and the gliosis developed later. The patient was improved by operation. There was marked sensory disturbance before the operation, complete anesthesia to touch, pain, and changes in temperature in the upper and lower extremities. From the second cervical to the tenth dorsal there was extreme hyperesthesia to touch and pain. This had disappeared since operation. The anesthesia was not so marked now as it was before operation.

#### **Familial Head Nystagmus in Four Generations Associated with Ocular Nystagmus.**—Dr.

NATHANIEL S. YAWGER, of Philadelphia, reported the case of a Russian Jewish family in which at least four generations showed the affliction. Members from three generations were interviewed. The features of the cases were the persistence of the associated nystagmus in the stock and throughout the lives of the individuals, together with certain other nervous manifestations, notably stammering. Both sexes showed the combined nystagmus and both transmitted it. The phenomenon did not vary markedly in the different members of this family; therefore the manifestations of one, a male forty years of age, were sufficiently descriptive for the others. This man was of the third generation and though not subjectively aware of his head movements, he knew from others that they obtruded themselves many times a day. When observing himself in a mirror with his attention directed toward the phenomenon, it was never manifested. The oscillations which appeared in series were usually made up of ten or twelve individual movements, they were always horizontal, and in character often impressed the observer as a repeated sign of negation. The speed was about 120 a minute. An almost constant unsteadiness of the eyes was seen and this was intensified by all extreme ocular movements, but the direction was invariably horizontal. In rate it was about 200 a minute. The term nystagmus as applied to this family disorder was extended beyond its usual application. Nystagmus was by no means limited to eye movements and was described as being involuntary, coordinated, and rhythmical movements of frequent occurrence, resulting from alternate contractions of opposing muscles. The condition as here shown was believed to be distinctly different from the movements of the head and eyes occasionally observed in infants, since the latter was a coordinated neurosis of temporary duration. It was remarked that in albinism the irides were without color and individuals showing this condition were remarkably nystagmic. In the cases here described, dark eyes predominated, however, and the color of the iris would hardly have much bearing upon nystagmus of central origin which was the probable seat of the disorder in this family. As to transmission, in both instances where males transmitted, they were themselves affected, while the female who handed down the disorder was not nystagmic but transmitted it to her two sons and these were by different husbands. It was suggested that this remarkable cephalic and ocular family nystagmus might be due to some obscure instability of the centres governing these movements.

Dr. I. ABRAHAMSON, New York, said that if the head nodding and stammering speech had been connected there would have been a quivering of the voice which was not the case.

**Cerebrospinal Fluid Pressure.**—Dr. ANDREW L. SKOOG, of Kansas City, stated that the choroid plexus gland was seen by Herophilus, Galen, Vesalius, and others of the early Christian era, but it was not until quite recently that the source for the cerebrospinal fluid was ascribed to the cells of the choroid plexus gland. Quincke, in 1872, performed some early experimental work on pressures in animals, but his first lumbar puncture on man was performed nineteen years later. He described his apparatus for registering pressures. The speaker described and illustrated his own apparatus for rhachiocentesis, which could register accurately fluid pressure. He considered normal pressure as ranging from 100 to 150 millimetres in the sitting posture. It was stated that the vast majority of the pathological pressures was above normal. Brain tumors gave the highest pressure, often ranging from 600 to 700 millimetres. Tubercular meningitis gave pressures not quite so high. A number of other diseases were listed for high pressures. Abnormally low pressures were much less frequently encountered. Transverse lesions of the spinal cord or its coverings might obstruct the downward flow of the spinal fluid in the subarachnoid space, so that the fluid registered at the lumbar spaces zero or only a few millimetres. The speaker reported one of his own cases, in which the choroid plexus gland had chronic pathological changes as a result of syphilitic disease. Many of the cells of the choroid plexus gland were completely destroyed. Some cells showed degeneration. Specific changes in the bloodvessels were observed. Many gummatous areas with dense round cell infiltrations were observed. The case presented clinical manifestations of brain and spinal cord lues. At the lumbar puncture, the spinal fluid pressure measured about thirty millimetres, and was reduced to nil by removing three c. c. This case supported the contention that the bulk of the cerebrospinal fluid was secreted by the cells of the choroid plexus gland.

**Organic Changes in the Central Nervous System Due to Probable Focal Infections.**—Dr. GEORGE W. HALL, of Chicago, stated that toxins could spread in the nerve roots of the pia and the effects would pass to the lateral columns of the cord and radicular fibres. Paralyzes were caused by spreading inflammation, from infections of the peripheral nerves passing to the meninges and cord. The teeth were often the source of infection and in one of the cases cited, a man of good habits who had marked pyorrhea, there was inflammation around the pons, as shown at autopsy. Two other cases of facial paralysis had been shown to be due to infected teeth. In another case arthritic changes in the spine of a multiple sclerotic nature came from infected teeth.

**Sciatica and Its Treatment.**—Dr. I. STRAUSS, of New York, said that these cases, being serious conditions of nerve inflammation, should be observed and treated by neurologists. Treatment by injection into the perineal sheath should be tried, but the landmarks for this treatment must be extremely

well marked, as otherwise there was danger of entering the nerve. He advised doses of aspirin with soda in these cases and an epidural injection of sixty to ninety c. c. normal saline every three days. These patients were often so greatly improved as to be able to go back to work. It was well known what a lingering, chronic course this disease usually took.

**Pituitary Disease.**—Dr. ISADOR ABRAHAMSON and Dr. HYMAN CLIMENKO, of New York, Doctor Abrahamson reading the paper, said there was great difficulty in differentiating these cases which were due to pituitary involvement pure and simple, and those complicated by involvement of other glands. Dwarfism was associated with hypopituitarism and gigantism with hyperpituitarism. There were all degrees of difference in these derangements and no reliance could be placed on the sugar tolerance tests because excessive sugar tolerance was often found in normal persons. A polyuria was, however, often observed. Some internal mechanism tended to keep hemoglobin content constant so that it showed no marked variation.

**Antipoliomyelitis Hesse Serum.**—Dr. MARCUS NEUSTÄEDTER and Dr. E. BANZHAF, of New York, stated that the experiments had been carried on for three years with monkeys. Horse serum had a higher potency in specific substances than human serum from individuals recovered from the disease anywhere from seven to forty-four years before. Convalescent human serum was hard to obtain and it was particularly hard to secure that containing sufficient antipoliomyelitis material.

**Persistent Treatment of Epilepsy.**—Dr. HOWELL T. PERSHING, of Denver, spoke of the rarity of systematic treatment in epilepsy and of the tendency to attacks even after long intervals of freedom. He advocated the systematic and continuous use of bromide for the prevention of occurrence of attacks and for the removal of the patient's dread of future attacks. He advised the administration of twenty grains three times a day in water. The prescription might be varied or added to from time to time as indicated by the needs of the patient. The dose was never to be omitted, though it might be reduced. He cited many cases where the attacks were kept in abeyance by this means.

Dr. L. PIERCE CLARK, of New York, said that suppression of attacks was not enough; persistent treatment was needed, but it should also be directed to the adjustment of the epileptic's life to his surroundings.

*(To be concluded.)*

#### SECTION IN GENITOURINARY DISEASES.

June 6, 1917.

**Bladder Disturbances Due to Nerve Lesions.**—From a review of the literature of the last few years, Dr. GEORGE GILBERT SMITH, of Boston, found that there were several organic nervous diseases accompanied by bladder disturbances which were not mentioned by urological writers. Among these conditions, most of which were well known to neurologists, he found syringomyelia, multiple sclerosis, myelitis, and postdiphtheritic paralysis. He reviewed the physiology of micturition, classified the bladder disturbances as belonging to one of four types, and

illustrated by case histories the occurrence of bladder disturbances in syringomyelia, multiple sclerosis, and postdiphtheritic paralysis.

**Vesical Diverticula: Operation on Two Cases with Remarks on Technic.**—Dr. BRANSFORD LEWIS, of St. Louis, showed that these cases explained the history of long continued pyuria resisting treatment, and with intermittent chills and fever. Careful technic in the two cases operated by Doctor Lewis produced a dry wound in about five days. It was important in these operations to keep up continuous aspiration of the urine so as to keep the bladder wound dry, and it was advisable to put a catheter in the ureter of the affected side to mark it and to avoid injuring it.

**Syphilis of the Bladder.**—Dr. HARRY A. FOWLER, of Washington D. C., was absent and the paper was not read.

**A Study of the Results of Treatment of Various Types of Bladder Tumors.**—Dr. JOHN T. GERAGHTY, of Baltimore, laid stress on the great advantages of the combined use of radium and fulguration in the treatment of those bladder tumors which were not indurated and frankly malignant.

June 7, 1917.

**Differential Diagnosis of Lesions of the Urinary Tract from Those of the Gastrointestinal Tract.**—Dr. LEON THEODORE LEWALD, of New York, said that how physicians, previous to the discovery of the Röntgen ray, made correct diagnoses of obscure intraabdominal lesions excited wonder and admiration. Present methods of diagnosis demanded hours of painstaking combined urological and Röntgen ray examinations often over a period of several days. But the reward of a correct diagnosis without an exploratory operation was ample compensation for time and energy expended. Numerous instances were cited where failure to invoke the aid of the röntgenologist and urologist prior to operation for supposed chronic appendicitis, etc., had resulted in failure to cure the patient really suffering from a lesion in the urinary tract. Thorough Röntgen ray examination of the abdomen before and after the introduction of contrast substances was essential to correct diagnosis prior to operation in nearly every case.

**Clinical Diagnosis of Lithiasis.**—Dr. HENRY G. BUCBEE, of New York, in reviewing 198 cases, remarked that symptoms of stone were often absent. Pain was the most constant symptom and x ray findings were positive in ninety-eight per cent., whereas the urine examination was unsatisfactory. All ureteral stones were of renal origin. It was of great help to boil the catheters a long time to make them flexible. It was well always to use the wax tip and moreover to have the patient return for further examination, as one negative test was often misleading. Stones of moderate size in the ureter might often be removed by twisting the ureteral catheter around them and withdrawing them. Calculi of the bladder, prostate, and urethra should be diagnosed if the examination has been complete.

**The Intravenous Phloridzin Test.**—Dr. MARTIN KROTOSZYNER and Dr. WILLIAM E. STEVENS, of San Francisco, in the first part of their paper, reviewed



the literature and described the technic of the hypodermic phloridzin test. The failure to describe technical details in textbooks and other publications was, according to the authors' experience, most probably responsible for the often reported failures of obtaining phloridzin glycosuria. Cumbersome technic and length of time required for its performance appeared to be the most important objectionable features toward sidetracking or eliminating the hypodermic phloridzin test in favor of the more commodious and expeditious phthalein method. Success in meeting the first drawback depended upon the possibility of bringing the glycoside to the cystoscopic room in a vehicle in which it could be kept indefinitely in solution without precipitation of phloridzin crystals. Experimentation with ampoules as suggested by Greene disclosed the fact that ampoule efficacy became vitiated in the course of time, four months constituting the limit after which it was considerably lessened or entirely extinct. Finally tablets were devised, containing 0.01 gram phloridzin, by the use of which the technic of intravenous injection was rendered as simple and expeditious as that used in the phthalein test. Intravenous injection of phloridzin in doses of 0.01 gram and even 0.02 gram was, by careful experimentation, found to be entirely harmless and as efficacious as hypodermic administration of the drug. The authors' conclusions were as follows:

1. The intravenous phloridzin test, with its simplified technic, was a commodious and expeditious procedure.
2. In normal cases sugar appeared within seven minutes in bladder urine, and within five minutes in renal urine; acme of sugar excretion set in within a few minutes, and its disappearance occurred within forty-five minutes after phloridzin injection.
3. As a test for total renal permeability—bladder test—its usefulness was limited; prompt appearance of sugar generally indicated normal, and persistently delayed appearance was characteristic of impaired renal function; quantitative determination of total sugar excretion was useless.
4. As a test for comparative renal function the intravenous phloridzin test gave more accurate and thus more reliable results, while its technic was as simple and less time consuming than that of the phthalein test.

#### Comparative Results of a Number of Functional Kidney Tests on a Series of Patients.—

Dr. BENJAMIN A. THOMAS, of Philadelphia, was enthusiastic in his praise and advocacy of the indigo carmine test, although it was well to use more than one test in making a diagnosis. He did not consider that Ambard's quotient was of any great practical value.

Dr. W. F. BRAASCH, of Rochester, Minn., remarked that while the various tests had different significance, he personally preferred the phenolsulphophthalein.

**The Value of Making a Routine Leucocyte Count on the Urine in Infections of the Higher Urinary Tract.**—Dr. HERMAN L. KRETSCHMER, of Chicago, said that a leucocyte count was the only true scientific means of keeping an exact record of the progress of a case of pyuria. The count was done with a counting slide very much like that used

for blood count work. Charts were shown illustrating the exact record which may be made and kept by this method.

**Surgical Diseases of the Urinary Tract in Children.**—Dr. ABRAHAM HYMAN, of New York, said that it was not generally recognized that children were subject to most of the urological diseases common to the adult. As a result of clinical experiences, the speaker had become convinced that diagnosis in affections of the urinary tract in children was by no means accurate, and that many cases were overlooked. The chief reason for this was that the modern methods of examination considered routine in the adult—cystoscopy, urethral catheterization, x ray, and functional tests—were seldom applied in the young. Until recently satisfactory instruments for examining children were not available; they might now be obtained. The instruments used were made to fit the length of the urethra of a five year old boy, eight to ten centimetres, and are 10½ to 12½ F. calibre for observation, and 15 to 18 F. for catheterizing. The youngest male cystoscoped was seventeen months old, the youngest female fourteen months of age.

The indications for cystoscopy were not as broad as in the adult, and should be reserved for surgical affections of the urinary tract and as an aid in differentiating conditions which might be confused with diseases of the urinary organs. Almost every case of pyuria of long duration should be cystoscoped, excepting pyelitis of infancy; and every hematuria unless it was proved to be an expression of a hemorrhagic diathesis or a hemorrhagic nephritis. Cystoscopy was of great service in determining the side of the lesion when no focal renal symptoms were present and the kidneys could not be palpated. The use of indigo carmine, combined with cystoscopy—chromoureteroscopy—offered additional aid, and often rendered catheterization of the ureters unnecessary. The technic did not vary much from the routine employed in the adult. Practically all cases must be examined under narcosis. Radiography should be used more frequently; many an unsuspected case of calculus would thereby be discovered. Cystography with thorium was invaluable in the diagnosis of diverticulæ and other vesical conditions. Two series described by case reports included the following diseases: perinephritic abscess, renal tuberculosis, renal, ureteral, and vesical calculi, mixed tumors of the kidney, sarcoma of the kidney, pyelonephritis, suppurative nephritis, hydro-nephrosis, chronic nephritis, chronic vesical retention of urine, and diverticulum of bladder.

**Polycystic Kidney.**—Dr. CHARLES E. BARNETT, of Fort Wayne, Ind., collected 422 cases, of which 291 were bilateral and 131 were unilateral. Pathologists still adhered to the term congenital cystic kidney, but from a practical and clinical standpoint this would seem to be a misnomer, as the condition was found in advanced years.

Doctor Barnett discussed two questions which he believed were of special importance in polycystic kidney: whether or not truly unilateral polycystic kidney occurs, and whether or not infection is a causative factor in this condition.

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

**City Milk Supply.** By HORATIO NEWTON PARKER, formerly Health Officer of Montclair, New Jersey. Lately Instructor in Municipal and Sanitary Dairying at the University of Illinois; Member of the International Association of Dairy and Milk Inspectors. First Edition. New York: McGraw-Hill Book Company, Inc., London: Hill Publishing Co., Ltd., 1917. Pp. ix-493.

This volume concerns itself with a subject of prime importance to the general public and to the physician. It is written in an interesting narrative form, but can well serve the purposes of a textbook for those desiring to get a perspective of the whole subject. Every step in the process of milk production and milk supply is treated in order of sequence. There is no attempt to enter into discussions of conflicting opinions. The book is rather a résumé of the whole work accomplished than a treatise of original work done by the author. The composition of milk and milk products and bacteriological considerations are discussed in detail. Diseases communicated by milk are enumerated and treated briefly. A very practical discussion of the methods of herd inspection and the various ways of controlling diseases follows, together with an outline of the plans for building up disease free herds and eventually eliminating the danger to the milk supply from this source. Of particular interest in this connection is the subject of the zoological differences in herds. A very good idea of the various breeds, their advantages and disadvantages, the advantages of pure breeds, and the importance of breeding strains noted for their high fat food tendencies can be gained. Special attention is given to the problem of the care of the stock, the dairy equipment, its upkeep, light and ventilation, and general sanitary requirements; the illustrations of the scoring cards and methods give a good insight into the methods of checking up delinquencies in this regard.

Because of the importance of the modern milk plants and the part the milk contract system plays in the milk supply of a community a large section is accorded these subjects. The questions of equipment, laboratory, bottling, canning, cooling, refrigeration, transportation, etc., are fully covered. The relation of pasteurization to a safe milk supply is discussed at length. Attention is called to the fact that in spite of care in production human infection cannot be prevented and the only precaution against contamination during production is pasteurization.

The part of the book dealing with milk inspection, methods, and personnel is of particular interest to health officers. For them likewise the appendix with its outline and illustrations of model laws and regulations is of great help as a guide in the formulation of legislative enactments on the subject.

**The Starvation Treatment of Diabetes.** With a Series of Graduated Diets. By LEWIS WEBB HILL, M.D., Junior Assistant Visiting Physician, Children's Hospital, Boston; Alumni Assistant in Pediatrics, Harvard Medical School; and RENA S. ECKMAN, Dietitian, Massachusetts General Hospital, Boston, 1911-1916. With an introduction by RICHARD C. CABOT, M. D. Third Edition. Boston: W. M. Leonard, 1917. Pp. vi-134.

The fact that this little volume is now in its third edition only two years after its first appearance is indicative of the reception given it by the medical profession. Such a reception was quite deserved, for the book is a very valuable guide to the proper conduct of Allen's revolutionary treatment of diabetes. The great drawback of this form of treatment has been the difficulty encountered in the proper adjustment of the diets after the initial period of starvation and the present volume relieves the practitioner of much of this difficulty by giving him an extensive series of very carefully worked out diets, sufficient to cover almost every need that might arise. The individual diets are presented serially, much in the order in which they would probably be used in a given case, but to facilitate reference they have been thoroughly indexed. Each diet

is arranged for all of the meals of the day; the amount of each food is stated in terms of grams of weight as well as in domestic measures, and the protein, fat, and carbohydrate content is given along with the total caloric value. In addition to the diets, the book contains several illustrative case records to make clear the modes of application of the treatment, a brief outline of the purpose and conduct of the treatment, a short review of the several approved laboratory tests which must be carried out frequently in every case, a chapter of tested recipes, one on food values and a summary of analyses of the protein and carbohydrate contents of a number of diabetic foods. In brief, the authors have succeeded in covering the subject of the starvation treatment of diabetes from its practical side in an adequate, concise, and thoroughly utilitarian way.

## After Office Hours

*Vanity Fair* for June devotes a couple of pages to pictures of elaborate kennels for canine thoroughbreds. The tenements in Mulberry Street are still being built in tandem. In the same issue are published pictures of some of the annual performances of the Digressionists, a New York club of twenty-four architects, each one of whom must produce something each year in the allied arts. The result has been some notable pictures, statues, etc. This is an excellent idea. Why not a society of physicians who are talented in one way or another? Call it the Mitchell Holmes society and have an annual exhibit of its members' work.

\* \* \*

Speaking of the High Cost of Living, the backyard garden, and similar topics, why doesn't some country doctor start raising drugs in his backyard and tell the rest of the profession about it? How pleasant it would be to tap a tree for the daily supply of salvarsan or pluck our aspirine tablets from a bush!

\* \* \*

Are you making forty per cent. on your capital? Are your wife and children liabilities or assets? The *American Magazine* for July tells how a \$2,000 man had himself audited by an expert accountant, to the great increase of his earning capacity. Read Markley's "Size-up" of Dix, by Ellis Parker Butler.

\* \* \*

Perhaps the most striking and picturesque activity of any doctor of these days is that of Dr. Vève, who edits *Le Poilu*, the first journal to be published in the trenches. This paper has become an institution now, 28,000 to 30,000 copies being published daily. The profits are applied to buying extras for the wounded and the only object of the paper, aside from this, is to divert the soldiers. The subscription price is two dollars a year, postage to the United States extra. The publisher's address is 261 M. le Médecin Major Vève, Médecin-Chef, 2 e Echelon Hôpital de l'Armée d'Evacuation, Secteur 5, No. 1, France.

\* \* \*

What a treat for psychiatrists the new Book, *I, Mary McLane*, will be! Her first book came out about 1910, when the movement was in its infancy in this country, but now with Freudianism in all its glory, Miss McLane's amazing self revelations will find a host of interpreters. The newspaper and magazine critics are quoting it with gusto. *Vanity Fair* for June has a page or two about it. H. L. Mencken dignifies it by a serious discussion, and the *New York Journal* is feeding it to its readers in divided doses, with a fanciful Brinkley like picture of the author. *Vanity Fair*, by the way, publishes her real picture.

\* \* \*

The *New York Times*, in its magazine section for June 10th, quotes from the *NEW YORK MEDICAL JOURNAL* Dr. Mayo's inaugural address in part. The employer's liabilities, the new insane hospital, compulsory health insurance, medical education, vaccination, prohibition, and dentistry were the chief subjects to which the *Times* devoted a page. Without advertising, without notoriety seeking, the Mayo brothers have risen to the enviable height where their doings and sayings are featured by the newspapers even as the steel, the leather, and the wheat kings.

The poet of the war has not yet risen, but the artist has. An obscure, conventional Dutch artist, Louis Raemackers, was found at the outbreak of the war doing cartoons for the *Amsterdam Telegraaf*. Something in the vastness, the incredibility, the horror of the great struggle touched him, something in the terrible tragedy of Belgium lit a torch within his soul that has sprung into a mighty flame, sending its glare over the battlefields so that all the world may see the ghastliness of it. In the *Century* for June George Creel tells about this world genius and a few of his pictures are reproduced in color.

\* \* \*

Owen Hatteras, who we suspect is a combination of George Jean Nathan and Henry L. Mencken, writes in the *Smart Set* for July: "The moralist's notion that a stern repression will divert sex activity into socially useful channels has a good deal of plausibility in it. Such sex activity, actually diverted, is at the bottom of most esthetic effort, and even a good deal of intellectual effort. All art, at bottom, is a love song; man, like the peacock, spreads his plumage when his eye grows amorous. But the trouble is this repression doesn't always repress. The sex activity attacked is not changed into something else, but into a debased and worse form of itself. Read Freud and you will understand the process; look around you and you will see it. The gusto of sex, denied normal satisfaction, is transformed into an irresistible, horrible obsession, a sort of madness. The machine made ascetic, presumably purged of all thought of sex, is actually unable to think anything else. Hence the sex crazy Puritans, the smutty old maids, the snouters into filth."

\* \* \*

The *American Review of Reviews* for June has a short article in which it says, speaking of the dangers of low arterial pressure: "But there is a very simple means of giving temporary relief, which everyone should know, since such knowledge might often be the means of saving life." The following are a few of the simple means: "Place immediately on an operating table heated by electricity. If the diastolic pressure remains below eighty millimetres an Hg injection of isotonic serum should be made. If this does not work, an injection of adrenaline is made into the vein near the heel." We can easily picture the bystander who has studied first aid rushing to the rescue of the victim of low arterial pressure. From the nearest house he drags an operating table heated by electricity; he then searches in his vest pocket for the isotonic serum, which no one should be without these perilous times, and injects it. But horrors! the arterial pressure is still low! He searches madly for the adrenaline, but, finding none, he is forced to slaughter a sheep which has strayed too near, or perhaps he has already gotten the goat of a passing physician. At any rate, he seizes the sufferer by the heel, like Thetis, and saves his life. If the victim has a wooden leg, there is no hope for him.

## Meetings of Local Medical Societies

**TUESDAY, June 26th.**—New York Psychoanalytic Society; Onondaga Medical Society, New York; Valentine Mott Medical Society, New York (annual); Washington Heights Medical Society, New York.

**THURSDAY, June 28th.**—Ex-Intern Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; New York Physicians' Association.

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending June 13, 1917:*

**BROWN, B. W.,** Surgeon. Relieved from duty at Ellis Island, N. Y., and ordered to proceed to Hot Springs, N. C., for duty.

**DEVALIN, HUGH,** Passed Assistant Surgeon. Ordered to proceed to Port Townsend, Wash., and take charge of the Marine Hospital.

**DYER, R. E.,** Assistant Surgeon. Granted two days' leave of absence on account of sickness, May 29-30, 1917.

**FAUNTLEROY, C. M.,** Passed Assistant Surgeon. Relieved from duty at San Francisco Immigration Station and ordered to proceed to New Orleans Quarantine Station and assume charge.

**FREEMAN, A. W.,** Epidemiologist. Granted three days' leave of absence en route, under orders of June 4, 1917.

**HURLEY, J. R.,** Passed Assistant Surgeon. Granted three days' leave of absence on account of sickness from May 31, 1917.

**MCMULLEN, J.,** Surgeon. Granted four days' additional leave from June 11, 1917.

**NYDEGGER, J. A.,** Surgeon. Granted five days' additional leave from June 9, 1917, on account of sickness.

**PRYOR, WILLIAM,** Sanitary Inspector. Ordered to proceed to San Francisco Quarantine Station to observe methods of fumigating by cyanide gas.

**SMITH, F. C.,** Surgeon. Directed to deliver an address on tuberculosis at the meeting of the National Association of Homeopathic Physicians and Surgeons at Rochester, N. Y., June 21, 1917.

**SMITH, J. H., JR.,** Passed Assistant Surgeon. Granted six days' leave of absence from June 7, 1917.

**WHITE, J. H.,** Senior Surgeon. Granted six days' leave of absence from June 8, 1917.

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## Births, Marriages, and Deaths

### Married.

**BABER-MIERSCH.**—In New York, N. Y., on Friday, June 8th, Dr. E. Armitage Baber, of Dayton, Ohio, and Mrs. Irene Angela Miersch, of Cincinnati.

**HARRIMAN-BAILEY.**—In Montpelier, Vt., on Wednesday, June 6th, Dr. Frederick Whitmore Harriman, and Miss Marian Fifield Bailey.

**RICHARDSON-SHATUCK.**—In Brookline, Mass., on Saturday, June 2nd, Dr. Edward P. Richardson and Miss Clara L. Shatuck.

**SNYDER-PIERCE.**—In East Lansing, Mich., on Saturday, June 2nd, Dr. Melanchthon B. Snyder, of Council Bluffs, Iowa, and Miss Burkelia Pierce, of Boulder, Colo.

### Died.

**BARNES.**—In New York, N. Y., on Sunday, June 3rd, Dr. Rollin H. Barnes, of St. Louis, Mo., aged forty-three years.

**BARTLETT.**—In Natick, Mass., on Sunday, June 10th, Dr. Clyde Bartlett, of Marion, Mass., aged thirty-four years.

**CHEANEY.**—In Hot Springs, Ark., on Thursday, June 7th, Dr. William J. Cheaney, of Petersburg, Ill., aged forty-seven years.

**COOK.**—In Buffalo, N. Y., Wednesday, June 6th, Dr. Edward J. Cook, aged seventy-five years.

**FOSTER.**—In St. Paul, Minn., on Wednesday, June 13th, Dr. Burnside Foster, aged fifty-six years.

**GERVAIS.**—In Arctic, R. I., on Sunday, June 10th, Dr. Paul E. Gervais, aged fifty-four years.

**HOOVER.**—In West Medford, Mass., on Saturday, June 2nd, Dr. Thomas C. Hoover, of Columbus, Ohio, aged sixty-seven years.

**HOUGHTON.**—In Philadelphia, Pa., on Tuesday, June 5th, Dr. Charles W. Houghton, aged eighty years.

**KELLOGG.**—In New Britain, Conn., on Sunday, June 10th, Dr. Kenneth E. Kellogg, aged forty-two years.

**MADDOX.**—In Denver, Colo., on Tuesday, May 29th, Dr. William B. Maddox, aged fifty-two years.

**NORMAN.**—In Washington, D. C., on Sunday, June 3rd, Dr. Francis Asbury Norman, aged seventy-eight years.

**OWEN.**—In New Bedford, Mass., on Monday, June 4th, Dr. James W. Owen, aged sixty-six years.

**SMITH.**—In Richmond Hill, New York, on Friday, June 15th, Dr. E. Franklin Smith, aged fifty years.

**STELTZ.**—In Washington, D. C., on Tuesday, June 5th, Dr. P. Harry Steltz, aged forty-eight years.

**TUSSON.**—In New Orleans, La., on Friday, June 1st, Dr. Walter J. Tusson, aged forty-four years.

**WILLIAMS.**—In Coatesville, Pa., on Saturday, June 9th, Dr. Henry E. Williams, aged seventy-seven years.

**WINTER.**—In Detroit, Mich., on Monday, June 4th, Dr. James A. Winter, aged fifty-three years.



# New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

*A Weekly Review of Medicine, Established 1843.*

VOL. CV, No. 26.

NEW YORK, SATURDAY, JUNE 30, 1917.

WHOLE No. 2013

## Original Communications

### SUMMARY OF THE WASSERMANN TESTS DONE DURING 1916 IN THE PHILADEL- PHIA GENERAL HOSPITAL.\*

BY RANDLE C. ROSENBERGER, M. D.,

Philadelphia,

Director of Clinical Laboratory of the Philadelphia General Hospital.

The following report on 5,106 Wassermann tests comprises the work done in this line during 1916 at the Philadelphia General Hospital. Most of these tests—4,430—were performed with the blood serum, while the remainder—676—were with the spinal fluid. The ordinary routine technic was used, with three antigens—alcoholic extract of syphilitic liver, acetone insoluble lipid, and cholesterinized alcoholic extract of beef heart. Controls were carried through in all cases. Taking the total number of all specimens of blood submitted there was a general average of 27.4 per cent. positive, while the spinal fluid gave a general average of 22.2 per cent. positive. The latter figure is accentuated by the fact that a large number of specimens were from the insane department. In 133, positive reactions were obtained with the cholesterinized antigen alone, and in looking up the histories of these cases, it was found that a certain number gave more or less definite syphilitic histories. Unfortunately, in a very large number of the total cases, no diagnosis was made at the time the serum was sent to the laboratory, and no diagnosis of a specific nature was found, even after looking up the history sheet in the record room.

Among the specimens of blood serum received for examination, fully one hundred were anticomplementary and are not included in this report. From the men's medical ward, where it is almost routine, 1,097 were examined, and of this number 259, or 23.5 per cent., were positive. From the women's medical ward, 273 examinations were made and of this number 103 were positive, or 37.7 per cent. In 273 submitted from the men's and women's surgical wards, including eye, orthopedic and dental, ninety-two were positive, or 33.3 per cent. The cases in the psychopathic wards included all types of mental cases under observation, toxemias of pregnancy, manias, dementias, including præcox, paresis, and paranoia, and traumatic and alcoholic confusional insanities. In all, 906 specimens of blood were submitted and of these 198 were positive,

or 21.8 per cent. Of the 432 specimens obtained from the nervous wards, 103 gave a positive reaction, or 23.8 per cent. Gynecological cases numbered sixty-nine, of which twenty were positive, or 26 per cent. and of fifty-eight from the men's venereal forty-five were positive, or 75.8 per cent.; 278 were examined from the women's venereal and 127 were positive, or 45.7 per cent.

An interesting series was also obtained from the wards of the tuberculosis department. Of these 291 specimens were examined, ninety-eight, or 33.6 per cent. of which gave a positive reaction. From the children's department there were only fifty-six examined, of whom eight, or 14.2 per cent., were positive. Maternity cases numbered 136, of which ten were positive, or 7.3 per cent. In 561 specimens from the insane department, only 154, or 27.4 per cent., gave a positive reaction.

A résumé of the examinations of the spinal fluid showed that of 676 studied, 151 were positive, or an average of 22.2 per cent. From the men's medical ward, of 258 tested, only thirty-one were positive; from the women's medical ward, thirty-six, of whom seven were positive; of seventy-one insane cases, forty-one were positive; of 107 specimens from the psychopathic wards thirty-seven were positive. Of 139 cases from the nervous wards, thirty were positive, while of twenty-eight specimens from the surgical wards two reacted positively, and of sixteen from the tuberculosis wards three gave a positive reaction. Of the 133 cases giving a positive reaction with the cholesterinized antigen and negative results with the other two antigens, were eight male cases of tuberculosis. Only one gave a history of venereal disease—a chancre ten years previously.

From the men's nervous ward there were twelve cases, and of these fifty per cent. gave a history of venereal disease; four gave a history of chancre; one a right sided hemiplegia, and the sixth was an adult who had been unable to walk since his second year and whose father has tabes dorsalis. No history was available in the other six cases.

From the men's psychopathic ward, sixteen cases were observed, and of these ten were diagnosed as paresis; one as hemiplegia; one mania; one as cerebrospinal syphilis; one alcoholic confusion, and in two no history was obtainable. In the series from the women's psychopathic ward only three cases were studied: one dementia præcox, one paresis,

\*Read before the Pathological Society of Philadelphia, May 10, 1917.

and one alcoholic psychosis. From the insane department twenty-two cases gave a positive reaction, three were paresis; four, dementia præcox; one, cerebrospinal syphilis; three, senile dementia; one, depressive senile psychosis. While a positive history was not given in all these instances, yet the record from a social standpoint would indicate a specific history. For example, one of them, a dementia præcox, was a Tenderloin habituë and another an epileptic who gave a history of prostitution.

From the women's medical wards eleven gave a positive reaction. In not one was a venereal history obtainable, but the clinical diagnosis and social history again led us to believe that venereal infection had been present. For example, a patient who had been in the women's venereal ward had a suspicious leg ulcer; another admits gonorrhea, but denies syphilis, and three had several miscarriages. From the men's medical ward, thirty-two cases gave a positive cholesterinized antigen reaction, and of these only five gave positive syphilitic history. Two, while denying syphilis, gave two positive findings on different occasions; one gave a history of gonorrhea and persistent headaches; one, denying infection, was diagnosed as cerebrospinal syphilis; in eleven no venereal history was admitted, and in twelve no history of any kind was obtained.

From the gynecological ward nine cases were encountered, and only one gave a positive venereal history. However, one case was diagnosed as syphilis; another patient had had two miscarriages; another had two stillbirths; and one, aged seventeen, with gonorrhea, who denied all venereal history, gave birth to a child whose blood gave a positive reaction. There was one case which was diagnosed as tuberculous pyosalpinx, but this diagnosis was not confirmed by histological studies. Of three cases from the eye ward giving a positive reaction, in two no history was available, and in the third a diagnosis of syphilitic iritis was made, and this condition cleared up on antisyphilitic treatment. From the women's surgical ward one patient, fifty-eight years old, denied syphilitic history, but had a long continued ulceration of the leg. Of two other cases, one patient, aged fifty-five years, was diagnosed as syphilitic leg ulcer, although he denied syphilitic history; and the other gave a history of a chancre twenty-one years previously. While this total of isolated cases does not represent the entire number studied—133—it must be remembered that in some cases four tests were made.

From an analysis of these reactions with the cholesterinized antigen, it will be seen that in obscure cases with a doubtful history, or instances where no secondary symptoms were ever observed, and in cases where long continued treatment was carried out, this antigen is far more sensitive and dependable than the ordinary alcoholic luetic antigen. It is our opinion that a Wassermann test is the most reliable routine laboratory test for the diagnosis of syphilis and for the study of cases under treatment. Even when a previously positive reaction becomes a negative reaction, great care should be exercised by a physician in giving a clean bill of health. There are several cases in this summary where three and

four doses of salvarsan were given and still a positive reaction was recorded. One case in particular gave a continued positive reaction with cholesterinized antigen; the patient had four doses of salvarsan, went out of the hospital, and returned after three months, and the Wassermann test was positive in all three antigens. In another case where a positive cholesterinized antigen reaction was obtained, the patient was given three doses of salvarsan, and one year afterward still gave a strong positive reaction with this particular antigen. A case of tertiary syphilis with lesions upon forearm and leg gave a faintly positive reaction in the cholesterinized antigen. One week after this test was made treatment was instituted, and a markedly positive reaction was obtained in all three antigens.

In a series of known syphilistics studied by Doctor Bentley there were thirty-nine with secondary and six with tertiary lesions. The secondary cases presented rashes, condylomata, or mucous patches, while the tertiary lesions were rupial or gummatous. In all instances a positive reaction was obtained in all three antigens, though several in which treatment had been instituted gave a more marked reaction in the cholesterinized antigen than in the other two antigens.

Our technic has been to use four tubes for each patient. Tube No. 1 containing the proper amount of luetic antigen in one to ten dilution; tube No. 2 cholesterinized antigen in one to twenty dilution; tube No. 3 acetone insoluble lipid in one to twenty dilution; tube No. 4 is used as a serum control. The various antigenic doses have in each instance been determined by previous titrations. To each of the four tubes 0.1 c. c. of inactivated patient's serum is added, and one c. c. of complement—fresh guinea-pig's serum one to twenty dilution—and about one c. c. of salt solution to increase the bulk. This was incubated for one hour. With this incubation an amboceptor titration is also made. An amboceptor diluted according to a preliminary titration is put into six tubes in doses of 0.05, 0.1, 0.2, 0.3, 0.4, 0.5 c. c. respectively, and one c. c. of the complement and one c. c. of 2.5 per cent. sheep's corpuscles suspension is also added. At the end of this hour's incubation the amboceptor titration is read and the smallest amount of amboceptor producing complete hemolysis is taken as the unit. The dose is one and a half units.

To each of the original tubes one dose of amboceptor and one c. c. of 2.5 per cent. sheep's cell suspension is added. The tubes are shaken and reincubated for the second hour. At the end of this time the tubes are taken from the incubator and a preliminary reading made and recorded. Then the racks are placed on ice over night and a final reading made and reported upon next morning. The following controls are also set up: 1, a known positive serum; 2, a known negative serum; 3, a control on each antigen; 4, a control on hemolytic system; 5, a control on the sheep's corpuscles.

#### CONCLUSIONS.

In our opinion, as expressed previously, the Wassermann test, using a reliable antigen, is the most valuable aid in the diagnosis of syphilis. Errors in

the reading or recording of reactions may occur just as in any other scientific procedure. Where an antigen is made carefully, and where titration is done regularly, where the control of each reagent used in the test is properly made, then there should be no great variation in the end result of this test. These Wassermann tests were done entirely by the technician, Miss McNitt.

RESUME OF THE SPECIMENS OF BLOOD AND SPINAL FLUID WITH NUMBER OF POSITIVE AND NEGATIVE REACTIONS OBTAINED DURING 1916.

Ward.	—Blood—			—Spinal Fluid—		
	Positive	Negative	Total	Positive	Negative	Total
Men's medical	250	838	1097	31	227	258
Psychopathic	198	708	906	37	70	107
Insane	154	407	561	41	30	71
Men's and women's nervous	103	329	432	30	100	136
Men's and women's surgical	02	181	273	7	26	28
Women's medical	103	170	273	7	29	36
Men's and women's tuberculosis	98	193	291	3	13	16
Maternity	19	120	139			
Women's venereal	127	181	278			
Gynecological	20	46	66		24	24
Children's	8	48	56			
Men's venereal	45	13	58			
Total	1,217, or 27.4%	4,430		151, or 2.4%	676	

2330 NORTH THIRTEENTH STREET.

## THE EFFECTS OF FATIGUE UPON THE AGED.

By ARTHUR L. FISK, M. D.,  
New York.

In considering the subject it is desirable to recall the conditions which underlie the sensations of fatigue, which are familiar to all but not generally understood. Ash thus defines fatigue: "Fatigue is a comprehensive term, which in its widest application embraces all those immediate and temporary changes, whether of a functional or organic character, which take place within an organism or any of its constituent parts, as a direct result of its own exertion, and which tend to interfere with or inhibit the organism's further activities." Its principal effect is lessening of the capacity to do work or to sustain activity; its most obvious sign is depression, a lowering of sensitivity, so that a given stimulus calls forth a response of less magnitude and intensity after exertion than before. We recognize two forms of fatigue, namely, nervous and muscular; and of these, two subdivisions, physiological and pathological fatigue, which differ from one another only in degree.

Inasmuch as the muscles are more accessible for investigation and experiment than are the nerves, the phenomena of fatigue of the muscles are better known than those of the nerves; but as the general law of biology applies to both of the tissues alike, it is thought that the processes which take place in the one occur similarly in the other. The fatigue of muscle which results from physical exertion was thought to be a condition only of the muscle, but such is not the case, for if a muscle of a frog's leg is extirpated and then electrically stimulated, it will contract in the same manner as an intact muscle contracts from voluntary stimulation. Now, if these contractions be repeated for a time in sufficiently rapid succession, there will take place within the muscle tissue certain chemical changes: the carbohydrates contained within the tissue will be de-

composed, and there will be formed certain toxic substances, lactic acid, creatine, and carbon dioxide, which substances inhibit further contraction. That this is so is demonstrated by the fact that when these substances have been removed by flushing the muscles with defibrinated blood, a weak salt solution, or other cleansing substance, which of itself is not harmful, further contractions of the muscle can be secured. The flushing of the muscle must, however, be done through its bloodvessels, and not by simply pouring over it the cleansing fluid.

Weichardt isolated toxins from muscle tissue of living animals which have been fatigued by their own exertions. These, when injected into the body of a rested animal, produce all of the symptoms of natural fatigue. Some forty years ago, Ranke studied the action on frog's muscle of the supposed products of muscle activity, lactic acid, creatine, creatinine, and carbon dioxide, and he found that creatine and lactic acid very markedly depressed muscular action, as measured by strength; therefore, to them he gave the name of fatigue substances.

In his work on fatigue Mosso says that fatigue is due to chemical processes which are the results of muscular exertion that increases the amount of oxygen absorbed and the quantity of carbon dioxide eliminated.

Professor F. S. Lee in an interesting paper on fatigue, states that there are three distinct products of metabolism that cause fatigue: sarcocollactic acid, novopotassium phosphate, and carbon dioxide. All of these substances are acid in their reaction, and are the basis of the acid reaction of a muscle which is in a condition of fatigue, whereas the reaction of a muscle in repose is alkaline. The conclusion from these observations, therefore, is that fatigue is the result of chemical changes, which occur within the tissues and organs of the body, and which give rise to certain toxic products that act to depress these tissues or organs. The sensations of fatigue are the psychical recognition of this depressant action of the toxic products of metabolism on the tissues, especially on the muscular system.

The general opinion concerning fatigue of the nerves is that while nerve tissue is extremely resistant to fatigue in comparison with other tissues, yet nerve protoplasm is no exception to the general biological law that metabolic changes occur during activity of the tissue; but such changes as do occur are either minute or more probably are at once compensated for by adequate anabolism. We know that intense mental activity is capable of giving rise within the body to profound chemical changes, as shown by the not infrequent occurrence of a nursing mother suffering an intense fright and, subsequently to it, nursing her baby, who within three or four hours thereafter has severe convulsions. This also demonstrates that the action of the fatigue toxins is not confined to the tissues in which they arise, but that the excessive activity of one tissue is capable of causing fatigue phenomena in others. Thus the constitution of the blood is altered by the absorption of the acid toxic products of fatigue in consequence of which its alkalinity is greatly diminished, which has serious potentialities. Any activity on the part of a nerve



or muscle that is already in a condition of fatigue, acts in a decidedly more harmful manner than would a heavier task done under normal conditions, so that when the body is fatigued even a small amount of extra work or fatigue often produces disastrous results. We know how extreme fatigue, whether nervous or physical, produces a change in temper, causing irritability, and often overpowers the noblest qualities, so that the passions often attain to such violence that they cannot be mastered by reason.

The order in which the functions of the body are affected in fatigue is, first, the circulation and respirations, then later digestion and the action of the kidneys. In individuals of advanced years, we have to do with tissues in a condition of fatigue or depression due to the wear and tear which they have suffered during the stress of life in the years that have passed. The evidence of this fatigue is shown by what is usually called lowered vitality, which is exhibited in poor circulation, deficient respiration, impaired digestion, and faulty action of the kidneys—processes which have to do with oxidation, assimilation, and elimination. The temperature is subnormal, the pulse slow and frequently intermittent, and the total quantity of urine below the normal. Such individuals are in a condition of chronic fatigue, depression, or acidosis from fatigue products. Their state of equilibrium approaches instability; so long as they remain within its poise they do well, but if they exceed that point by unusual mental or physical activity, then serious consequences follow, from which as a rule they do not recover. As has been shown, the reason for this is that if the tissues already depressed are called upon for more or greater activity, they suffer a depression out of all proportion to the energy which was expended. The tissues become overwhelmed by the products of their own metabolic activity; anabolic processes are inhibited; the catabolic processes gain the mastery, and finally death comes, the system being destroyed by its own products. A similar process is seen in its more sthenic form in the acute acidosis of the young. Such are the phenomena of fatigue and their effect upon the individuals of advanced years, as they appear to the author.

The following records from my practice will serve as illustrations.

CASE I.—S. G., man, seventy-nine years of age, was in comfortable health. He was executor of a large estate, of which he had to make the final accounting. On several occasions he worked late into the night. The strain he was under was shown in restlessness, irritability, and insomnia. Within two weeks after he had rendered the accounting and been discharged by the Court, he died.

CASE II.—B. C., man, aged seventy-five years, banker, was sent East by his physician for change and rest. After a month at Atlantic City, he came to New York. When I saw him he showed evidence of physical exhaustion. Absolute rest for days with very careful dieting improved his condition, so that he was allowed to get up, dress, and be very moderately active. I had impressed upon him the necessity of avoiding fatigue and especially of not doing any business. One morning when I went in to see him, I found him closeted with a partner strenuously engrossed in important business affairs. That mental strain cost him his life. Severe exhaustion and depression followed, from which it was impossible to rally him.

These two cases illustrate the effects of mental

overactivity in individuals already greatly fatigued. I will now give two illustrations of the effects of physical overactivity:

CASE III.—H. B., woman, eighty-four years of age, moved in June to her place in the country, where she passed a very comfortable summer on the piazza of her home, with short drives about the village. The last of September a sister visited her. The last day of the sister's visit, they took a drive of ten miles; before the drive was half through the patient felt fatigued. When she reached home, she went to bed, which she never left. She died within ten days.

CASE IV.—M. M., woman, seventy-five years old, was a paregoric addict. In July she came from Greenwich, Conn., by train to New York, to have some work done upon her teeth. After a session with the dentist, she felt too fatigued to return to Greenwich, so she went to her city house. She was confined to her bed and the house for some weeks in consequence of this effort. When she had recovered sufficiently to be up and about, she and her family became most impatient to return to the country. I advised that if she must go, she go by train, but my counsel was overruled by the family, and she went by motor. I was told over the telephone in the evening that she had made the journey well, that she was in excellent spirits, and that she had eaten a good dinner. The next day she felt too tired to get up; this exhaustion progressed more and more; and she passed into coma and died within one week from the day that she motored out to Greenwich.

The effects of fatigue upon the aged, therefore, we believe, is to increase the depression or acidosis that exists, and this increase, if sufficient, overpowers the system with toxins, so that death results.

41 WEST FIFTIETH STREET.

## A PLEA FOR THE EARLY DIAGNOSIS AND TREATMENT OF ACUTE CATARRHAL APPENDICITIS.\*

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The late Dr. John B. Murphy, just about a year ago quoting from the *Year Book of Surgery* finds that the combined hospital statistics show a little over ten per cent. mortality in the cases of appendicitis. He says that is not the mortality rate of one hospital or two or three, but the rate from the combined statistics of a number of hospitals in this country. In the People's Hospital we have had during the last six years 359 cases of acute appendicitis which we operated in with a mortality rate of 5.2 per cent., or nineteen deaths. That is also much too high. If we operate in acute appendicitis within the first twenty-four hours, that is, as soon as a diagnosis is made, the death rate should not be over one per cent. If that is so, then we must admit that we are losing too many cases altogether.

Who is to blame? Once a diagnosis is made the physician has no right to treat the case medically, but should suggest surgery only. We are agreed that the symptomatology of acute appendicitis has been thoroughly established. If this is so, why are the cases not diagnosed at once? There are three reasons for this.

The first one may be due to the patient or the patient's family. The doctor is not called in as soon as

\*Read before the Clinical Society of the People's Hospital, February 10, 1917.

the patient gets sick with abdominal pain, thinking it may be only a slight intestinal disturbance. A purge may be given and then if the patient does not seem better in two or three days a doctor may be called. By this time general peritonitis may have set in and in these cases we know that the mortality is high.

The second reason is that when the case is diagnosed by a physician as acute catarrhal appendicitis and immediate operation advised, his family objects. The physician accedes to the family's wishes. Medicines are given and worst of all an ice bag is placed over the appendix region "to freeze the appendix." If Nature drains the appendix into the cecum, the condition improves, but, should the patient not have that good fortune, he is taken to the hospital, perhaps on the fourth or fifth day, to be operated upon and we know that the mortality in these cases is high. The mortality is not due to the lack of skill on the part of the surgeon, but to the case coming under the surgeon's knife too late.

In the third place, the physician is called as soon as acute abdominal pain is present, but does not make a diagnosis of acute catarrhal appendicitis. The symptoms are not plain enough to him. He waits two days, three days, or longer, he does not recognize the true condition until a mass may be felt or a general peritonitis has set in; then the patient is sent to the hospital and it may be too late for a successful outcome. No one can tell the first day he sees an acute catarrhal appendicitis what the second day may bring forth. The longer a diagnosis is delayed the longer will be the delay in operation and most certainly the mortality will be higher. We cannot emphasize this point too strongly. Let us go over ancient history again. How are we to diagnose acute catarrhal appendicitis? The cardinal symptoms are as follows: 1, cramp like pain in the upper part of the abdomen; 2, nausea or vomiting; 3, local sensitiveness; 4, muscular rigidity over the appendix region; 5, elevation of temperature; 6, leucocytosis.

It is to be borne in mind that the symptoms of acute catarrhal appendicitis make their appearance in the order above noted. The patient first complains of pain, then he feels nauseated or vomits, and then there is a definite localized sensitiveness over McBurney's point. On palpation we find that the right rectus is rigid. The temperature is taken and we find that it is elevated. The leucocyte count shows an increase in the total as well as in the polymorphonuclear percentage. A careful and detailed history together with a thorough physical examination will bring out these facts very clearly. Now let us consider the individual symptoms in detail.

*Pain.*—The patient is usually in good health when he is suddenly attacked with a severe cramp like pain in the epigastric region. That pain increases in intensity for the next four to six hours, then this epigastric pain generally disappears and becomes diffused over the entire abdomen, and finally becomes localized over the appendix region. Now, as long as that pain is severe in character and localized, there is no doubt in the physician's mind that it is an appendix pain. On the other hand,

a physician is often called in to see a patient who has had severe abdominal pain which has diminished in intensity and often has disappeared entirely. Remember, that sudden cessation of any inflammatory pain may mean gangrene. Stoppage of pain in these cases within the first forty-eight hours is a danger signal. It means that either the appendix has fortunately drained into the cecum, or gangrene or rupture has occurred. In gangrenous appendicitis there is no pain. The appendix is dead and dead tissue gives no pain. Should that gangrenous appendix rupture, then within a short time pain will again be a prominent symptom, but it is then due to a localized or general peritonitis. With regard to pain as a symptom, the patient will give you valuable information if you ask him to show you where the pain is. In the first twenty-four hours he will press his hand or fingers in the abdomen over the appendix region. At this time the inflammation has not spread beyond the mucous membrane. When the appendix has ruptured and there is a peritonitis he will only point to the site of the pain. This is due to the fact that the serous membrane is affected and he is afraid to use pressure.

*Nausea or vomiting.*—The patient may become nauseated within the first few hours, but he usually vomits. Vomiting *never* precedes the pain. Pain is always first. I have often refused to operate in many supposed appendicitis cases because the vomiting preceded the pain. To cite an instance: A patient was brought into the hospital after having been seen by three physicians who made the diagnosis of general peritonitis with a ruptured appendix. Upon questioning the woman I found that she had vomited before the pain had appeared. There was no doubt that she had a general peritonitis, but I was sure that it was not due to the appendix. It was subsequently proved that she had a general peritonitis following an abortion. The patient only vomits once or twice and that is all. This is reflex vomiting, and due to a distended appendix. When peritonitis has set in, the patient has constant nausea or vomiting, and this is due to peritoneal irritation.

*Local sensitiveness and muscular rigidity.*—These usually go together. As soon as the pain becomes localized over McBurney's point, the appendix has become distended, swollen, and congested, and Nature now protects the organ in that region by applying a muscular splint. There is marked rigidity of the abdominal muscles which can be felt on palpation. When the process spreads beyond the appendix, Nature provides rest within the abdomen by keeping the intestines quiet. As we have pointed out Nature protects these parts by applying splints in order to keep the organs at rest; therefore we must not interfere by giving food or medication by mouth or rectum. Drastic purges and high enemas are absolutely contraindicated. If peristalsis is encouraged we are almost sure to cause a spreading of the infection.

*Elevation of temperature.*—This is a constant symptom within the first thirty-six hours of acute appendicitis. Should there be no rise of temperature we would have to seek another diagnosis.

There must be a rise of temperature soon after the onset in every case. Again I must refuse to operate for acute appendicitis, if there is no history of fever soon after the onset of the other symptoms. I recall a patient sent to me at the hospital not long ago. The case was diagnosed by different physicians as one of acute appendicitis. The patient first had pain, then vomiting, then pain on pressure over the appendix region, but a normal temperature. The blood count was normal and examination of the urine revealed blood and pus. X ray examination confirmed our suspicion by showing a stone in the ureter which was removed. Should there be a sudden drop in temperature, say from 102° or 103° F., to 99° or 100° F., with a rapid pulse, one must be on the lookout. Gangrene has set in. If complete the temperature may have dropped to 98° or 99° F. Should the entire appendix not have become gangrenous then there may be a temperature of 99° to 100° or 101° F. There is a destruction of tissue, including the vessels so that there can be no further absorption of toxins, therefore no rise in temperature. Should there be a secondary rise after a sudden drop of temperature we are certainly dealing then with a spreading peritonitis.

**Leucocytosis.**—This is a very important symptom. A leucocyte count should be taken in every case, whether an acute appendicitis or other acute condition is suspected. If the count is high in connection with the other cardinal symptoms, it verifies the diagnosis indicating the degree of infection we have to deal with and the resisting power of the patient. If we find the patient having all other symptoms, but with a low leucocyte count we are not to interpret this as a contraindication to operation. A low leucocyte count may be present even with a partially gangrenous appendix. A short time ago I was called in consultation to see a case of acute appendicitis. The man gave all the symptoms of a gangrenous, ruptured appendix. An immediate operation was advised. The patient came to the hospital where a leucocyte count was taken. The pathologist reported a count of 11,000 white cells and sixty-nine per cent. polymorphonuclear cells, which showed little or no infection. On opening the abdomen we found a ruptured gangrenous appendix. This count apparently indicated that the man had a fairly good resistance and little or no infection. It was, however, misleading, as the operation showed. The reason we had no high polymorphonuclear count was because the appendix was dead and dead tissue does not absorb toxins or other infectious matter.

A count should be taken for the purpose of comparing it with later ones so as to be of prognostic value. Should the white cells and the polymorphonuclear count be high, it would show a good resistance and a strong infection. Should there be a high total count and a fall in the polymorphonuclear cells, it would show good resistance and a diminution of infection. Should there be a fall in the leucocytes and the polymorphonuclear cells remain high, we would have a bad prognostic sign. It would show a poor resistance and a strong infection. What I have said holds good for any

adult. In children, however, it is especially true. In children the blood supply of the appendix is more readily obstructed than in adults and therefore gangrene sets in much more rapidly, often within twenty-four hours of the onset of the symptoms.

**Treatment.**—There is only one treatment and that is operation. When are we to operate? As soon as the diagnosis is made. Never give an anodyne, such as morphine or other drugs to relieve pain, as you all know that these tend to mask the symptoms. If you see a case within the first twenty-four hours you may venture a mild purge, such as castor oil or an enema. After the first twenty-four hours I would advise against any medication for the bowels, especially in children. An ice bag over the appendix is to be condemned. It freezes the skin, therefore that part becomes less sensitive to the touch, but the condition of the appendix is not influenced by it. It does more harm than good. In thin persons and especially in children, I believe that an ice bag applied over the appendix region will cause a poorer blood supply, because of the contraction of the bloodvessels and consequently a diminished phagocytosis. In this way we are offering obstacles to Nature's efforts at healing, instead of giving any material aid.

#### CONCLUSIONS.

1. A careful history and physical examination are essential in each case.
2. The sequence of symptoms is most important.
3. The pain is the first symptom and always precedes the vomiting.
4. Vomiting in the first twenty-four hours is not marked. When peritonitis appears, the vomiting is constant.
5. Drastic purges and enemas are to be avoided.
6. The ice bag is to be condemned.
7. Operation is indicated as soon as the diagnosis is made.

55 WEST NINTH STREET.

#### A CASE OF BILATERAL, SPONTANEOUS NONTUBERCULOUS PNEUMOTHORAX WITH AUTOPSY.\*

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The object of this paper is to put on record a case whose remarkable combination of anomalies is only in part indicated by the title, as the autopsy findings will show. The patient was admitted to my general service at Mount Sinai Hospital for the first time on March 15, 1917, and left against advice eleven days later. I did not see her during this time. The following is an abstract from the hospital records:

CASE.—Mrs. S. F., aged twenty-four years; married two years; husband well; one healthy child six months old; no miscarriages. Her chief complaint was shortness of breath. Family history: Mother died of unknown cause. Father died of "stroke." Four brothers and one sister

\*Read at the annual meeting of the National Association for the Study and Prevention of Tuberculosis, Cincinnati, May 11, 1917.



were alive and well. There was no history of diabetes, carcinoma, or tuberculosis. Personal history: Always well until onset of present illness. No gastrointestinal, cardiac, pulmonary, or urinary disturbances. Menses regular, every twenty-eight days, no pain. The main features

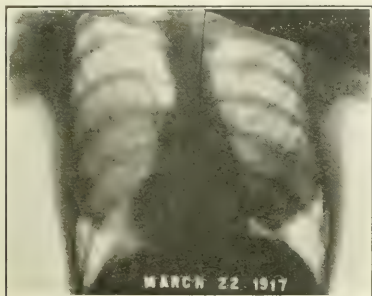


FIG. 1.—Taken seventeen days before death.

of the present illness were: An attack of shortness of breath and pain in the left lower chest occurred one year ago when in the fourth or fifth month of pregnancy. The patient stated that the attack immediately followed coitus. Recovery was gradual in the course of two months. Six months ago a second similar attack occurred following coitus, which lasted two weeks. A third attack on the left side occurred a few weeks later. The present attack of dyspnea began acutely four weeks ago again after coitus and was attended by pain in the lower left chest. No fever was noted at any time, though the patient complained of unproductive cough. She denied any swelling of legs, had no night sweats or hemoptysis. There were no visual or auditory changes.

**Physical examination.**—General condition was good; orthopnea marked; face cyanotic. The ears were negative; mastoids negative; nose negative. The throat was clear; tonsils enlarged; tongue moist and coated; teeth in poor condition, many missing. Palate showed very high arch. Eyes were apparently normal; pupils were round and central, and reacted to light and accommodation. No petechiae, icterus, or nystagmus. Neck was negative. Respiration was shallow and the rate increased. There was marked inequality of two sides, right chest being greater than left. The intercostal spaces were markedly widened. Anteriorly the left lung was tympanitic from apex to base. Breath sounds were absent. In the right anterior lung there was impairment of resonance from apex to third space, blending with tympanitic note obliterating liver dullness. In the right axilla the note was also tympanitic. Breath sounds were normal from apex to third space at which point they disappear. No breath sounds could be detected in the axilla. Posteriorly there was tympany from apex to base over both chests. Breath sounds could not be heard over left chest. Over the right, breath sounds were heard faintly at apex. There were no râles. The left border of the heart was four and a half inches from the midsternal line. The upper border was at the level of the third rib. The right border was not made out and the apex was neither seen nor felt. Action was regular, sounds distant. No murmurs were detected. Pulses were equal, regular, and of good force. In the liver, the upper limit of dullness was not made out. The abdomen was rounded and soft and marked by numerous linea albicantes. There were no masses or tender points. Lower border of liver was felt as low as iliac crest. The kidneys were not felt. The spleen was not felt. Lower extremities were apparently normal. Knee jerk and Achilles reflexes were present, and clonus and edema were absent. Upper extremities were apparently normal. Triceps and wrist jerks were present. There was no clubbing of fingers. There was marked cyanosis of face; otherwise the skin was negative. Inguinal glands were palpable. Joints were negative. The spine showed marked scoliosis. Rectal examination was

negative. Vaginal examination showed uterus retrodisplaced; cervix uteri was soft and patulous.

**Clinical history.**—Examination of twenty-four hour urine showed the following characteristics:

Reaction .....	Acid	Acid	Acid
Specific gravity .....	1012	1020	1014
Albumin .....	Trace	Trace	Very faint trace
Sugar .....	0	0	0

**Microscopical examination:** Occasional white blood cells, calcium oxalate, epithelium, and red blood cells. Blood pressure was 115/90; weight, 107 pounds; pulse varied from eighty to 118; temperature varied from 98° to 99.8° F.; respiration varied from twenty-four to thirty. The patient raised no sputum during her stay in the hospital. Wassermann test was negative. Tuberculin complement fixation reaction: Miller's antigen +, Petroff's antigen ++. Röntgen examination of the chest, March 15, 1917, showed an extensive pneumothorax on the left side, the lung occupying only the middle area of the chest, extending from the level of the third to the sixth rib anteriorly. The air was apparently under considerable tension as the intercostal spaces were spread widely apart. There was also an area of pneumothorax occupying the lower axillary portion of the right chest. The diaphragm on both sides showed free movement. There did not appear to be any displacement of the heart or mediastinum. On fluoroscopic examination the heart action was seen to be more rapid and tumultuous. No definite infiltrations were seen in the lungs. This was possibly due to technical defects. Röntgen examination of the chest, March 22, 1917, showed a persistence of the pneumothorax in the left chest and apparently a slight increase of the pneumothorax in the right chest. In the latter place the pneumothorax occupied the lower axillary region and also a small area near the apex.

On April 7, 1917, twelve days after the patient left the hospital I saw her in consultation at her home. This was the first and only time I had an opportunity to examine her myself. She was intensely dyspneic, sitting on the edge of her bed, bending forward as well as her scoliosis permitted her to do, and a very detailed examination under the circumstances was out of the question. Such physical signs as were obtained, however, pointed very definitely to a bilateral pneumothorax. I immediately referred the patient to the hospital, where she was readmitted the same day and died the fol-

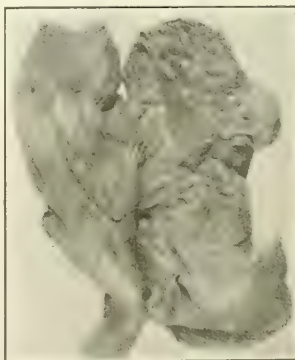


FIG. 2.—Showing collapse of left lung.

lowing day. The following is again an abstract from the hospital records:

Patient readmitted to the hospital April 7, 1917; died April 8, 1917. During the first nine days after the patient had left the hospital her condition remained as on dis-

charge. Three days ago her symptoms suddenly became more marked. She complained of restlessness, dyspnea, and inability to sleep at night. Physical examination at this time was practically the same as on discharge. The signs of bilateral pneumothorax persisted. The borders of

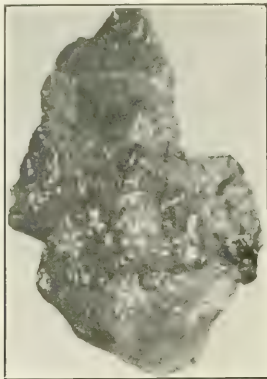


FIG. 3. Right lung.

the heart could not be outlined. Apex auscultated five centimetres to the left of the midsternal line. Action was very rapid and sounds were distant. Pulses were equal, rapid, and of poor quality. Dyspnea was marked. Face and extremities were extremely cyanotic.

A paracentesis of the left chest was done near the angle of the scapula, an aspirating needle being attached to a long tube and led out under sterile saline. Bubbles of air escaped, about eight with each inspiration, which continued for some four or five minutes. The patient was somewhat relieved by the above procedure, cyanosis and dyspnea becoming slightly less marked. The pulse continued rapid and poor and seven hours later the patient died. During this stay in the hospital the temperature varied from 99.4° F. to 100.2° F., pulse from 116 to 138, and respiration from thirty to forty-four. The urine had a specific gravity of 1035, contained a trace of albumin, some oxalates, and a few red blood cells.

*Complic autopsy by Dr. William Thalheimer.*—The body was that of a fairly well nourished young woman; marked cyanosis of face; marked rigor mortis and post mortem discoloration. The spine showed marked scoliosis. The chest was well formed, the right chest being somewhat more prominent. The heart was situated in the midline and was normal in size. Pericardial sac contained a normal amount of normal fluid. The anterior surface of the right ventricle showed a large milk spot. The tricuspid orifice admitted four fingers; the right heart was otherwise normal. The mitral orifice admitted two fingers and showed a slight grade of fibrous thickening along the line of closure; the left heart was otherwise normal. The coronary arteries were normal. The aorta was normal. The diaphragm was greatly pushed down on both sides so that it presented an almost completely horizontal plane across the body extending backward from just above the free border of the ribs. On each side the diaphragm could be placed in proximity with the chest wall as high up as the sixth rib in each mamillary line. When the left pleural cavity was incised air escaped with considerable force. The lung was collapsed and was about twice the size of a man's fist lying against the mediastinum. Pleural cavity contained no free fluid and the parietal pleura was smooth and glistening. Over the pleural surface of the lung were present great numbers of thin walled, transparent air vesicles, varying in size from several millimetres up to two to three centimetres. Most of these were sessile but a few of them were attached by narrow pedicles. Some of these vesicles were collapsed and contained a few drops of bloody fluid. The lung was moderately anthracotic, soft, and cushiony, and contained no indurated areas or masses. On section the alveoli throughout appeared

to be dilated and their walls were very thin. The lung was honeycombed in appearance because of great numbers of small spherical air containing spaces. The bronchial tree was dissected out and found normal. In the lower lobe just beneath the pleura was found a small pearly gray nodule two millimetres in diameter, which had the appearance of a tumor nodule. When the right pleural cavity was incised there also escaped a considerable amount of air under considerable pressure. The right lung was collapsed to almost the same extent as the left, but over its upper lobe there were a moderate number of moderately firm, fibrous adhesions to the parietal pleura. The pleural cavity contains 400 c.c. of thin yellowish purulent fluid which had no odor. The lung presented over its surface vesicles of the same type as those found over the left lung, but not quite so large or so numerous. On section the lung was similar to the left. Its bronchial tree was also normal. The trachea was normal; the nodes were anthracotic but otherwise normal. The mediastinum showed no abnormality. The liver was considerably pushed down, its free edge being on the edge of the umbilicus. There was one pale anemic area, several centimetres in size, at the edge of the right lobe of the liver. On section this area, except for its pallor, was similar to the remainder of the organ. The surface of the liver was smooth and glistening dark brown in color. On section the organ showed moderate grade of passive congestion but was otherwise normal. The gallbladder and bile ducts were normal. The spleen was normal in size and moderately firm. On section it showed congestion and in places a hemorrhagic condition of the pulp. Malpighian bodies were normal. The right kidney was normal in size; capsule was stripped with ease leaving a finely granular pale surface. Over the surface were a few small tumor like nodules, one to three millimetres in size. On section the organ was pale but otherwise normal. Arising from the lower pole of the left kidney was a large round tumor, about twelve centimetres in diameter. The peritoneum over this was densely adherent to it. On section of the kidney and tumor, the tumor was grayish, cream colored and rather firm, and fused gradually with the lower pole of the kidney. There were some small areas of softening in the tumor and many large bloodvessels which were filled with lamellated thrombi. The kidney was considerably distorted by the tumor and showed over its surface near the tumor several rounded tumor nodules one to three centimetres in diameter. The kidney was pale but otherwise normal. The pelvis was normal and did not communicate with the tumor. The ureter was normal. At the centre of the left adrenal a firm nodule five to six millimetres in size in the medulla was found. On section this was grayish in color and had the appearance of normal medulla. The right adrenal was normal. The stomach and esophagus were normal. The adrenal mucosa

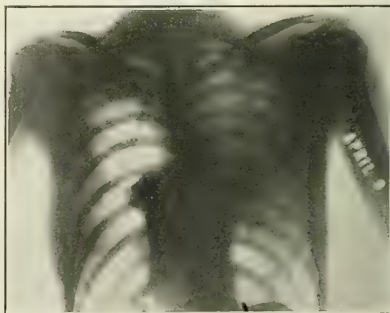


FIG. 4.—Taken after death. Left and right pneumothorax.

of the entire small intestines was dark red in color. The intestines were otherwise normal. Near the root of the mesentery of the small intestine was a group of large caseous, partially calcified nodes measuring three to four centimetres. The remainder of the nodes were normal. Retro-

peritoneal lymph nodes were normal. The bladder showed slight cloudiness of its mucosa but was otherwise normal. The uterus was normal in size; endometrium was red and hemorrhagic in appearance. The left ovary was normal. The right ovary was four by six centimetres in size and was made up practically entirely of a dermoid cyst. The right Fallopian tube showed on its surface three white, flat, button like nodules. The left was normal. After all the viscera had been removed, the spine was investigated and showed a scoliosis. The bodies of the vertebrae and the tissues about the spine were normal. No other abnormality could be found.

The diagnosis was: Bilateral pneumothorax with right pyopneumothorax; extreme emphysema of both lungs; subpleural and intrapulmonary vesicles containing air; spindle celled sarcoma of the kidney; tuberculous mesenteric lymph nodes.

*Microscopical examination.*—One section of the lung presented a typical picture of extreme degree of emphysema. There were many large thin walled air spaces, irregular in contour, but in general circular in outline. These spaces were devoid of septa or fragments of septa. Here and there were small areas of atelectasis with collapsed alveoli containing a small number of heart failure cells. Desquamated epithelium and mucus filled the entire lumen of the bronchi. Another section presented about the same condition as above. The atelectatic process, however, was more prominent and there was tremendous congestion of the bloodvessels. Many of the atelectatic alveoli contained serum and red blood cells. Weigert's elastic tissue stain showed that elastic fibres in the alveolar walls were normal in thickness and showed a tremendous degree of fragmentation, the fragments being very short. In many places the ends of these fragments were widely separated from one another. Section of the tumor of the kidney showed a vascular spindle celled sarcoma. There was no definite evidence of a mixed tumor. Small nodules in cortex of right kidney were made up of fibrous tissue. Microscopical examination of the adrenals showed a hydropic degeneration of a portion of the medulla. The bloodvessels were tremendously congested. Section of the cyst of the ovary included the wall of a dermoid cyst, including squamous epithelium of the sweat gland. The nodule in the pleura was made up of a spindle cell sarcomatous tissue identical with the tumor in the left kidney.

*Critical remarks.*—The medical literature of the last fifteen or twenty years has furnished a large number of cases of spontaneous pneumothorax. In American literature I wish especially to refer to splendid articles by Emerson (1) and Hamman (2); those particularly interested will find a long list of references compiled by these two authors. The latest article, one by Masshak and Craighead, appeared as recently as the second number of our new *American Review of Tuberculosis*, and is of interest because the authors include manometric readings showing intrapleural tension before and after gas withdrawals. All authors agree that the overwhelming majority of cases is due to pulmonary tuberculosis. Thus Pitt (3) reported that out of twenty-eight autopsies of pneumothorax, both spontaneous and traumatic, at Guy's Hospital between 1885 and 1898, seventeen were due to tuberculosis: four were due to lacerated lung; three were due to tracheotomy; two were due to necrosed pulmonary tissue; one was due to pulmonary thrombosis; and only one was due to a ruptured emphysematous bulla. Staehelin (4) discusses 918 cases observed during thirty-eight years in three Viennese hospitals, of which 715 were due to tuberculosis, i. e., seventy-seven per cent., and seven were due to emphysema, i. e., less than one per cent.

Special interest, therefore, attaches to cases in which emphysema is the underlying cause. As in

my case a number of these are reported as spontaneous pneumothorax in the apparently healthy and all were unilateral with one exception, to be referred to later. Again, in some there were repeated attacks on the side involved, with recovery in the intervals. Thus Finney (5) reported a patient with two attacks on the left side, Sale (6), a young woman with eleven attacks on the right side in four years, and Gabb (7), a lady of fifty-six years of age, who had had four attacks in fourteen years. With reference to this patient, an interesting letter is published from Doctor Bramwell, confirming the diagnosis of the first and second attacks because the story of the first had been doubted by Doctor Peacock at an examination made by him five months after.

There exist also reports of attacks alternating between the two sides; thus, Grenier (8), once on the right and twice on the left side.

I have been able to find but one case like my own of bilateral spontaneous pneumothorax, due to emphysema, reported by Staehelin (*loc. cit.*). His article is illustrated by confirmatory radiographs and the diagnosis was further established post mortem. The patient was under observation at the Basel Clinic for eight days before death. It was not determined how long the double pneumothorax had existed. Life had evidently been prolonged by the presence of adhesions which prevented complete collapse of the lungs, though the lungs were shrunk to a small volume. I have seen somewhere a reference to an article by Augry in Paris, 1887, reporting a death from double pneumothorax due to emphysema, but I could not find this article in the library of the New York Academy of Medicine.

There are two factors in modern medicine which are facilitating the recognition of cases of spontaneous pneumothorax in the apparently healthy: first, the experience gained in the vagaries of its physical signs by the wide use of artificial pneumothorax, and, second, the more general use of radiography. Of the two, the latter appears to me to be the more valuable—certainly so in small pneumothoraces. The normal thickness of alveolus plus pleura equals about 0.25 to 0.125 millimetre. Considering that in emphysema this measurement is reduced frequently to 0.05 or 0.03 millimetres, it is strange that rupture does not take place oftener, for Donders (9) has shown that the strongest negative inspiratory pressure equals fifty-seven millimetres Hg and the strongest expiratory pressure equals eighty to one hundred millimetres Hg. This pressure is probably not equally exerted at all points of the lung, as though the lung were water or air exclusively, but is limited to certain points only. The immediate exciting cause, as is well known, for a pneumothorax, is some acute physical strain that is accompanied by a relatively greater expiratory than inspiratory effort, such as coughing, sneezing, blowing an instrument, laughing; and yet opinions differ as to which phase of respiration is the more guilty.

I have nowhere seen coitus mentioned as the immediate exciting cause as was the case in the repeated attacks of my patient. Perhaps contributing causes may have been the pregnancy and the scoliosis because they embarrassed respiration. If sco-



liosis also interferes with the nutrition of the lung, as is asserted by orthopedists, this must be regarded as an additional contributing factor. Another point of unusual interest was the slight positive complement fixation for tuberculosis — 1+ and 2+. It would have justified the diagnosis of a tuberculous origin of the pneumothorax. The post mortem revealed nothing of the kind and the reaction was accounted for by the presence of a group of large caseous mesenteric lymph nodes. The large kidney sarcoma with metastases had apparently run along perfectly latent, as not infrequently happens, with no evidence except a slight albuminuria and an occasional red blood cell; and even these may reasonably be attributed to the oxalate of lime.

As regards the therapy in this case, there is general agreement among writers on spontaneous pneumothorax that in unilateral cases interference is for the most part uncalled for, but agreement is just as general that puncture and aspiration are indicated when the intrapleural tension is excessive, when dyspnea and cyanosis are marked, and if life seems threatened. Zahn (10), Fussell and Reisman (11). There is of course no literature on bilateral cases with one exception previously alluded to, and it must remain uncertain whether a thoracotomy on one or both sides of my patient might not have been wiser. In any case she was doomed on account of her other disease, sarcoma with metastases. In connection with this I must refer briefly to an article by Hellin (12) regarding the analogous condition of double empyema. He first demonstrated on rabbits that a double pneumothorax was not incompatible with life and publishes reports of four cases of empyema in which thoracotomy was done on both sides at one sitting with recovery.

At any rate this case has proved definitely that a bilateral pneumothorax is not absolutely incompatible with life. The hospital records of her two admissions show that she lived with this condition for a period of twenty-four days. To this duration may probably be added another three or four weeks according to information given me by her family physician.

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785 MADISON AVENUE.

## A NEW METHOD FOR AUDITORY PERCUSSION OF THE CHEST.

BY ROBERT M. ALEXANDER, M. D.,  
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Auscultatory percussion as a method of physical examination is a procedure in which auscultation and percussion are practised simultaneously. The writer was first convinced of its value while an intern on the medical service of Dr. L. N. Boston, at the Philadelphia General Hospital.

As usually practised the method consists in placing the stethoscope over a diseased area in a lung or over a viscus, and gradually approaching the out-

lines of the organ or consolidation with a finger tap. When this point is reached a note of distinctly higher pitch is heard.

In addition to this method the writer uses a special method, in which a stethoscope having two dia-

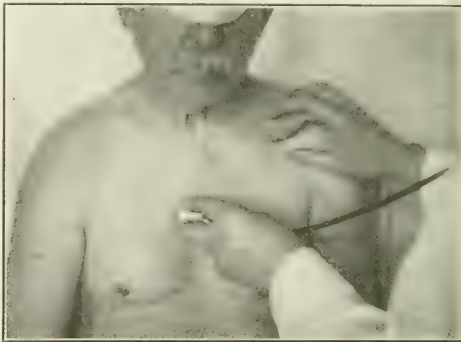


FIG. 1.—Stethoscope held over sternum while percussing tapping over apices.

phragms and made in the form of a drum is employed. The hand placed over the stethoscope is used to conduct vibrations to one of the diaphragms. The other diaphragm is placed on the chest wall, and the fingers of the hand, holding the stethoscope, are percussed. By this method more vibrations are conducted to the examiner's ear, and it is possible to detect slighter changes in pitch than is possible by the usual method of percussion. A method by which the stethoscope is placed over the sternum or spinal column and percussion practised on the two sides and comparing them is also employed. A third original method depends upon the conductivity of vibrations by the spinal column.

*Special method.*—Place the stethoscope over the centre of any portion of the sternum below the junction of the upper and middle segments of this bone (Fig. 1). While holding the stethoscope firmly in position percuss with one finger over first one and then the other apex of the lung. Always percuss over corresponding areas of the chest, underneath which lung tissue is normally found. In the event of there being any consolidated area contained in either lung, the sound obtained by percussing over this consolidation presents a greater degree of difference in pitch than is to be obtained by comparing the notes of the two sides while employing the ordinary method of percussion. The percussion stroke must be made with comparatively little force. It is immediately apparent that a distinct change exists in the sounds obtained by percussion over the healthy and the diseased structures.

In narrow chested individuals and in children it has been found that by holding the bell of the stethoscope in the palm of the left hand, and against the sternum, the thumb beneath the left clavicle, and the second or third finger beneath the right clavicle and percussing them alternately (Fig. 2), the vibrations are not only conveyed to the stethoscope through the tissues of the chest wall, but also by the

hand. The volume of sound transmitted to the ears is greatly augmented by the employment of this method. This method may also be employed as in Fig. 3.

The sound is better collected by a stethoscope having two diaphragms and made in the form of a drum. I had three such models made, and in these instruments the diaphragms were of unequal size in one. One of these stethoscopes was of a medium size, another rather small, and the diaphragms were composed of hard rubber and of parchment.

*Posterior study of the lungs.*—Place the stethoscope on the centre of the spinal column over the upper thoracic vertebræ (Fig. 4). In the event of there being any consolidated area contained in either lung, a higher degree of pitch is elicited by percussing over the diseased tissue than is present in the healthy lung.

I also use the special stethoscope for studying the apices of the lungs posteriorly. Place the stethoscope over spinous processes of the upper thoracic vertebra, and hold it firmly in place by the tips of the second and third fingers of the left hand. Place the first and fourth fingers of the left hand at equal distances from the bell of the stethoscope, and at corresponding areas on each side of the spinal col-

posite side. The volume of sound is also greater when percussing over consolidated lung.

To detect areas of consolidation at the bases of the lungs posteriorly, place the stethoscope over centre of the spine above the consolidated area, and



FIG. 3.—Alternate percussion of first and fourth fingers, showing manner of holding special stethoscope.



FIG. 2.—Alternate percussion of thumb and first or second finger over apices. Bell of stethoscope held in palm of hand.

umn and then percuss them alternately. In the event of there being a consolidated area beneath one of the percussed fingers, the note obtained will be of a distinctly higher pitch than that obtained on the op-

percuss with one finger from above, downward, going from normal lung tissue to diseased lung tissue of the same lung. When the upper area of the consolidated lung tissue is approached a note of distinctly higher pitch is elicited, together with some increase in the volume of sound.

In studying the upper limits of a pleural effusion the stethoscope is placed over the spine at a point above where dullness is present and with a finger tap the area of dullness is approached. Its upper limit is shown by a note of distinctly higher pitch. This method is of value when it is desired to know whether or not the upper line of dullness is movable when the patient's position is changed from the erect to the reclining posture.

A number of methods have been devised and practised in the employment of auditory percussion. S. H. Habersohn (1) stated that it was possible with the greatest ease to define the limits between the upper and lower lobes of both lungs, both behind in the interscapular region and in the anterior axillary regions. The stethoscope by his method is placed upon the lower lobe and the tuning fork or finger tap is gradually moved upward from the lower to the upper lobes. A sudden diminution in the intensity of the sound marks the passage of the sound producer from the lower to the upper lobe, the septum acting as a damper to the conducted vibrations.

Steigle (2) has discussed several methods. The method of DeMussy, called *auscultation plessimétrique*, was published in 1876. The physician, by his method, stands at the side of the patient and percusses over the upper sternal vertebræ, the sternum, or the clavicles while the stethoscope is

moved from place to place on the opposite side of the chest. By the method of Dr. Andrew H. Smith the chestpiece of the binaural stethoscope is placed in the patient's mouth and the lips com-



FIG. 4. Alternate percussion of first and fourth fingers, using special stethoscope.

pressed about it while the nostrils are compressed at the same time. The physician or an assistant then percusses the chest in various positions. There is also the method of Bianchi and Compte in which the phenendoscope of the former is employed. The method of Compte consists in placing the button of the phenendoscope over the organ to be examined and the ear pieces are adjusted while the finger is drawn over the skin, beginning at a point where the button is applied and running outward in radiating lines from this as a centre. As soon as the finger passes beyond the limits over which the button is placed it is stated that the rasping bruit heard before suddenly ceases. This change of note is described as being very abrupt and distinct. Stengle states that the distance is equal, more or less, in all directions and that the vibrations caused by the finger being drawn over the skin cannot occur in the deeper tissues. He feels that it is improbable that the position of the deeper organs would have any influence on the sounds obtained through the instrument and that it is probable that these sounds would be greatly influenced by the distance to which the finger is carried from the instrument. He believes the method of Compte to be useless.

Several writers have described the method by which the stethoscope is placed over the organ to be examined and tapping with one or more fingers is begun at a distance and gradually approaches the outlines of the organ or consolidation. When this point is reached a note of distinctly higher pitch is heard and is described by Maguire (3) as "the knock of direct contact."

Dr. F. W. Jackson (4) states that Dr. George P.

Cammann and Dr. Alonzo Clark in 1840 asserted that by auditory percussion the heart could be measured in all but its anteroposterior diameter under most, perhaps all, circumstances of health and disease, with hardly less exactness than if the organ were exposed before us; and that the outlines of the liver, spleen, and kidney could be traced in the same way. In twenty-three examinations of the heart Jackson was able to confirm his observations at autopsy. He found that in nine cases error was of not more than one fourth inch. He with Doctor Cammann and Doctor Clark believes the great source of error to be due to the resonance which is transmitted from the ribs. Habersohn thinks it is due to several lines of diminution of conduction of sound, probably produced by the deep cardiac dullness and by the pericardium.

I wish to thank Doctor Boston, whose valuable assistance and cooperation have made this article possible.

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SIXTH AND ELM STREETS.

## THE USE OF NITROUS OXIDE ANALGESIA IN OBSTETRICS WITH DESCRIPTION OF A SIMPLE APPARATUS.\*

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Hitherto the pregnant woman has dreaded confinement, knowing that the pains she would bear during that time would be such that she would never forget. The medical profession has been taxed to the utmost to find some means to ameliorate the pains which would at the same time not injure the patient or fetus. Various drugs were tried with more or less success. Among these morphine and its derivatives were most popular. However, when used to the extent of easing labor pains to any degree, it was found that there was interference in the normal progress of labor by causing the complete cessation of uterine contractions in some cases, in others preventing efficient contractions to such a degree that the first and second stages of labor were prolonged, finally necessitating instrumental delivery. It was furthermore ascertained that there was a dangerous effect upon the fetus, producing asphyxia in varying degrees in proportion to the amount of the drug used. These poor results led the majority of the profession to limit itself in the use of this drug to those cases with prolonged first stage of labor with rigid cervixes. Chloral and the bromides, while not having the analgesic value of morphine, were used in very much the same manner, and were finally restricted also to cases of prolonged first stage with slowly dilating os uteri.

\*Read before the Bronx County Medical Association, March 14, 1917, and the West Side Clinical Society, April 12, 1917.



With the discovery of ether and chloroform it was thought that their administration during labor, if given sparingly on an open mask and only during active pains, was entirely free from danger. While the severity of the pains were diminished in a satisfactory manner, later it became common knowledge that both of these anesthetics were harmful to both mother and fetus when administered over any length of time. Of the two ether was less harmful and could be used for a longer period without causing the deleterious effects of chloroform. It was noted that when these anesthetics were administered for a long period of time there was great tendency to uterine inertia, either primary or secondary, frequently necessitating operative delivery in cases that in all probability would have been delivered spontaneously had these anesthetics not been used. It was furthermore ascertained that after prolonged administration of either chloroform or ether, and especially with the former, there frequently occurred secondary relaxation of the uterus following delivery and in consequence post partum hemorrhage was often observed. It was also noted that many babies were born asphyxiated in varying degrees, and a great many could not be resuscitated. It was also ascertained that the toxic action of chloroform produced various pathological conditions in the kidney and liver which led to possible permanent damage to those organs, or resulted in delayed chloroform poisoning with a fatal termination.

The perfection by Gauss and Kroenig of the technic of administration of morphine and scopolamine during labor caused the medical profession and laity to have renewed hope that at last a harmless method had been discovered whereby a painless labor might take place without deleterious action on either mother or fetus. When this method was tried by many obstetricians in this country it was ascertained that the successful induction of "twilight sleep" was not a matter of routine administration of certain doses of these drugs at definite stated intervals, but their employment necessitated many long hours of vigil at the patient's bedside in order to vary the doses as certain conditions arose, and to keep a watchful ear to the fetal heart, and in short to be practically at the bedside of the patient during the entire labor. Under these conditions it became necessary, owing to the length of time spent with each patient, either to charge an increased fee for the administration of twilight sleep, or to send the patients to institutions especially equipped for that purpose. It was furthermore ascertained that the administration of these drugs during labor was not altogether free from danger when used by those unacquainted with the details of the technic, in consequence of which this method is naturally limited to those of the profession whose experience in its administration lessens the danger to a minimum.

It is rather interesting to know that thirty-seven years ago Klinkowitch, of Petrograd, administered nitrous oxide gas to twenty-five patients in labor, and that he reached the same conclusions as we have made at the present time. He noted a satisfactory decrease of pain with no diminution of the uterine contraction and no ill effects upon either mother or child. Strange as it may seem, there is

no record that this anesthetic was again utilized for the same purpose until ten years ago Webster, of Chicago, began to administer nitrous oxide and oxygen to his obstetrical patients requiring operative



FIG.—Apparatus designed by the author for the administration of nitrous oxide during labor.

delivery. In later years he applied this method to ordinary normal cases of labor for its analgesic effect.

During the last few years the administration of nitrous oxide during labor has become a most popular method of diminishing the severity of the pains. The technic consists of allowing the patient to breathe the gas at the beginning of each pain, and to discontinue its use with the subsidence of the pain, and as each succeeding painful uterine contraction takes place the same process of administration is repeated. This is such a simple procedure that it can be utilized by the great majority of those attending labor cases, and does not necessitate any technical skill as an anesthetist in the administration. It was at first thought that it was better to give oxygen with nitrous oxide as in operative surgical anesthesia, but it was found that the amount of nitrous oxide necessary to produce a fair amount of analgesia at any time was such a small quantity, and that cyanosis was practically absent or of such slight duration as to be negligible, therefore the necessity for oxygen was lacking.

In the administration of such an anesthetic during labor there are certain facts that should be ascertained before the general adoption of it. It is necessary to know what effect the prolonged use of the gas has on the mother and fetus. As to the mother, we should be sure that there is no interference with uterine contractions causing prolonged labor; that the blood pressure is not increased materially; that there will be no secondary relaxation of the uterus tending to post partum hemorrhage; and that there will be no toxic effect upon the kidneys and liver. In relation to the fetus, we should know that the

fetal heart during the administration is not affected, and that no degree of asphyxia is present at birth. It is furthermore necessary to ascertain whether a sufficient amount of analgesia is obtained to warrant the expenditure of time necessary in giving the anesthetic.

At the Harlem Hospital in the Obstetrical Service of Dr. G. L. Brodhead, nitrous oxide has been administered to eighty-four patients during labor and upon these careful examinations made. Nitrous oxide alone has been used in these cases without oxygen. The apparatus has been a simple one consisting of a nasal inhaler to which is attached a rubber tubing ending in a small rubber breathing bag. From this bag a tubing is joined to the reducing valve. This valve is controlled by an adjustable set screw attached to a wheel. The valve is set in by a clamp to the gas tank opening, and the flow of gas to the inhaler is entirely controlled by this after the tank valve is widely opened. This valve is similar in character to a needle valve on a carburetor, allowing for a maximum or minimum amount of gas being used.

The method of administration has been to adjust the inhaler over the patient's nose and to keep it there by an elastic head strap, the patient being in bed or on the delivery table. When the patient begins to complain of labor pains the administration of the gas is begun. The time of commencing the administration is usually toward the end of the first stage when dilatation of the cervix is about three to four fingers. The gas is then given at the beginning of each contraction in sufficient quantities to ease the pain, and at its subsidence is discontinued. The patient is instructed to tell the obstetrician when the pains are beginning, and before the painful contractions have got well under way the gas has been administered in sufficient quantities, so that the full force and painful effect of the contraction has been diminished. This is repeated as often as pains occur. The amount of gas necessary to give complete or partial analgesia varies with different patients. Some neurotic and temperamental women require a great deal more than others of the phlegmatic type. This, naturally, has to be left to the judgment of the anesthetist.

As the second stage progresses and the presenting part advances on the perineum and appears at the vulva outlet, the nitrous oxide is discontinued and chloroform administered by the nurse, and the obstetrician prepares himself for the delivery of the child, which is then brought into the world under chloroform administered to the obstetrical degree. The object in changing to chloroform for the short time the head is passing over the perineum is to eliminate the necessity of employing a special anesthetist for administering the nitrous oxide gas. By this means the obstetrician himself can ease the pains of labor at the time when they are severe by the use of nitrous oxide, and later deliver the patient by changing the anesthetic to chloroform as in the usual case of labor. The expense of the administration is very slight in comparison to the amount of good accomplished. In an average case where nitrous oxide is started at the beginning of the second stage one half a tank is the amount used for the completion of labor. This, of

course, varies with the individual's susceptibility to the analgesic effect, as was said before.

Of the eighty-four patients to whom gas was administered thirty-eight were primiparæ and forty-six multiparæ. Forceps delivery occurred in four instances: three low and one medium forceps. In two cases in which pituitrin was used for inertia, four were multiparæ and two primiparæ, making six cases in all, or seven per cent. There were four breech deliveries, and one craniotomy in a contracted pelvis, with a dead fetus. The systolic blood pressure was increased fifteen millimetres in one case, ten millimetres in two cases, and five millimetres in three cases. It was decreased twenty millimetres in one instance, and remained unchanged in seventy-seven cases. The fetal heart was unchanged in eighty-two cases, slowed ten beats in one case, and twenty beats in another. There was no maternal mortality. The fetal mortality was one, and autopsy on this baby showed a congenital atelectasis. The baby's mother had gas administered for five minutes.

There was one stillbirth; in this instance the fetal heart had not been heard throughout labor. In twenty-five cases there was complete analgesia, or 29.4 per cent. In fifty-eight cases there was moderate analgesia, or sixty-nine per cent. In one case analgesia was absent, or 1.6 per cent. In this last instance the absence of analgesia can be accounted for by the fact that the patient was refractory and did not breathe properly. Amnesia was complete in five cases, moderate in three cases, and absent in seventy-six.

The length of time of the administration of the gas varied from five minutes to four hours and twenty-five minutes. Asphyxia of the child occurred in three cases, each one of which had the umbilical cord around the neck one to three times. All three infants were revived. Cyanosis of the child occurred in two cases. In the other eighty-two cases there was no cyanosis. Cyanosis of the mother occurred moderately at the beginning of the gas administration in one case, and cleared up as labor advanced. One patient continued to have considerable cyanosis throughout. In the other eighty-two cases there was no cyanosis. The second stage in thirty-two primiparæ averaged one hour and fifty-five minutes. The second stage of thirty-one multiparæ recorded, averaged one hour and twenty-two minutes. There was no post partum hemorrhage, resulting from secondary relaxation of the uterus. No uteri were packed. Ergot was given, however, as a prophylactic after the completion of the second stage in every case.

From the above series of cases recorded and analyzed it can be deduced that with nitrous oxide administered alone during labor no ill effects upon mother or fetus were noted; that the resort to forceps or pituitrin was not more necessary than in the average cases of labor; that there was no tendency to post partum hemorrhage; that the prolonged administration did not cause damage to the kidney or liver as far as could be observed clinically. These results have also been noted by others. Various observations made upon the effects of nitrous oxide on the individual organs lead one to conclude that it is the ideal anesthetic to use in obstetrics. A

greater degree of analgesia can be obtained without complete narcosis; no kidney or liver changes have been noted following the administration over prolonged periods, because the elimination of nitrous oxide is entirely through the lungs; nitrous oxide remains in the tissues a very short period following its administration, which was shown by Kemp, who observed that twenty per cent. of nitrous oxide found in the blood after administration was reduced in two minutes' time to 6.09 per cent. The apparatus described above is of such compact and small size that it can readily be carried in the obstetrical bag. The gas tank with suitable covering and handle can easily be transported to each case of labor by the physician, or can be sent previously to the patient's house before labor begins.

In conclusion it may be said that the administration by the method described can be carried out satisfactorily by every physician practising obstetrics at a minimum expense and with the satisfaction of relieving the majority of patients of about ninety per cent. of the severe pains of labor with no deleterious effect upon either mother or child.

250 WEST SEVENTY-FIRST STREET.

## PHYSIOLOGICAL THERAPY IN GONORRHEA.

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Perhaps there is nothing in a name. Since, however, every disease must be labeled, the name might just as well be indicative of the specific lesion. "Urethritis venerea" describes the lesion and at the same time points to the etiology. The organism which has been credited as being the causative factor is the micrococcus of Neisser. The name "urethritis venerea" implies, then, an infectious disease caused by a specified germ to which the system responds by a localized inflammation of the urethra. The system recognizes the presence of this specific organism and in order to rid itself of its unwelcome guest, a local inflammatory process is inaugurated. This inflammatory process is necessary for the purpose of increasing the temperature, the dilatation of the bloodvessels, the diapedesis of the leucocytes and the discharge of the debris from the body.

Under ordinary circumstances, assuming that the inflammatory reaction is adequate, this would be sufficient to establish a complete cure. The reason that this curative process is inadequate will be found in the fact that the micrococcus of Neisser finds in the human secretions a particularly favorable medium—*Nährboden*; a substance necessary to its own propagation is contained in the human blood. In the urine it finds sodium chloride and an acid condition, both of which seem to be necessary elements for its continued existence. This micrococcus grows best at a temperature ranging from 99° to 104° F. These favorable conditions are present not only during health but during the reaction process even in an exaggerated degree. The attempt

to overcome the germs is inadequate and the disease remains.

Viewing urethritis venerea from this standpoint is it any wonder that the medical profession tenaciously clung or always returned to the silver salts as its best therapeutic agent? What is the effect of the introduction of silver salts into the urethra? The silver combines with the chlorine, forming a precipitate of silver chloride, AgCl, an inert substance. Silver nitrate attacks tissue and albumin and only incidentally the germs. It is no wonder that the genitourinary practitioner has come to the conclusion that not only are all the stronger silver solutions harmful, but on the contrary that the weaker this drug is used the better are the results. Instead of using, as formerly, the solutions of one or one half per cent. strength, they are now using one in five hundred. The explanation is that the chemical reaction with sodium chloride could not be prevented but the destructive effect upon the tissue was minimized. Not only that, the weakened silver solution instead of attacking and injuring tissue simply caused an irritation which assisted in producing a gentle reparative reaction. All other non-official silver salt preparations depend upon their nonirritating qualities for their good effects.

Such treatment can hardly be considered physiological. In order to treat this disease physiologically not only should the physiology of the patient be taken into consideration but also the physiology of the micrococcus. The Neisser germ does not thrive well in an artificial culture medium. The normal urethra is continually bathed in an acid sodium chloride solution favorable for germ cultivation. According to physiological therapy sodium bicarbonate is administered to render the urine alkaline, then all sodium chloride intake is stopped by ordering a salt free diet. Now we have an alkaline sodium chloride free urine which offers a poor medium for cocci proliferation.

The temperature of the urethra during this infection ranges from 99° to 103° F., a temperature favorable for the germ proliferation. By inserting an ordinary steel sound attached to one pole of a diathermic apparatus, the temperature can easily be raised to 108° F. in the urethra. This temperature, if maintained for at least one hour or more daily for three days, kills the specific cause of the infection.

Since iodine is the best germicide known and since the introduction of the sound requires lubrication, about fifteen drops of a colloidal iodine preparation are injected into the urethra. All iodine compounds are very unstable, but when the sound and the tissues in contact with the iodine become heated, nascent iodine is liberated. This iodine in a gaseous state will enter tissue during the diathermic process better than any oily or watery iodine or silver solution. After three days of this kind of treatment all active treatment should cease and the patient should be instructed to douche the urethra at least twice daily for three more days with water as hot as can be comfortably borne.

A smear must be taken daily for control purposes. The average case of uncomplicated urethritis venerea can be cured in one week.

231 WEST NINETY-SIXTH STREET.



## PERSONAL SERVICE TO THE INSANE.\*

*Urgent Need to Amend the Law.*

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The present method of procedure in committing our mentally afflicted patients is in need of revision in more ways than one, but it would carry me too far afield to attempt to review the whole subject. There is one phase of it, however, which should be of interest not only to the psychiatrist, but to every physician as well; that it is of paramount importance to the public, many of them will sorrowfully attest. What I have in mind is the question of personal service in the commitment of an insane person.

In order that one may fully understand this matter, let me briefly state the procedure in committing a person to a hospital for the insane: 1. Some one, preferably a relative, makes a petition to have the patient sent to a hospital for mental diseases. 2. Two licensed medical examiners certify under oath, that the patient is insane. 3. Personal service, i. e., notifying the patient what is to be done, one day before the judge is asked to sign the order for commitment. 4. Signing the order by the judge on the following day, committing the patient to the private or state hospital, selected by the family. 5. Reception of the patient by the superintendent of the hospital, if, in his opinion also, the patient is insane.

All the data in the commitment is made out on a blank furnished by the State Hospital Commission, whose headquarters are in Albany. All the statements must be sworn to before a notary. I wish to show that in nearly all cases, where it is not really nonsensical, as in the case of stuporous or deteriorated patients, who do not know nor care what you are doing, this is a barbarous and pernicious practice. In the others, as in depressed patients, or patients who have some insight into their condition, those of us who witness daily the great amount of suffering such service causes to the family, and the great distress to the patient, can not help but trust that the profession will ask the legislature to amend the law. The practice was evidently incorporated in the law to enable the patient to resist commitment, if he so wished. In a fairly extensive practice among this class of people for fourteen years, including two years' residence in two hospitals averaging 3,300 cases, I have never seen an instance where it was applicable. Still patients and their families must continue to suffer, because nothing is done to help them. When you consider the large number of insane—the ratio is about 1 to 250 of the total population in our state hospitals—you can understand that this question is a serious one. Patients must, of course, also be served when committed from the charity psychopathic wards.

You, of course, recognize that there is no question of crime in these cases, for the law does not permit physicians to commit any one who is under an indictment. These patients are all sick people in the strict sense of the term. They can not be cared

for at home by their people, and they need hospital care. My contention is that neither the law nor medicine has any right to do anything which will make them worse before going to the hospital for treatment. As the law now stands it does have a detrimental effect on many of them. Our profession owes it to itself and to the public to correct the present defective procedure.

Let me place before you a copy of the personal service notice, which must be personally given to the patient one day before the order of commitment is to be signed by the judge:

## FORM USED IN PERSONAL SERVICE.

In the Matter of an Application for the Commitment of an alleged Insane Person.

Take notice that on the annexed petition of ..... and the certificates of Doctors ..... and ..... hereunto annexed, an application will be made before the Honorable ....., Judge of the ..... Court, at the ..... on the ..... day of ....., 191.., for an order committing you to the ..... Hospital, as an insane person.

County of ....., ss.:

....., being duly sworn, says that he is ..... of age, and that on the ..... day of ....., 191.., at ..... he served a notice in the foregoing form of application for an order adjudging such person to be insane upon the person alleged to be insane, namely, ....., by delivering a copy of said notice and application personally and leaving the same with .....

He further says that he knew the person served as aforesaid to be ..... the person mentioned and described in the said application as an alleged insane person.

Sworn to before me this ..... day of ....., 191..

Let me now quote an extract from the Insanity Law in reference to personal service (Chapter 82, of the Insanity Law of the State of New York):

Proceedings to determine the question of insanity. Any person with whom an alleged insane person may reside or at whose house he may be, or the father or mother, husband or wife, brother or sister, or the child of any such person, or the next of kin available, or the committee of such person, or any officer of any well recognized charitable institution or home, may apply for such order, by presenting a verified petition containing a statement of the facts upon which the allegation of insanity is based, and because of which the application for the order is made. Such petition shall be accompanied by the certificate of lunacy of the medical examiners, as prescribed in the preceding section. *Notice of such application shall be served personally, at least one day before making such application, upon the person alleged to be insane.* . . . The judge to whom the application is to be made may dispense with such personal service, or may direct substituted service to be made upon some person to be designated by him. He shall state in a certificate to be attached to the petition his reason for dispensing with personal service of such notice, and if substituted service is directed the name of the person to be served therewith.

That is the law. Now what is the practice? Although the law specifically states that the judge may dispense with personal service, you never know whether he will or will not do so in any individual case, no matter whether the two physicians request it or not. Let us say that the two physicians have examined the patient the previous day. He may be suicidal or homicidal, or he may have wandered away from home on numerous occasions; he may be an extremely depressed man. To serve such a

\*An abstract of a paper presented before the Brooklyn Neurological Society, February, 1916, and before the St. Mary's Medical Club, January, 1917.

patient with the aforementioned notice would not only be a folly but it might result in the patient's attempting suicide—which has been done—or in his promptly leaving the house, thus causing great misery and distress to the family. The family may eventually recover the patient, though at what expense and anguish, you can guess.

On the official form let us suppose that you have requested that personal service be waived, stating your reasons for the request. Meanwhile you have made all your arrangements to have the patient sent to the hospital, which may be in a distant city. This, of course, has to be done early. The family are prepared, and you feel that you have done your duty. Now what may happen? The following day the papers are presented to the judge by you or by a member of the family. Here is where the individual personal element comes in upon which you cannot count. One judge promptly recognizes the facts, and acquiesces to the wishes of those who know what is best for all concerned—the medical examiners. He signs the order and the patient is sent to the hospital for treatment. But in a large number of cases there is no such happy course. Another judge promptly refuses to sign the order, and though, of course, while he acts from conscientious reasons, nevertheless the trouble for the family and the physicians now begin. I have often said to the judges that to serve the patient would be dangerous, and would do no good. Most of them will listen to your appeal; some will not. I know of one judge whose clerk told me he would not make an exception in any case; of another who signs willingly, as long as there has been service. I know of another who told an alienist friend of mine that he would like to see every patient whose order he signed. So while they all act in a spirit of conscientiousness, the practice is wrong, and it is not they who suffer, but the patient and the family. It is the physicians who are held responsible for committing the patients; it is they who are civilly and criminally liable in case of an error. The judge by refusing the request of the family and the doctors, does nothing but add to the already heavy burden of the family.

Were we only dealing with stuporous or deteriorated patients, there would not be much concern over the question. In serving such patients, we are merely doing something stupid. They pay no attention to the notice. It is often absolutely dangerous to serve a paranoiac, a paranoid præcox, or a manic depressive patient, especially in the depressed phase. You do no good, and may do much harm. You can imagine the patient's family returning home to do what the judge requires, but which the doctors, as a matter of common sense and sound judgment, ask to have waived. We leave it to your imagination as to what happens, when the above mentioned paper is handed to an excited delusional patient, a depressed one, or one with paranoid ideas. If the patient does not run away, can you picture to yourself the distress in that household while they wait until the morrow, so the paper can be taken to the court again, for the judge's signature, which according to law can not be done until the next day? Can you picture a weak woman in the presence of a maniacal

man, a poor old woman all night trying to control her delusional son; and all for what purpose? I suppose so they will not be "railroaded" to a hospital for treatment.

In answer to one judge who said, in denying my request to waive personal service, that I might put the patient in an observation ward, I told the judge that there was no reason whatever why I should subject any patient of mine to such an ordeal. An observation ward is a place where charity patients may be sent, for just what the name indicates, for observation in doubtful cases. There is absolutely no reason why a patient suffering from a frank mental condition should not be sent for treatment direct to the hospital which the family selects. This I always do, as it is ridiculous to send a patient first to such a place, where they still have to be served, and where after a few days they are then committed to the institution to which they should have gone originally. There is no more sense in sending an ordinary mental patient to an observation ward, and then to a sanitarium or state hospital, than there is in sending a medical case to one hospital for pathological examinations, and then to another for treatment. I might say that this particular judge did agree with me that the wording of the personal service was bad and should be changed.

Of course, if a man wishes to assume no responsibility in regard to his patient, he can have him sent to an observation ward, but he does not do his whole duty to the patient or family by such a course. In fact, he is of no more service to the family than a police officer would be.

I could cite case after case if space permitted showing the fallacy of this procedure. In nearly all cases, except for instance in the various dementias, it is often extremely dangerous. I have spoken to numerous jurists and psychiatrists as to the wisdom of this procedure. Not a single argument could be advanced in its favor, except that it may have been put into the law to prevent "railroading"—a highly delusional concept if you only review the present safeguards in the law. One judge recently used the expression in court "railroading to prison" when he meant hospital, but the slip showed his idea of hospitals for mental diseases. In order to "railroad" the patient, you must have a criminal petitioner, two doctors of the criminal type, and even after the judge orders the commitment, not the least important man yet to reach would be the superintendent of a private or state hospital who shall not receive the patient, unless insane.

I need not refer also to the patient's right of habeas corpus, even after admission, and his right to a hearing in court. If you can buy up all these men, does your intelligence permit you to believe for a moment that you would have any difficulty whatever in getting a person to swear falsely that he served the patient? And this would constitute personal service! This is the part of the law we ask to have amended. If not dispensed with entirely, then two changes should be made for humanitarian reasons: 1. Change the wording of the present form, so that the notice to the patient will be less brutal, in order that he will really believe he is going to a hospital for treatment, and that he is not "mad,"

"crazy," nor a "lunatic." For the law, no more than medicine, has no right to make a patient worse, and it does in many instances when it insists on giving a patient this paper. The effect on the family is worse; and because of it all, a patient is thereby kept too long from treatment in many cases. 2. Either do away with personal service entirely, except when the judge orders that it shall be done, and then he shall state his reason on the certificate. Or change the law to read "*shall*" dispense with personal service, instead of "*may*" dispense with personal service, whenever the physicians so request. If the judge wishes to insist in spite of the request of the physicians, he shall state his reason on the certificate. The reason given should be a valid one, such as in his opinion there is not enough evidence to show insanity, etc., and not some mere technicality, as in one of the following cases:

One day recently I had to send three patients to three different hospitals. One was a manic depressive psychosis, manic phase. I made personal service. The patient did just what I thought she would do—threw the paper away. The judge signed her order, because she had been served. The next was a case of dementia præcox, a boy who had already attempted suicide. I asked to have service waived, and gave my reason. The judge did so, and signed his order. The third case was also one of dementia præcox. The patient imagined he was quite dead, that in order to save his family from want he would have to kill them. He had gone to a number of stores trying to buy a revolver to carry out the deed. I asked to waive service in his case, as he was dangerous. Though I had his mother in court to substantiate my plea, the judge refused to waive service; asked about her husband, who had killed himself six months before, then asked if there were any other men in the family. She said, yes, a son of twenty-one years. The judge said we must serve him. I had to get him from his place of business, meanwhile keeping his mother about the court. He read the notice, and did not seem to understand what he was to do. I explained to him that if he wished he could get a lawyer and prevent his brother going to the hospital. It was all ridiculous, as he knew his brother needed treatment. Thus the law was followed, but it was really agony for these poor people. Even now, after getting a notary to witness the signature of the woman who served the other son, we had more trouble when I took the papers back to court, for the clerk asked us to come back in twenty-four hours. The poor old mother was trembling, her lips ashen white. She had had three hours of this horror already. I asked the clerk if he thought I could do any such inhuman thing. I then took the papers into the judge who had requested substituted service and begged him to sign them, which he now did. The whole thing was a legal farce. Remember, these are sick people—there is no question of a crime!

I have spoken to many judges on this question, and I am sure most of them agree with what I have here written. The medical profession owes it to itself and to the suffering public to amend this

law. Those of you who have had to do with these poor people know what I mean. I will say nothing of the hours which the physician wastes by this procedure, with no benefit whatever to any one.

I have never seen a single case where this personal service was indicated. Until this law is amended all patients and their families must suffer. The Brooklyn Neurological Society has put itself on record favoring the amendment of the law in this matter, and the Medical Society of the County of Kings has endorsed their stand. I expect that Dr. Walter Timme will introduce the resolution in the New York Neurological Society, and we hope that the New York Academy of Medicine will indorse it. We expect to interest every county society in the State, and to bring the matter up before the State society this spring. We want too to interest the judges and lawyers, and last, but not least, those most concerned, the public. We do this with the hope that our legislative body will repeal or amend the law, which does no good, but does do an incalculable amount of harm. We ask that none of the reasonable safeguards be taken from the patients. We also ask that none of them be made worse by ridiculous laws. Then the hours you spend with your patients to assure them that hospital treatment is best for them will not go for naught, as it does now, as soon as they are handed this horrible paper. The word "insane" repeatedly used on the present form naturally arouses certain associations in the minds of these afflicted depressed patients, such as "lunatic," "mad," "crazy," "a creature unlike other human beings." All the consolation you try to give them after this service is without results.

In nearly every case for commitment we are dealing with a purely medical question. The one medico-legal feature is the necessity for the judge's order, inasmuch as you are taking away the liberty of the patient. If the only ones who really know that the patient is insane and will be harmed by service request that such service be dispensed with, that should suffice.

The question as to whether there are bad doctors is no more pertinent to the principle here involved than the question as to whether there are bad lawyers or judges. The question is: Is the law just? The answer is: No. The remedy is to amend it.

A newly elected judge in Manhattan recently held up a paper of mine for nearly two days, causing great annoyance to the family. There was no real reason, no question that the patient was not insane, as four well known psychiatrists had seen the patient. He said, "Why commit him? Let him go voluntarily"; yet the commitment paper showed that he was a pronounced paranoiac without the slightest insight into his condition. No hospital would think of admitting him as a voluntary patient; in fact, legally he could not sign a paper. How much more reasonable was the remark of a Supreme Court judge, a friend of mine, in a case where I examined a patient brought down from Matteawan, who said, "I am not competent to decide these cases alone. I must depend on the medical examiners." Another judge says there are too many in the asylums—that half of them are all right!



However, I would not think of criticizing the judges. I only want to arraign this pernicious law. I am sure that the serious members of the bench must keenly feel the responsibility in these cases. But let us put the responsibility where it belongs, on the physicians.

That some judges do err sometimes in these mental cases is evident when one reads the names of some of the men appointed to examine a suspected incompetent. Members of the medical profession cannot repress a smile on reading that a well known nose, throat, or skin specialist has been asked by the court to determine the question of sanity. Such a practice is of course absurd. The average physician knows very well that only a trained psychiatrist can decide such a question.

#### CONCLUSIONS.

1. Personal service is ridiculous in most cases, dangerous or harmful in others.

2. The patient's rights are fully safeguarded without it.

3. Personal service should be dispensed with entirely, or else the words "may dispense" should read "shall dispense" with service at the request of the physicians; if the request is denied the judge should state his reasons. This is a medical rather than a legal problem.

4. The present form of service is unscientific and crude, and should be changed.

220 BROOKLYN AVENUE, Brooklyn.

### INFANTILE PYLORIC STENOSIS.

By J. EPSTEIN, M. D.,  
New York.

Pyloric stenosis in infancy is not an uncommon disease. The existence of an infantile stenosis of the stomach outlet has been known since the latter part of the eighteenth century, but it is within recent years that it has received considerable study in the diagnosis and treatment. The fate of the infants affected with pyloric narrowing before the modern knowledge of its causation and treatment is difficult to conjecture. Many undoubtedly have succumbed to this starvation disease, while others have probably survived in spite of the lack of proper surgical and medical treatment.

The etiology of infantile pyloric stenosis or congenital hypertrophic stenosis is quite obscure. Those factors which cause pyloric stenosis in adults, such as new growths, cicatricial contractions, or perigastric adhesions, are usually not present in the new born. The condition is either a congenital hyperplasia of the muscle fibres of the pylorus due to some maldevelopment during fetal life, or it is a compensatory hypertrophy the result of a pyloric overwork during the early days or weeks of life. Considering the manifold physiological functions of the pylorus, an abnormal process may develop which will cause a hypertrophic narrowing of the pyloric lumen, specially at a time when the gastrointestinal tract is still an immature digestive apparatus and its nervous control an irregular and imperfect system. But to assume that the hypertrophy of the pyloric

ring and the consequent stenosis of the opening is of an acquired or postnatal formation will not account for the unusual rapidity of the hypertrophy and for the fact that it usually occurs in otherwise healthy breast fed infants with no other evidence of digestive disturbances. The congenital or antenatal origin of this disease would perhaps serve as a better etiology, because there are analogous pathological conditions of stenosis or atresia occurring in other parts of the body in some of the new born, and because pyloric stenosis manifests itself so early in life. There is, however, little evidence of the existence of congenital pyloric hyperplasia or hypertrophy in the fetus which might lead to infantile pyloric stenosis.

The pathological anatomy shows considerable thickening of the pylorus, specially of the circular muscular fibres, and whether this condition is the result of a developmental overgrowth or is a compensatory hypertrophy caused by pyloric overwork, the result is the same. The pyloric tube becomes so narrow that the chyme from the stomach cannot easily pass into the intestines. In addition to the existing aberrant anatomical condition there seems to be another factor, probably a spasm, which tightens the pyloric opening still further, making it difficult or impossible for the stomach to empty itself downward into the intestines, with the result that it must empty itself upward by vomiting.

The symptoms and signs of congenital hypertrophic or hyperplastic stenosis are well defined. And the diagnosis is comparatively easy. The infants affected are usually of full term, healthy at birth, frequently the first born, and of the male sex; they are usually breast fed with no evidence of digestive troubles. At any time from a week to two months after birth, but usually between the third and the sixth week, the baby suddenly begins to vomit during or after nursing. The vomiting is forcible and projectile in character and frequently comes through the nose. There is a steady loss in weight, the infant becomes wasted, and as a result of lack of food and fluid intake, there is a persistent constipation and a diminution of urine. During or immediately after feeding there is seen gastric peristaltic waves passing from the cardiac to the pyloric region and the pylorus may be felt like a small hard mass. There is usually considerable retention of food in the stomach which may be obtained by aspiration two or three hours after nursing.

Before making a positive diagnosis of congenital pyloric stenosis one must exclude vomiting due to improper food, improper feeding, too much food at a time, and too frequent feedings. The history of the little patient, together with a knowledge of the composition of the food, the amount of food taken at each feeding, and the frequency of feedings will lead to a correct differential diagnosis. In rare cases, vomiting may be a condition of rumination or merycism, but on careful observation it is noticed that the infant simply regurgitates the food into the mouth, part of which is rejected and the rest is re-swallowed. Stenosis of the duodenum and atresia of the small intestines may be the cause of vomiting, but in the former condition there is bile present in the vomitus and the latter disease is immediately fatal. Pylorospasm is sometimes difficult to

differentiate from pylorostenosis. In pylorospasm there is frequently a history of neuroses in the family and the vomiting usually occurs in older children. There is always some other evidence of digestive troubles and the vomiting is intermittent. In pylorostenosis vomiting begins in early infancy with no other evidence of digestive disturbances and there are always present the following cardinal symptoms and signs: 1, persistent projectile vomiting; 2, persistent constipation; 3, persistent loss in weight; 4, visible gastric peristalsis; 5, palpable pyloric tumor; 6, gastric retention of food.

The treatment of pylorostenosis may be medical or surgical. In every case medical treatment should be tried before the infant is referred to the surgeon, but surgical help should not be delayed too long. The medical treatment consists mainly in proper feeding and lavage, though opium preparations, atropine, and alkalies are also recommended. Surgically various operations have been tried such as gastroenterostomy, pyloroplasty, and pylorotomy, but the so called Rammstedt's operation is giving better results. It consists in making an incision along the length of the pylorus, transversely to the circular muscular fibres, and cutting in to the mucosa but not through it. Though there is a considerable mortality under both medical and surgical treatment, a successful operation offers immediate beneficial results, while medical treatment is at best a long and tedious process. But the strong aversion of parents for operations on such young infants is the cause for medical treatment in many cases where surgery would probably be better, as in the following case which came under my care and was treated medically.

CASE.—A male infant, the fifth child of healthy parents, no history of persistent vomiting in the other children, full term, and normal labor, birth weight unknown, breast fed every two or three hours, with good digestion, suddenly began to vomit at the age of three weeks and one day. Two physicians treated the infant at different times during the next week with no benefit. The vomiting increased in force and frequency and there was obstinate constipation and diminution of urine. At the age of four weeks and two days, the mother brought the baby to me, being greatly alarmed because the baby on that day did not urinate. The history of the case at once suggested the diagnosis of congenital pyloric stenosis. On examination, the child looked undernourished, weighed six pounds, but otherwise the general physical examination was negative. The infant was nursed in my presence and it vomited with some force soon after. During or right after nursing there were distinct gastric peristaltic waves and the pylorus could easily be felt. Two and three hours after nursing I obtained at different times considerable food from the stomach, showing gastric retention.

The diagnosis of congenital pyloric stenosis was therefore quite evident. Surgical treatment was suggested, but the parents were horrified at the thought of operating on such a young baby. I therefore decided to do something medically. In the course of study of the case I have examined the mother's milk for the percentage of fat and the child's gastric content and the urine with the following results. The mother's milk contained about two and a half per cent. of fat. The gastric content one hour after nursing gave a total acidity of 18, no free hydrochloric acid; two hours after nursing, examined a few days later, gave a total acidity of 42; free hydrochloric acid, 12; combined hydrochloric acid, 24. The urine was negative for albumin, sugar, bile, acetone, and diacetic acid, and there was a trace of indican.

The treatment consisted in proper nursing and lavage with no drugs. For the first twenty-four hours after I saw the little patient, I ordered nursing for five minutes every four hours, later for five minutes every three hours.

The nursing was gradually increased to ten minutes, then to fifteen minutes, later to twenty minutes every three hours. I washed the stomach with plain warm water every day. The vomiting diminished, the constipation was relieved, and there was a free flow of urine. But after over two months of treatment there was hardly any gain in weight and the vomiting was contingent on lavage; when this was omitted for several days the vomiting returned.

From my experience with this and a few other cases it seems to me that many infants with congenital pyloric stenosis, treated medically, would fare better under surgical treatment.

222 EAST BROADWAY.

## Correspondence

### MISCELLANEOUS MEDICAL NEWS FROM WASHINGTON.

*Three New Branches of Medical Service Established—Curriculum of Medical Officers' Training Camps—Academic Honors for Colonel Birmingham—Three House and Senate Bills on Medical Service Introduced—Present Status of the Medical Establishment—Preparations for a Reserve Corps for Public Health Service.*

WASHINGTON, D. C., June 26, 1917.

Three new branches of the medical service of the army have been created by Surgeon General Gorgas with approval of the Secretary of War. These new branches, which are necessary to meet war conditions, are: A division of sanitary inspection, headed by Colonel Frederick P. Reynolds; a division of hospitals and hospital construction, headed by Colonel James B. Glennan; and a division of medical military instruction, headed by Colonel Edward L. Munson. Their work will be coordinated under direction of Colonel Henry P. Birmingham, senior assistant to the Surgeon General.

The immediate needs of the army in medical service is 5,000 qualified practitioners who are willing to enter the military establishment, and it is estimated that twice that number will be required by the end of the year, as ten medical officers are required for every 1,000 men. To give physicians instructions in military matters the four training camps for medical officers have been established at Fort Riley, Kans., Fort Benjamin Harrison, Ind., Fort Oglethorpe, Ga., and one on the Pacific coast. The physicians at the camps are to undergo a course of instruction divided into three periods of four weeks each. In particular it will be necessary to teach them to train enlisted men of the hospital corps. The first four weeks is spent in becoming acquainted with the duties the enlisted men are expected to perform. The second month will be devoted to training in the duties of medical officers generally and in an intensive book training on military medical matters. The third month will be spent in training in the field.

The regents of the University of Michigan have voted to confer upon Colonel Henry P. Birmingham, of the army medical corps, at commencement on June 28th, the degree of Master of Arts. The University of Michigan is most conservative in the selection of those upon whom honorary degrees are conferred, so the honor conferred upon Colonel Birmingham is a distinction out of the ordinary. It is

fully appreciated throughout the military establishment that this honor is abundantly deserved. He is one of the most distinguished and able members of the army medical corps. He has performed many valuable services, the most recent being that of acting surgeon general in the absence of Surgeon General Gorgas during the mobilization of the army and national guard in Texas. Colonel Birmingham at present is on duty at the War Department as senior assistant to the Surgeon General.

Representative Dent, of Alabama, chairman of the House military committee, has introduced a bill to amend the national defense act of June 3, 1916, by adding a provision, "That, during the existing emergency, lieutenants of the medical corps of the national guard shall be eligible to promotion as captain upon such examination as may be prescribed by the Secretary of War."

Senator Fletcher, of Florida, has introduced a bill to add the following to the same act: "Any person who at the time of the approval of this act shall be or has been an officer of the Medical Reserve Corps, or contract surgeon, on active duty for twelve years subsequently to 1898, shall be eligible for appointment as first lieutenant in the medical corps, subject to examination; provided, that any officer so eligible who fails to pass the physical examination shall be retired with the pay and allowances of a first lieutenant of the medical corps." Since the Spanish-American War, a number of physicians who are too old to receive permanent appointments in the medical corps of the regular army under the general law, have been performing active duty as members of the Medical Reserve Corps and as contract surgeons. The amendment is proposed for the benefit of these.

Representative Smith, of Idaho, has introduced a bill providing that hereafter osteopathic physicians shall be associated with the medical department of the army and navy, the total number not to exceed one to a regiment, and such appointees to have the same official status, rank, pay, and allowances of officers of corresponding grades in the medical service.

It is estimated that more than 2,000 medical officers will be required to look after the health of the greater navy, Marine Corps, Naval Reserve, Aeronautic Corps, Hospital Corps, coast defense forces, and auxiliaries of the naval establishment. When all these branches are recruited up to their full authorized strength, the naval medical corps will have to care for the health of more than 250,000 men. Hundreds of physicians and surgeons from every part of the country have offered their services to the navy, and a large number of them have been enrolled in the Medical Reserve Corps from which appointments of those within the age limits are made after examination to permanent commissions in the regular medical corps of the navy. Some 377 took the examination commencing on June 2d, and announcement of appointments is now awaited.

The medical establishment of the navy now includes 394 officers in the regular medical corps; 114 in the regular Medical Reserve Corps, exclusive of those that are candidates for permanent appointments; 263 in the naval reserve force; 493 in the general service of the naval reserve force; fifty in

the national naval volunteers; forty-seven in the regular dental corps; sixteen in the dental reserve corps; and eight in the dental reserve force. Special courses of instruction for newly appointed naval medical officers are being conducted at Harvard Medical School, at Boston, Jefferson Medical College, at Philadelphia, and at several institutions in New York City.

In pursuance of recent legislation, preparations are being made to organize a reserve corps for the Public Health Service for the period of the national emergency. Those appointed will be those found professionally, physically, mentally, and morally qualified, and they will hold their commissions for a period of five years, unless sooner terminated in the discretion of the President. However, a commission in the service will not exempt the holder from military or naval service. The appointees will be rated as sanitarians, senior assistant sanitarians, and assistant sanitarians. Another law just enacted that affects the Public Health Service provides that when officers and other persons in that service are serving aboard coast guard vessels in time of war or are detailed for duty with the army and navy in accordance with law, they shall be entitled to all the rights, privileges, benefits, and allowances, including rights to pensions for themselves and widows and children, as now provided for officers of corresponding grades and length of service of the coast guard.

**Epidemic Ulceromembranous Stomatitis (Vincent's Angina).**—A. R. Campbell and A. D. Dyas (*Journal A. M. A.*, June 2, 1917) say that this condition has become prevalent among the troops in Europe. In the mouth and throat it may occur in four forms. The commonest is the tonsillar type in which there is a diffuse diphtheritic membrane on one or both tonsils, fetid breath, enlarged and tender cervical glands, and some pain in swallowing. The membrane is almost indistinguishable from that of diphtheria and when removed leaves a bleeding surface. The next most frequent form is that in which there is a deep ulcer on the ramus of the lower jaw just behind the last molar tooth. The third form is that of pyorrhea, which involves first the incisor teeth. The severest oral form is the least common and is marked by general extension of the membranes and ulcers over the entire mucosa of the cheeks, tongue, pharynx, palate, and even the lips. In addition to the oral forms of infection there is a small proportion of cases with the clinical picture of severe acute bronchitis and the sputum is loaded with the typical organisms. Finally a few cases of balanitis have been seen due to infection by the typical organisms. In any case the positive diagnosis can be made only as a result of microscopical examination with the discovery of the typical bacilli and spirochetes. In certain cases the buccal lesions are very likely to be confused with mucous patches and it is necessary both to make microscopical examinations for the Vincent organisms and to make a Wassermann test. Treatment should include the administration of salvarsan, neosalvarsan, or Fowler's solution and the use of the latter as a mouth wash or dentifrice.



# Editorial Notes and Comments

## NEW YORK MEDICAL JOURNAL

INCORPORATING THE  
Philadelphia Medical Journal  
and The Medical News  
*A Weekly Review of Medicine*

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Address all communications to  
A. R. ELLIOTT PUBLISHING COMPANY,  
Publishers,  
66 West Broadway, New York.

### Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single  
copies, fifteen cents.

Remittances should be made by New York Exchange,  
post office or express money order, payable to the  
A. R. Elliott Publishing Co., or by registered mail, as the  
publishers are not responsible for money sent by unregis-  
tered mail.

Entered at the Post Office at New York and admitted for transpor-  
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JUNE 30, 1917.

### OUR SERVICE TO OUR READERS.

The meeting of the American Medical Association in New York city closed on June 8th. The NEW YORK MEDICAL JOURNAL for June 9th contained the address of the president of the association in full, a report of the proceedings of the house of delegates, including the election of officers, which took place on June 7th, a general review of the meeting, an editorial evaluation of the proceedings, abstracts of the address of the retiring president, of the secretary, and of four reference committees, and abstracts of fifty-one papers, with reports of the discussions thereon, and portraits of seventeen officers. In the issue for June 16th we presented abstracts of seventy-four additional papers with discussions and eight portraits; in the issue for June 23d thirty-four papers and eight more portraits, and in the current issue twenty-three more papers are presented in abstracts, with discussions. We have given our readers altogether 146 columns of matter concerning the meeting, or about 73,000 words, and we have done this promptly while the subject matter is timely and interesting. We feel that we may point out this conspicuous evidence of the valuable service of the NEW YORK MEDICAL JOURNAL.

## A PLEA AND A PLAN FOR THE ERADICATION OF MALARIA.

Fulfillment and justification of research lie in the application of the knowledge discovered toward the elimination of sources of human suffering. The list of diseases is still very short in which all the facts relating to causation, treatment, and preventive procedure are known and which it has been found possible to eliminate absolutely even in a small controlled area. However, when such facts are known, when a disease has become nonexistent in a section, and when a definite and practical plan for its eradication is available for universal application, there is no earthly reason for its presence and every reason for condemnation for the tolerance of it.

The interdependence between disease control and human achievement is no more perfectly exemplified than in the building of the Panama Canal. The history of this tremendous engineering enterprise runs parallel with the record of malaria research to ultimate success in mosquito extermination. The problem of malaria eradication was found to be nothing more nor less than mosquito control. A few personal rights, alleged inalienable, are being scrutinized closely by the inquisitorial eye of science—the right to own cats and dogs and spread hydrophobia and any number of other virulent diseases among one's fellowbeings; the license to spread syphilis broadcast; to cherish lice in one's bosom and under one's waistband and disseminate typhus fever. However, the personal equation is not so prominent in the problem of malaria, and personal liberties are not involved when science demands the massacre of several thousand infant mosquitoes in one's back lot.

After a general discussion of the prevalence of malaria, the social and economic loss occasioned by it, and a review of its etiology and transmission, Mr. Frederick Hoffman in *A Plea and a Plan for the Eradication of Malaria* (The Prudential Press, Newark, N. J.) gives a résumé of the procedure followed in the Canal Zone, the problems that were met, and an analysis of the methods employed in mosquito extermination. The second Pan-American Scientific Congress adopted a resolution whereby the United States and all Pan-American countries pledged themselves to cooperate to eradicate malarial diseases from the Western Hemisphere. Out of this resolution a plan was evolved to perfect the final program of the National Committee on Malaria. The plan of organization, scope, aims, and working methods of this committee, in propor-

tion to the magnitude of the task, are too extensive even to outline here. The plan is thoroughly comprehensive and scientifically conceived, and its authors are experts in all the sciences involved in the problem. They have worked in close cooperation with Federal, State, and local governments and the most international, national, and corporate scientific societies, sociological, medical, climatological, entomological, and civil engineering organizations, and with educational and publicity and industrial and business organizations. Such a conception is of enormous import to humanity; when fully developed, it will wield a mighty weapon in behalf of life and efficiency.

### SOCIOSANITARY INVESTIGATIONS.

A most careful and clearheaded analysis and criticism of the status of sociosanitary investigations has been presented in three papers grouped under the title *Methods of Investigations in Social and Health Problems*, published by the Russell Sage Foundation. The titles of the individual papers define the scope of this investigation into investigations and indicate the essentially logical nature of the criticism: *The Necessity of Health Standards*, by Dr. Donald B. Armstrong; *Some Shortcomings of Sociosanitary Investigations*, by Franz Schneider, Jr.; *The Application of the Statistical Method to Public Health Research*, by Dr. Louis I. Dublin. The complaint of these three authorities is that reports of such investigations show evidence of an enormous amount of "slovenly technic, unsupported argument, and logical fallacy," which renders them always unsatisfactory and often useless. They plead for a standardization of method and procedure. In short an application to the technic of all work along these lines of those scientific methods essential in the pursuit of any other scientific work.

Extremes of specialization and generalization in scientific work are often difficult to reconcile, but it will be agreed that they can meet on the common ground of scientific method with the common goal of establishing scientific truth. Sociology and sanitation are closely related, their data are often along parallel lines, and conclusions are frequently interdependent. For progress of these two most important sciences accuracy in the study of conditions relating to both is vital. Public health is a comparatively new phase of the oldest science. Sociology is the youngest member in the scientific family, and is hardly more than literally "infant." It is groping for expression. It must learn the language if it would prevail in the company of established sciences and contribute its quota of correlating truths, for only under this condition can it add to the sum

of human knowledge. Its students would do well to take to heart criticism and instruction as to technic from these authorities.

### THE REAL EXTENT OF FUNCTION IN DISEASE.

The shift from static to functional in the approach to clinical problems is a sign of a quickening of medical thought. It is, however, perhaps not so recent as one might believe. It is, to be sure, pioneer work to make this applicable to definite medical problems of the heart, the kidneys, or what not. Yet the congratulatory comment of the *Lancet*, May 26, 1917, upon the work of Sir James Mackenzie lacks that comprehension of the situation which is needed really to rouse the profession to a thorough working conception of function. This discussion fails to look backward appreciatively or around inclusively enough. It cuts off the real informing significance of the functional attitude by limiting its applicability to one set of disease problems or another.

A truly dynamic conception has more to account for than the reaction of an individual in terms of cardiac regularity or renal insufficiency or exact measurements of the total excretory function. Any one of these, or all together considered in this exterior way, goes a very short distance in the measurement of health and efficiency or disease and inefficiency of the whole man. The dynamic value of function must be genetic both in interpretation and in application in medical problems. Just as the necessities of function created the pathways for its performance and for its further perfection and increase, so the effort of the man within, conscious or unconscious, still controls that function toward success or otherwise.

The heart, the lungs, the kidneys respond with definite reactions to the demand of a larger impulse or set of impulses, in which the individual expresses his struggle with environment of whatever sort and his attempt to control it. Up to a certain point mechanistic explanation can expect definite symptoms in definite conditions. This, however, is only a small part of the whole complex matter. Functional success or failure and functional capacity, to be understood, need the interpretation which reaches deeper. They need in fact interpretation in terms of the individual with his particular aims and methods of attaining them, or his attempt toward that goal, with the inherent reason for his failures.

Heart, lungs, kidneys speak a definite language of results of the activity of a deeper force. Through their terms may be learned something of that force. A true knowledge of function, however, even a working, pragmatic conception of it which must

make its way to greater clinical usefulness, demands the thoughtful consideration of such influence upon cardiac murmurs, tuberculous lesions, variations in renal excretion. Not alone the gradation of the patient's daily walks and variation of his diet, but the purposeful attitude of the patient toward these details, as toward all forms of his environment, are determining factors in recovery and prophylaxis. They are also determinable to a much greater extent than has been conceived, that is, controllable through a psychological approach.

As to looking backward, it should not be forgotten that practitioners of the remote past had sometimes at least a more complete conception of the entrance of the whole man into the question of health and disease, and they acted accordingly. In other words they were upon the functional side. Later the struggle for scientific accuracy and the development of laboratory technic concentrated attention upon the more limited view of modern clinical science. It is again therefore a further advance to admit once more in a far more accurate and scientific manner the functional consideration. Only let it not be forgotten that it is not a completely new development, but that, as it was vaguely recognized in the past as the way to understand and treat disease, so it must still form the background of a clearer therapy today. No one organ of the body functions independently, therefore its disturbances are only completely understood in the light of its part in the entire economy of individual striving.

#### DIAGNOSTIC NEEDS IN CANCER.

Although medical science has made great strides along many lines there remain unsolved some very important problems. Much is made of the wonderful results of preventive medicine and advanced surgery. New schemes of treatment are hailed with great applause and enthusiasm, but there is one weak member that is not very frequently dragged forward—diagnosis.

There is no doubt that advances in diagnosis have been made, but they are not as great as many of us would wish. Much has been done in the laboratory, and the chances are that more will be done, but in some ways we are as far behind the goal as we were a decade ago. It is true that we can find the plasmodium of malaria, the treponema, and a host of other causative agents, yet the diagnosis of the infectious fevers in their early stages depends upon the experience of the observer. As far as cancer is concerned very little has been done, and there is probably no other condition in which an early recognition of the lesion is more important. We are, however, comparatively helpless. If the patient

is kept waiting until the disease is selfevident he has lost most of his chance of cure. This is true of lesions on the surface of the body and infinitely truer when some internal organ is involved. Unless the abnormality is recognized in its very inception the outlook is indeed bad. All physicians appreciate the difficulty of coming to a conclusion when dealing with some indefinite gastric condition. The general appearance may be very suspicious, but no one can tell definitely what the process is. Exploratory operations may be performed; they are not always satisfactory, but frequently no other course is possible.

Many attempts have been made to elaborate some method by which cancer can be diagnosed before it has become inoperable. Von Dungern tried out complement fixation, at first using an alcoholic extract of malignant tumors as the antigen. Later an acetone extract of human blood corpuscles, particularly those from an individual suffering from progressive paralysis, was employed. Theoretically the results should have been at least comparable to those of the Wassermann reaction, but such has not been the case. Coca, in a recent communication, reports his lack of success in about 130 cases. The same writer experimented with the Freund-Kaminer test in a hundred and fifty instances without satisfactory results. This reaction is based upon the supposed property of the serum of noncancerous individuals to destroy the isolated cells of cancer.

Various other tests have been suggested from time to time, but sooner or later all have faded from view until at the present time an examination under the microscope is the only method that even approximately does what is wanted. Without doubt no greater discovery could be made than one which would enable us to determine whether or not a case is malignant. It is about time that something more should be found out in this direction, as there is probably no question of greater importance.

#### OUR NEXT ISSUE A MILITARY NUMBER.

The increasing importance of military medicine under the stress of war has prompted us to devote the major portion of our next issue to military medicine; in fact, to make it a military number. Among the contributors will be Colonel T. H. Goodwin, of the British Royal Army Medical Corps, who has been on the battle front for nearly three years and who came to the United States as a member of the British Commission which was headed by Sir Arthur Balfour. Dr. Dudley J. Morton, of Chevy Chase, Md., who served for over two years at a base hospital in France, will present an illustrated article on Distal Osteoporosis of the Upper Extremity. Captain Ar-



thur Newton Tasker, Medical Corps, United States Army, will describe the organization and work of the medical department. Dr. Henry K. Loew, first lieutenant in the medical officers' reserve corps, will give some medicomilitary experiences in the war zone. Dr. Fred H. Albee will describe a new orthopedic base hospital now being constructed under his direction in New Jersey, and Dr. Smith Ely Jelliffe will write on Peripheral Nerve Injuries in the War. The new Columbia University war hospital, now nearing completion, will be described and illustrated, and a comprehensive article on the thirty-eight American base hospital units, accompanied by illustrations, will also be included in the list of special features in this war number. All this matter will be in addition to our regular departmental matter, making the issue interesting and profitable reading for military and civilian physicians alike.

## News Items

**Smallpox in Duluth.**—An outbreak of virulent smallpox at Duluth, Minn., has been reported to the United States Public Health Service. Since June 11th there have been 27 cases, with 7 deaths.

**War Cross Won by Six Americans.**—Six young Americans attached to the Norton-Harjes Ambulance Unit of the American Red Cross have received the War Cross for bravery in France. Among them was Dr. Charles Briggs, of Schenectady, N. Y.

**Harlem Medical Association.**—At the annual meeting of this association, held on May 2d, the following officers were elected: President, Dr. Sigmund Epstein; vice president, Dr. Thomas H. Cherry; secretary, Dr. Louis Friedman; treasurer, Dr. Gustav G. Fischlowitz; trustees, Dr. Seymour Oppenheimer, Dr. Frederick P. Hammond, and Dr. John F. Connors.

**French Sick and Wounded Being Brought to America.**—It is reported that in order to relieve the congestion in French hospitals, the sick and wounded are being brought to the United States to be cared for in American hospitals. Quarantine stations are rapidly being prepared to handle the increased work, the biggest problem of the health service at the present time being to prevent the introduction of contagious diseases from abroad.

**American Medicopharmaceutical League.**—The executive committee of this association held a regular monthly meeting on the evening of June 25th. Several new members were elected, and the secretary, Dr. Samuel Brothers, of Brooklyn, announced that a total of 1,081 members had been elected during the past four years. The next meeting will be held on Monday evening, September 24th, no meetings being held in July and August.

**Maine Medical Association.**—At the closing session of the annual meeting of this association, held in Portland on June 14th, a resolution was adopted favoring national prohibition for the duration of the war. Officers were elected as follows: President, Dr. James A. Spaulding, of Portland; vice presidents, Dr. George Coombs, of Waldoboro, and Dr. D. M. Stewart, of South Paris; secretary-treasurer, Dr. John E. Thompson, of Bangor.

**An Orthopedic Hospital in London for American Officers.**—The establishment by the American Red Cross in London of an up to date orthopedic hospital for American officers, the building for which was donated by William Saloman, of New York, provides what is believed to be the first hospital of its kind for officers. Similar institutions for privates are already in existence. The institution will treat disfigurements and deformities caused by wounds.

**Cerebrospinal Meningitis in Camp Dewey.**—According to press dispatches there are two cases of cerebrospinal meningitis in Camp Dewey, at Kitamaugh, Conn., where 200 Junior Naval Reserves are encamped. The camp has been quarantined and active measures have been taken to prevent the spread of the disease.

**Women to Equip a Hospital Ship.**—The base hospital ship presented to the government by Mrs. George Dewey is to be equipped by the Women's Section of the Navy League. This means the provision of towels, sheets, pillow cases and other supplies, as well as comfort kits and specific hospital equipment. It is requested that contributions be sent to headquarters, Room 410, 50 East Forty-second street.

**Willimantic City Medical Society.**—Dr. Charles A. Jenkins, retiring president of the Medical Society of Willimantic, Conn., entertained the members of the society Wednesday evening, June 13th. Dr. Frederick M. Smith was elected president, and other officers were elected as follows: Vice president, Dr. A. D. Marsh; secretary and treasurer, Dr. Robert C. White; committee on scientific papers, Dr. C. E. Simonds, Dr. R. C. White, and Dr. Laura H. Hills.

**North Dakota State Medical Association.**—At the thirtieth annual meeting of this society, held in New Rockford, May 9th and 10th, the following officers were elected: President, Dr. George M. Williamson, of Grand Forks; first vice-president, Dr. Edgar A. Pray, of Valley City; second vice-president, Dr. M. A. Baldwin, of Casselton; third vice-president, Dr. Fred Owing, of Kenmare; secretary, Dr. H. J. Rowe, of Casselton, and treasurer, Dr. W. F. Sihler, of Devil's Lake. The association will meet in Fargo in 1918.

**Health Department Discontinues Use of the Diazo Test.**—Last year nearly seventeen hundred specimens of urine were sent to the Department of Health's diagnostic laboratory with the request that they be tested for the diazo reaction. Of this number less than 250 gave a positive reaction. Under the circumstances the department feels that the time consumed in testing the seventeen hundred specimens and preparing and distributing the diagnostic outfits to the collecting stations might have been more profitably employed, especially when, as at present, there are such heavy demands on the laboratory. It has therefore been decided forthwith to discontinue the examination of specimens for the diazo reaction, and physicians attending cases of suspected typhoid fever will please take notice.

**Women Organizing Base Hospital Unit.**—The first woman's base hospital unit in the United States is being organized for service in France. Dr. Cornelia C. Brant, dean of the New York Medical College and Hospital for Women, is secretary of the new unit, which will be offered to the War Department for overseas service, thus precipitating the issue whether this government will recognize women as medical officers. The movement was launched at the convention of the American Institute of Homeopathy, held recently in Rochester, N. Y. Dr. Florence N. Ward, of San Francisco, is chairman of the organization. Dr. Sarah Hodson, of Chicago; Dr. Cora Smith King, of Washington; Dr. Margaret Hassler, of Reading, Pa., and other well known women surgeons throughout the country are assisting in the organization.

**Emergency Ward Beds in New York Hospitals Available for Government Purposes.**—The Committee on Hospital and Medical Facilities of the Mayor's Committee on National Defense has prepared the following summary of the number of emergency ward beds available in the hospitals of Greater New York for government purposes during the war:

Hospitals.	Surgical.				Medical.			
	Male.	Female.	Children.	Total.	Male.	Female.	Children.	Total.
Public .....	1431	305	215	2041	510	386	1403	1041
Private, general .....	1423	420	121	1964	602	291	143	1036
Private, special .....	386	104	164	714	0	0	0	0
	3240	970	500	4710	1112	677	1546	2285

Some of these beds are available immediately, while others would be available on twenty-four hours' notice, on one week's notice, and on one month's notice. Dr. S. S. Goldwater is chairman of the committee.

**Red Cross Relief Fund.**—Announcement is made by Mr. Henry P. Davison, of the Red Cross War Council, that \$114,000,000 for war relief work had been collected during the seven days of the campaign. Local chapters of the Red Cross are entitled to retain for their own work twenty-five per cent. of the total amount collected, but the national organization will have a very generous fund with which to begin their work. The fund will be used primarily to care for American soldiers and sailors, and secondarily for relief work among the Allies. A commission of about twenty experts, headed by Dr. Frank Billings, of Chicago, will be sent to Russia to study the needs of the Russian people. A similar commission will be sent to Roumania.

**Occupational Therapy.**—The June issue of the *Modern Hospital* was devoted to the subject of occupational therapy and occupations for the handicapped, the importance of which has not been sufficiently realized until comparatively recent times. Papers on the subject were contributed by Dr. W. R. Duntton, Jr., assistant physician, Sheppard and Enoch Pratt Hospital, Towson, Md.; Dr. Philip King Brown, Manor, Cal.; Dr. Herbert J. Hall, Marblehead, Mass.; Dr. A. H. Ruggles, Providence, R. I.; Dr. A. T. Laird, Nopeming, Minn.; Dr. Paul E. Bowers, Indiana Hospital for Insane Criminals; Miss Elizabeth Upham, Milwaukee, Wis., and Mr. George Edward Barton, Clifton Springs, N. Y. Another important feature of this issue is a paper by Miss Alice F. Bell, Columbia University, on the standardization of records in training school for nurses.

**Fourth of July Tetanus.**—The prevalence of tetanus resulting from Fourth of July pistol and firecracker wounds in the United States during the past fourteen years is shown in the following table, compiled by the Department of Health:

1903.....	415 cases		
1904.....	105 cases		
1905.....	104 cases, with	87 deaths	
1906.....	29 cases, with	25 deaths	10 in New York city
1907.....	73 cases, with	62 deaths	5 in New York city
1908.....	76 cases, with	55 deaths	6 in New York city
1909.....	150 cases, with	126 deaths	7 in New York city
1910.....	72 cases, with	67 deaths	4 in New York city
1911.....	18 cases, with	10 deaths	3 in New York city
1912.....	7 cases, with	6 deaths	2 in New York city
1913.....	4 cases, with	3 deaths	2 in New York city
1914.....	6 cases, with	6 deaths	3 in New York city
1915.....	4 cases, with	4 deaths	3 in New York city
1916.....	1 case, with	1 death	1 in New York city

The health department calls attention to the importance of injecting tetanus antitoxin promptly after the injury. The department has for some years supplied tetanus antitoxin free of charge, and on request will even send a trained physician to inject the remedy. Lockjaw has never occurred in any of the cases promptly injected.

**New Division for Navy Medical Corps.**—Surgeon General Braisted, U. S. N., has organized a new division in his office in Washington, to be known as the Division of Sanitation, which will have control of all questions of hygiene and kindred subjects not only in every naval training station, but in every naval district as well. It is proposed to assign one representative of the new division to each district and to have the officers report to the head of the division in Washington. The new branch will start off with a substantial nucleus comprising fifteen experts on sanitation from the personnel of the Public Health Service. The latter organization, for the time being at least, will make provision for the pay and allowances of the appointees, but the Navy Department will reimburse them for any expenses in travel, etc., in the line of their new duties. It is expected that the formation of the new division will be reflected quickly in improved health conditions in training stations and camps.

Among the fifteen men who have been ordered to report to Surgeon General Braisted at once are Dr. H. W. Cummings, of Washington, D. C.; Passed Assistant Surgeon W. M. Bryan, Marine Hospital, Chelsea, Mass.; Surgeon A. M. Stimson, Bureau of Hygiene and Labor, Washington, D. C. (to be stationed at Newport, R. I.); Senior Surgeon Fairfax Irwin, Philadelphia; Surgeon G. B. Young, Norfolk, Va.; Senior Surgeon W. J. Pettus, Charleston, S. C.; Senior Surgeon G. M. Guiteras, Marine Hospital, Key West, Fla.; Surgeon M. J. White, Marine Hospital, St. Louis, Mo. (to be stationed at New Orleans); Senior Surgeon L. G. Williams, Marine Hospital, San Francisco; Surgeon R. J. Lloyd, Seattle, Wash.

**The Work of the Medical Section of the Council of National Defense.**—The Medical Section is under the general supervision of Dr. Franklin H. Martin, of the Advisory Commission, and in the immediate charge of Dr. F. F. Simpson, who acts as chief of the section. In ascertaining the civilian medical resources of the country and comparing these resources with the actual resources and personnel of the medical departments of the United States Army, Navy, Public Health Service, and the American National Red Cross, the prime need was the careful selection from the civilian medical profession of thoroughly qualified doctors who could be recommended to the Army and Navy as members of the Medical Officers' Reserve Corps, a list of these men to be submitted to the Surgeons General for inspection, elimination, and final acceptance of those found desirable. In pursuance of this plan committees were formed in each State and asked to submit a selected group of medical practitioners from their respective sections. These lists were carefully compiled and divided into sections according to ages and specialties, and the names of the selected men were furnished to the Surgeons General. The selection of 21,000 competent physicians has been completed. The men represented by these lists were also given applications for positions in the Medical Officers' Reserve Corps, with request that they fill them out and file them with the Surgeons General.

The next important duty was to obtain young medical men, preferably recent graduates, for service as medical officers in the regular army and navy medical corps. The deans of the various medical schools came to Washington at the instance of the Medical Section and asked that medical officers of the army and navy be detailed to their respective schools to teach graduating classes the administrative details in connection with medical officers, in order to make available for service the 3,500 medical students to be graduated in June. This action has resulted in materially filling the gaps in the regular army and navy medical corps with men of the most desirable type.

The third task was to standardize the various instruments, supplies, and equipment common to the Army, Navy, Public Health Service, and Red Cross, coordinating them with the needs of the civilian medical profession. Committees representing the Army, Navy, Public Health Service, and Red Cross, and civilian doctors, were formed to standardize the existing supply tables and to select those necessary for the proper conduct of the departments. These committees after many months of work have formulated their recommendations, and catalogues with the authorized standardized instruments are now being published.

Consultations have been had with the deans of the medical schools of the country in cooperation with the Surgeons General, and arrangements made by which medical schools will continue their regular work and supply the normal output of young medical men, thus, it is hoped, avoiding the disastrous results of other countries flowing from the disorganization of medical schools. There has also been established a method by which, in cooperation with the large civil hospitals of the country, their staffs will be segregated, allowing the younger and more active men to enroll in the Officers' Reserve Corps for duty at the front.

A General Medical Board composed of civilian medical men of the highest rank has been formed, which meets at stated intervals in Washington to advise and cooperate with the Surgeons General of the Army, Navy, Public Health Service, and Red Cross in all matters needing cooperation between these branches and the large civilian medical element. This board, working through subcommittees, is in a position to furnish the very latest information on medical and surgical experience in the European war and from the principal laboratories and research organizations of America, and with regard to the relative desirability of men who are candidates for positions in the Medical Reserve Corps or the regular Medical Corps of the Army and Navy. At the instance of the General Medical Board, the Council of National Defense has taken decisive steps for the hygienic and moral welfare of the soldiers and sailors of the nation. The General Medical Board also aids in the selection of civilians, dentists and veterinarians for service in the medical departments of the army and navy.

Finally, the efforts of the Medical Section have been constructively directed toward aiding the medical departments of the army and navy in securing the doctors and materials needed for an army of such size as may be created.



# Modern Treatment and Preventive Medicine

## A Compendium of Therapeutics and Prophylaxis, Original and Adapted

**Therapeutical Value of Pertussis Vaccine.**—Anna I. von Sholly, Julius Blum, and Luella Smith (*Journal A. M. A.*, May 19, 1917) attempted to determine the therapeutical value of this vaccine in whooping cough by using it in a series of cases seen in the clinic alternately with a vaccine made from influenza bacilli and a mock vaccine prepared by diluting sterile milk. They point out that it is almost impossible to reach any very definite conclusions, for the evidence of improvement must rest largely upon the statements of the mothers or guardians of the children. Different methods of analyzing the results also gave widely variant results. Treating only patients who received at least three doses of vaccine and who were given their first dose before the third week of the paroxysmal stage, the proportion of cases reported as distinctly improved was almost the same for the influenza vaccine as for the pertussis vaccine. In the controls, treated with terpine hydrate or dilute milk injections, nearly six per cent more were said to be improved after the third visit than among those given the influenza vaccine and over ten per cent. less were improved by this treatment than by pertussis vaccine, but there were nearly five per cent. more stationary cases under it than under the vaccine. Used prophylactically the results seemed to show that the vaccine was capable of giving some protection, but it was difficult to determine whether this was materially greater than could have been accounted for by the known natural immunity:

**Adrenaline as a Remedy for Iodism.**—G. Milian (*Paris médical*, May 5, 1917), struck by the similarity of the vasomotor phenomena of iodism—edema, lachrymation, coryza, and conjunctival congestion—to those sometimes following injection of arsenobenzol, in the treatment of which adrenaline was found to yield excellent results, conceived the thought that this agent might likewise prove useful in cases of iodine idiosyncrasy. The first case in which it was tried showed this to be an actual fact. A soldier admitted to a hospital for spastic paraplegia and other syphilitic manifestations, upon being given daily three grams of potassium iodide, manifested marked coryza, edema, headache, a burning sensation in the eyes preventing sleep, etc., which soon necessitated discontinuance of the remedy. Next day the iodide was resumed, but with the addition of 0.003 gram of adrenaline by mouth morning and evening. On the following day there were no symptoms except slight discomfort in the eyes. To exclude a possible coincidence, the adrenaline was discontinued four days later. Next day marked ocular pain, free lachrymation, swelling of the lids, and insomnia returned. Two days after the adrenaline was resumed, and by the following day all the symptoms had disappeared. In a second, less severe case good results were likewise obtained, though a rather marked left sided frontal headache, probably due to a Herxheimer reaction rather than iodism, persisted in spite of the adrena-

line, and was relieved only by 0.5 gram of pyramidon. Milian warns against giving too little adrenaline; at least 0.006 gram a day should be given, in two doses, and if this prove insufficient, subcutaneous or intramuscular injections of 0.001 or 0.002 gram of the remedy should be employed. It should be used not only for preventive but for curative purposes, and might save life in the event of laryngeal edema. Presumably the vasomotor manifestations of iodism are due to adrenal insufficiency.

**Subcutaneous Injection of Oxygen in Trench Foot.**—H. Oswald Smith (*British Medical Journal*, April 21, 1917) recommends this measure as an important part of the treatment in all cases of the edematous or gangrenous types. By means of an ordinary salvarsan needle oxygen is injected slowly into the subcutaneous tissues in the region of each malleolus and at the base of the toes in the middle line until the part is well distended. The oxygen should be washed through a saturated solution of sodium carbonate and perfect asepsis should be observed. The needle should always be inserted through healthy tissue. After the injection the foot is dressed with lint wrung out of a one per cent. solution of picric acid and changed as often as needed. The oxygen drives the edema fluid out of the needle openings and is itself slowly absorbed, meanwhile aiding in preserving the nutrition of the damaged tissues and promoting the circulation through them. All blisters should be drained by passing through them a single strand of sterilized thread. The dead skin should be left *in situ* as a protective.

**Anesthesia.**—W. J. McCardie (*British Medical Journal*, April 21, 1917) finds that a small admixture of chloroform with ether largely does away with the irritant effects of the latter upon the respiratory passages, makes anesthesia simpler in induction and increases its safety by preventing the excessive depression of the chloroform and the excessive stimulation from ether. The mixture best suited to this purpose varies with the stage of anesthesia. For induction and often also for maintenance the proportions should be eighteen to twenty parts of ether to one of chloroform. Greater relative proportions of chloroform may be required, or even straight chloroform, for the maintenance of anesthesia and the change from one mixture to another is simpler and safer after induction with the  $E_{13}C_1$  mixture than after gas ether or plain ether. The mixture should be given with the wide bore modification of the Clover inhaler and anesthesia should always be preceded by a dose of ten milligrams of morphine and 0.6 milligram of atropine, given half an hour beforehand. For rapid and safe induction another mixture has also proved of great value, namely two parts of ether and one of chloroform. This is used by spraying fifteen to twenty drops of the mixture directly into the bag of a closed inhaler.



**Treatment of Appendicitis Complicating Pregnancy.**—Aime Paul Heineck (*Medical Fortnightly*, May 15, 1917) states that he does not advise the interruption of pregnancy. During the operation the uterus should be handled as little as possible and later opiates should be administered. The operation may be performed under local or general anesthesia. The operation of election is appendicectomy. When there is doubt as to whether the case is one of salpingitis, appendicitis, or tubal pregnancy, a median suprapubic incision should be made. An appendicular abscess should be opened at its point of maximum bulging, preferably through a cutaneous surface. If the appendix is not easily found, the abscess should be incised and drained either by means of a tube or gauze drain. The postoperative treatment is the same as for an ordinary case of appendicitis except that the patient remains in bed longer.

**Magnesia Oxide in the Treatment of Mercury Poisoning.**—Edwin Schisler (*Journal of the Missouri State Medical Association*, April 1, 1917) gives the report of sixteen patients treated in the St. Louis Hospital, of whom eleven were discharged cured after a hospital stay averaging eleven days and five died. All patients were given emergency treatment of gastric lavage, with administration of milk, eggs, and seventy-five to 100 c.c. of a saturated solution of magnesium sulphate. Then anticipating acute parenchymatous nephritis salt free diet was indicated with sweating to increase free elimination of solids and water. Magnesia oxide thirty or sixty grains was given three times daily with plenty of water when there was no edema. One tablespoonful of olive oil was given three times a day and electric packs applied where symptoms of suppression of urine arose. The Edebohl's decapsulation operation was not done in any case as results in other series did not justify its use.

**Treatment of Pneumonia.**—Henry M. Moses (*Medical Record*, April 21, 1917) gives the report of fifty-three consecutive cases of pneumonia seen in the Kings County Hospital male wards. No specific treatment has been evolved, but the dietetic and hygienic régime of Cornwall was followed, giving the patient through a tube a liquid nonputrefactive diet of modified milk, cereal gruels, fruit juices with lactose and plenty of water; administering sodium chloride and calcium chloride and lactate as foods, and supplying plenty of pure but not necessary cold air. Cathartics were never given unless absolutely necessary and enemas were used when it seemed advisable to empty the bowels. The patient is kept in bed in the horizontal position until ten days after defervescence, care being taken that he uses the minimum amount of energy. Every patient received tincture of digitalis in doses of ten to fifteen minims from three times daily up to every four hours. Whiskey was given only to those accustomed to it, and the irrational patients seemed to be greatly improved by venesection. Where dyspnea and cyanosis were due to insufficient oxygenation and not to heart failure inhalations of oxygen were of great avail, and low blood pressure was successfully combated by pituitrin 0.75 to one c. c. hypodermically every six hours if needed. There were thirty-five recoveries and eighteen deaths.

**The Management of the Early Stages of Hypertensive Cardiovascular Disease.**—W. S. Thayer (*Southern Medical Journal*, May, 1917) sums up as follows the essential points in the treatment of hypertensive cardiovascular disease in its early stage: The influences that are likely to aggravate a hypertension are undue mental or physical strain or excitement, heavy smoking, and immoderate eating. These influences may best be eliminated by relatively simple physical and psychological means. Gain the patient's confidence, endeavor to encourage him, to relieve his fears, and to make him appreciate that the essential thing in life for him is moderation in all things—eating, drinking, tobacco, mental or physical effort. Give him careful, detailed advice as to his daily habits. Search for and endeavor to remove local sources of irritation, errors of refraction, sinus disease, gastrointestinal disturbances. Try to bring it about that he may take vacations of sufficient length and may learn to seize the opportunity for short interruptions in his life's routine. Teach him to take simple calisthenic exercises and encourage outdoor sports when his physical condition allows it. If such exercise is inadvisable, arrange for regular massage and hydrotherapy. Do not attempt medically to treat hypertension itself. Try to discourage an undue interest in his own blood pressure.

**Intravenous Injection of Arsenobenzol in Concentrated Solution.**—M. Favre and Massia (*Presse médicale*, April 16, 1917) report that, since the fall of 1915, they have administered 3,150 injections of neosalvarsan or novarsenobenzol Billon dissolved in a quantity of water never exceeding two c. c. The solution of the novarsenobenzol, facilitated by slightly agitating the ampoule, is very prompt. In the case of neosalvarsan, which dissolves somewhat less readily, the ampoule should be sharply tilted and the drug shaken into a thin layer on its lateral wall before the water is introduced; the ampoule is straightened only after the water has entered, formation of a thick mass of the drug at the bottom of the ampoule being thus avoided. The resulting clear solution is drawn into a 2.5 c. c. Luer syringe for injection; the two c. c. of fluid suffice even for a 0.9 gram dose. Distilled water from various sources was used and even, where it was not available, boiled water, previously filtered; the injections were equally well borne in all instances. The small syringe is advantageous in that the piston rarely sticks during the injection. With a fine, well sharpened needle, even the smallest veins can be entered with surprising ease. The concentrated solution is perfectly borne by the venous walls, the authors never having noticed the least evidence of vein irritation. The inflammatory induration resulting from leakage of solution into the cellular tissues is neither more marked nor more lasting than that from much more dilute solutions. General reactions were, as a rule, completely absent, and when present, very mild. The use of the concentrated solutions seemed actually to minimize such reactions. Preceding soluble mercurial medication is also credited by the authors with promoting the best possible tolerance of the arsenical. Mercury is also continued in the intervals between the novarsenobenzol injections.

**Review of Anesthesia in Obstetrics.**—John Osborn Polak and Harvey B. Matthews (*Long Island Medical Journal*, April, 1917) review the many methods and agents suggested for this specialized form of anesthesia and conclude that the ideal anesthetic for obstetrics has not yet been discovered. Some of the combinations of drugs have advantages which make them serviceable. Thus pantopon or morphine with scopolamine are of value to help the patient through the first stage. With these the use of nitrous oxide for the second stage will give excellent results, and seems to be the most satisfactory combination. No anesthetic measure should be employed which tends to prolong the second stage, owing to the danger to the child. This last statement applies with special force to the use of the morphine group of agents.

**Feeding during Operation to Prevent Surgical Shock.**—Herbert H. Brown (*British Medical Journal*, April 21, 1917) believes that loss of blood and insufficient feeding are important elements in the production of shock, the latter being particularly frequent in operations upon the stomach and upper intestinal canal and in cases in which there has been a previous period of relative starvation. On the strength of this belief the author now passes a small tube into the upper part of the small intestine through the pylorus in all operations on the stomach and administers slowly a pint of peptonized milk containing one beaten egg and an ounce of brandy. This is done during the operation or just before the stomach opening is finally closed. The results in preventing shock and hastening recovery have proved excellent.

**Gunshot Fractures of the Arm.**—C. H. Fagge (*Practitioner*, May, 1917) deals with the various bone injuries resulting from gunshot wounds of the upper extremity and the value of bone grafts in the treatment of ununited fractures. He believes that bone plates and screws, on the one hand, and bone grafts, on the other, are not alternative any more than they are separate methods. In a large percentage of the cases in which he employed a graft it seemed to him necessary also to introduce a plate. The graft must be autogenous, and consist of compact and cancellous bone, the former for rigidity and to give purchase for screws, the latter to insure bone reproduction. The grafting of a layer of periosteum on the surface of the bone graft does not appear to be essential and has the disadvantage that excessive bone formation may occur at the place from which the bone graft was taken. The graft must be fairly secured in position and must be subjected to neither stress nor strain. If this proviso is to be fulfilled in dealing with cases in which a definite gap has to be bridged, it seems to be essential that the separated fractured ends and the intervening graft must be secured to one another in some way, however well they may be mobilized on a splint or in a plaster casing. He believes that this fixation can be brought about only incompletely by suturing with catgut or kangaroo tendon, as advocated by Albee, so he is accustomed to secure the broken ends in due alignment with a long plate and screws, so arranged as to fix the intervening graft in its proper position.

**Treatment of Pseudarthrosis of the Femoral Neck by Bone Transplantation without Arthrodesis.**—Pierre Delbet (*Bulletin de l'Académie de médecine*, April 17, 1917) reports on the ultimate results obtained with a procedure already described in 1908 and 1912, having for its purpose the consolidation of the head of the femur with the neck where an intracapsular fracture has failed to unite. Contrary to the prevailing view, intracapsular fractures are the rule even in young individuals. Experience in inserting a transplant 6.5 to eleven centimetres long, freed of periosteum, in fifteen cases showed that such a transplant will not only mechanically support the weight of the body, but in patients who are not too old will lead to the formation of new bone between the fracture surfaces. In four cases the new bone deposition is visible in the x ray plates, and in one the neck of the femur seems to have been completely reconstituted. In two cases in which the superincumbent weight led to fracture of the transplants, consolidation of the latter followed. A long standing pseudarthrosis, though more difficult to deal with than a recent one, does not contraindicate the operation. In a woman in whom the condition had existed six years before intervention, the results were nevertheless very satisfactory, as also in the case of a woman aged sixty-nine years. Ten patients in whose cases the intervention had been carried out a long time previously were all able to walk easily.

**Vaccine Treatment of Certain Forms of Chronic Enteritis.**—A. Berthelot (*Presse médicale*, April 19, 1917) asserts that while the feces of subjects with normal intestinal functions almost never contain true aminoacidolytic microorganisms, i. e., organisms capable of developing on a single aminoacid as organic pabulum, the feces of patients with certain forms of chronic enteritis almost constantly contain such organisms. In the diarrhea cases the organisms present can readily be cultivated on histidine or tyrosine, and consist usually of *Bacillus lactis aerogenes*, less often the pyocyanus or coliform organisms, and rarely dysenteric bacteria. In the cases with constipation, on the other hand, the organisms present grow on alanine or tryptophane, and in ninety per cent. of cases belong to the *Bacillus coli* group. Clinical trials of vaccines prepared with the predominating aminoacidolytic organism in the given case yielded only inconstant results, but by experiments in rats it was found that if the heated aminoacidolytic vaccine is administered in conjunction with a heated vaccine of the predominating proteolytic organism in the same intestinal flora—usually the *Bacillus perfringens* or pyocyanus, and sometimes the proteus vulgaris, *Bacillus sporogenes*, *Bacillus putrificus*, etc.—a complete cure is often obtainable, and in many additional cases a distinct improvement. Clinically, striking results were thereupon likewise obtained. Application of this treatment presupposes, of course, that the presence of intestinal parasites, tuberculous or neoplastic lesions, and nephritis or chronic appendicitis as a cause of the enteritis has been definitely excluded. That vaccines of the type described are clinically harmless has been shown by Sir Almroth Wright and many others.

# THE AMERICAN MEDICAL ASSOCIATION

## Sixty-Eighth Annual Meeting

Held at New York City, June 4 to 9, 1917

(Continued from page 1230.)

SECTION IN OBSTETRICS, GYNECOLOGY, AND ABDOMINAL SURGERY.

June 7, 1917.

**Prolapse of the Female Urethra.**—Dr. JOHN W. KEEFE, of Providence, R. I., stated that this condition occurred most often in young women because of coughing and straining at stool, and less frequently in older persons because of general debility. Its origin was nervous, the constrictor urethræ becoming parietic and being unable to regain its tone until shortening of the membrane had been effected and the sphincter replaced. Cauterization was disadvantageous in leaving scar tissue, and astringents gave only partial success. To correct the condition surgically, the speaker made an incision in the lower part of the meatus down to and through the muscle. A suture was then placed, coming out through the wound, a lead probe passed into the bladder, the muscle ends firmly joined about the probe with two sutures of chromic catgut, and chromic gut then passed through the muscle completely round the urethra beneath the mucous membrane. In taking these sutures the wound was entered at the right side, the needle passed in a semicircle to the upper part of the meatus and reinserted at the same point, and a semicircle then made to the opposite, left side of the wound, where the needle emerged. Finally, four catgut sutures were inserted to join the mucous margins, the lead probe removed, and selfretaining catheter inserted.

**Further Notes on a Rare Type of Bladder Ulcer.**—Dr. GUY L. HUNNER and Dr. GEORGE L. STICKNEY, of Baltimore, referred to a lesion situated in the vertex or free portion of the bladder and characterized by only minute ulcerations—one or several—of the mucosa, though more deeply there was usually a broad infiltration of all coats of the bladder wall. The bladder symptoms were very pronounced, and frequently there were also intestinal symptoms, the lesions extending to the peritoneum. The urine was clear, but on careful centrifugation showed a few leucocytes and red cells. All attempts to find microorganisms in the affected tissues by cultural or staining methods had proved vain, and the condition could therefore be called a simple ulcer, in spite of its severity. The condition, unrecognized, had often led to various operations on other organs in an attempt at relief. In the treatment, all measures tried, including the high frequency current, had proved ineffective except complete excision of the chronically infiltrated area. A large part of the bladder might thus have to be removed, but the results even in such cases had been excellent. Fifteen of the eighteen cases seen had been treated by operation. In the remaining three, inoperable because of advanced age, strong silver nitrate had given partial relief.

### Ureterotubal and Ureterouterine Anastomosis.

Dr. ANEL F. W. WERELIUS, of Chicago, dwelt on the high mortality of transplantation of the ureters into the intestine, as ordinarily attempted, owing to ascending infection. Experimentally he had noted that if the ureters were anastomosed instead into the Fallopian tubes or the uterus, the subsequent unfavorable consequences could be almost entirely obviated if the operation itself was a success. Operating experimentally in ten bitches in a hospital and with the same technic as for human subjects, the speaker had had a mortality of thirty per cent., which, however, he thought could in future be lessened. The bladder had in some operations been excised, in others allowed to remain. The results of the experiments had been sufficiently encouraging to warrant further work.

**Ovarian Organotherapy.**—Dr. WILLIAM P. GRAVES, of Boston, concluded his paper with the following summary: Studies in ovarian organotherapy were at present necessarily confined for the most part to clinical observations. Such observations, though admittedly inaccurate, might to a limited extent be of scientific and practical value. Personal clinical experience with extracts of ovarian substance had revealed that preparations of the corpus luteum alone were less efficacious therapeutically than were those of the whole ovary. Theoretical knowledge and scientific experimentation tended to show that an important part of the ovarian internal secretion was elaborated by the interstitial cells. It was probable that the interstitial cells corresponded to the lutein cells of the theca interna of the atretic follicle. In some adrenals these cells became disaggregated and appeared as glandlike masses—interstitial gland; in others they remained confined to the follicle by the outside envelope—theca externa. The interstitial cells therefore corresponded to the theca lutein cells of the corpus luteum. The interstitial cells of the ovary were analogous to the testicular interstitial cells of Leydig which were known to elaborate an internal secretion. Ovarian therapy for its best effectiveness should include at least the product of the interstitial cells. Extracts should therefore comprise the ovarian stroma in order to take advantage of the atretic follicles. Extracts made from the corpora lutea of pregnancy proved too toxic for practical use. Extracts made from the ovaries of pregnant animals, with exclusion of the corpora lutea, proved superior therapeutically to the extracts of whole ovaries of nonpregnant animals which included the corpus luteum. The superiority of the follicular extracts of pregnancy was explained by the fact that during pregnancy follicle atresia was especially marked with a corresponding probable increase in activity of the interstitial cells.



**Appendicitis and the Gynecologist.**—Dr. ROBERT T. MORRIS, of New York, said that the gynecologist sometimes found difficulty in differentiating between pelvic conditions and the four marked types of appendicitis. These four well defined types of appendicitis represented two irritative lesions and two infective lesions. The most prominent diagnostic point differentiating between all forms of chronic appendicitis—but not any form of acute appendicitis—and pelvic conditions lay in the fact that the right sympathetic lumbar ganglion only was hyperesthetic on pressure; in cases of any chronic pelvic irritation or infection, both right and left ganglia were hyperesthetic. There was no direct nerve connection between the appendix and the ganglion in question. This being the case, it might be stated that an afferent impulse went to a segment of the spinal cord from the irritated appendix, and the efferent response were manifested at two points, one in the head skin zone for the appendix and the other in the ganglion in question. Another important diagnostic point consisted in persistent distention of the ascending colon with gas in all forms of chronic appendicitis. This distention was probably dependent upon a tiring out of the innervation of the ascending colon after a preliminary period of overstimulation from the point of persistent irritation.

**Technic and Scope of Local Anesthesia in Abdominal Surgery.**—Dr. ROBERT EMMETT FARR, of Minneapolis, said that except in the hands of a few surgeons local anesthesia was held in reserve for the operation of inguinal hernia and for cases of extreme hazard. Novocaine was the safest anesthetic known. It was satisfactory as an anesthetic in a considerable percentage of abdominal cases, a percentage rapidly increasing with experience. The toxicity of novocaine depended to a greater extent on the strength of the solution than upon the amount used, and large quantities of 0.5 per cent. might be used. A thorough saturation of the tissues gave the complete anesthesia necessary for success in this line of work. Except in hernia operations, direct infiltration was the method of choice. All layers were infiltrated before any incision was made. The layer-by-layer method should be discarded. The production of pain on entering the abdominal cavity of the rough handling of the viscera would produce a defensive maneuver on the part of the patient which might force the use of general anesthesia. This must be anticipated and prevented by the surgeon.

By making use of gravity, longitudinal and lateral tilting and vertical retraction through ample incision the visualization was excellent. All movable organs might be operated upon under local anesthesia. Organs and tissues fixed to the posterior parietal peritoneum by inflammation or malignant disease, and the gallbladder when situated high up beneath the ribs, required general anesthesia. Children lent themselves especially well to this method. With perfect anesthesia the post mortem like repose of the organs gave the very best opportunity to perform work with the minutest attention to every detail. The pneumatic injector was used for the introduction of the anesthetic. This not only greatly

reduced the time, but provided a free, easy, and measured flow, making possible a uniform infiltration of the tissues in addition to saving the surgeon the large amount of labor necessitated by the use of syringes. The comfort of the patient was greatly increased by the moderate use of scopolamine and pantopon, the narcotic being used as an adjunct, and not as a substitute for local anesthesia. It was the speaker's practice to give a small dose when the patient awoke in the morning, and to repeat one half hour before operation. This tended to make the patient somewhat drowsy and offered an opportunity to avoid the anxiety which the anticipation of an operation produces. The comfort of the patient was further enhanced by transporting him to and from the operating room on the invalid litter which had been devised for this purpose.

Doctor Farr said in conclusion: 1. Novocaine is a safe anesthetic. 2. Novocaine anesthesia will permit the performance of a large percentage of ordinary abdominal surgery. 3. With perfect anesthesia, a proper position of the patient, and vertical retraction, the opportunity for the surgeon to work excels that offered by any form of anesthesia other than spinal. 4. Preliminary narcotics in moderate doses are the source of solace to persons who must undergo surgical operations. 5. Children lend themselves especially well to local anesthesia in abdominal surgery. 6. While special technic and training are necessary, they are easily acquired and the benefits to be derived are well worth the expenditure of time and effort.

**Causes of Recurrence after Operations on the Bile Passages.**—Dr. DANIEL N. EISENDRATH, of Chicago, laid emphasis upon the necessity of lessening the number of recurrences following operations. Statistics were of less value than the publication of the details of the cases which had been reoperated in or inaccurately diagnosed. In this manner faulty methods could be corrected and more standardized technic adopted by all surgeons. Recurrences were best divided into true and false. Under the former were included the true reformation of calculi. A number of authentic cases of this kind had been reported including several of the speaker. The retention of infected secretions in the crypts of Luschka in the wall of the gallbladder explained many cases of recurrence of infection and even true reformation of calculi after cholecystectomy. However when stones were found in the common duct after drainage of the same, it could never be certain that they were not overlooked at the first operation or had migrated downward from the liver. Special attention must be paid in the future to the subject of intrahepatic cholelithiasis, and a brief review of present knowledge of the same, including a list of clinical observations was given.

The most important false recurrences were those due to overlooked calculi; reinfection of a gallbladder which should have been removed or the persistence of infection in the bile ducts after cholecystectomy; pancreatitis, and faulty technic. Under the first named attention was especially directed to small calculi which lay hidden beneath the folds of mucous membrane at the neck of the gallbladder or in the cystic duct. He therefore strongly advo-

cated cholecystectomy with removal of the cystic duct close to the common duct when many small calculi were found in the gallbladder. A personal observation and one from the literature as well as experimental work by von Haberer demonstrated the fact that a pseudogallbladder containing calculi might be formed from the stump of the cystic duct if the latter was not completely removed. A closer study of the pathology of biliary infection was urged in order to be prepared to remove the gallbladder as an almost routine measure combined with drainage of the common duct. In a number of the speaker's own cases calculi were found in the main bile ducts when there were no definite symptoms pointing to their presence and also when palpation of the common duct was negative. The technic of supraduodenal choledochostomy as employed by the speaker was described in detail and the use of the T drainage tube shown by lantern slides. The paper closed with a list of recurrences in his own practice, the majority of which were secondary operations of his own cases and those primarily operated by other surgeons.

Dr. WAYNE BABCOCK, of Philadelphia, urged that in cases of recurrence after operations on the bile passages a report of the conditions found at the second operation be placed before the original operator, in order that further general knowledge of the causes and methods of preventing recurrence might be gained. The dangers of delay in operating in gallbladder cases was emphasized. The condition might be divided into three stages: 1, that of cholecystitis, occupying the five or ten years preceding the operation, and which had hitherto been looked on with entirely too much indifference and complacency; 2, that in which stones were present but caused no complications in the ducts; 3, that of the terminal condition, e. g., empyema of the gallbladder, gangrene, pancreatitis, etc. In the first stage the treatment indicated was cholecystectomy, which was followed by practically no recurrences or secondary operations. The second stage cases should also be treated for the most part by cholecystectomy. In the first stage the operative mortality was less than one per cent., and in the second, three to five per cent. No cholecystostomies should be done in the first two stages, except in emergency cases, where the patient was in a bad condition at the time. In the older third stage patients seen twenty or thirty years from the beginning of their trouble, drainage of bile was likewise ineffectual, and cholecystostomy often did not result in the removal of residual stones.

Dr. JOHN B. DEAVER, of Philadelphia, referred to cases illustrating the principles that had been emphasized by Doctor Eisendrath, and laid stress on the physiological rôle of the pancreas, which might become injured as a result of disease of the bile passages. Calculous pancreatitis and inflammation of the head of the pancreas had recently been noted, respectively, in two cases, as a result of undue delay before operation. In intervening surgically, the speaker avoided overlooking stones by passing a scoop into the amputated end of the cystic duct. Gauze was never used by him in gallbladder operations. The dangers attending stricture and internal fistulas in gallbladder cases were referred to.

Because of this and for other reasons, early operation was advantageous.

**Acute Pancreatitis.**—Dr. JOHN B. DEAVER, of Philadelphia, stated that infection of the pancreas, the most important organ among the digestive glands, came from some neighboring focus, usually the biliary tract, through the lymphatics and the retroperitoneal tissues. It might also become infected from an ulceration in the second portion of the duodenum, from the lymphatics of the colon, and sometimes retroperitoneally from the pelvic organs. Not all acute inflammations of the pancreas were accompanied by hemorrhage. The most important recent contributions to the study of pancreatitis had included investigations of the behavior of the pancreatic ferments in this disorder. One of these ferments was now known to cause fat necrosis, and this afforded a reliable diagnostic point in pancreatic involvement. The proteolytic influence of trypsin as a factor in acute pancreatitis had, however, hitherto escaped attention. The hemorrhage witnessed in pancreatitis was possibly due to digestion of the vessel walls by this proteolytic ferment. Normally this ferment was rendered active by enterokinase, but experimentally, calcium salts, certain bacteria, and certain products of ferment action also proved capable of activating trypsin. Normally trypsin might not digest the tissue cells, but if activation took place it would do so. The poisons formed as a result of intestinal obstruction were known to be toxic enough to kill, and these poisons had now been found to be much the same as those of pancreatitis. In the hyperacute type of pancreatitis there occurred sudden, severe pain, profuse hemorrhage, shock, and death in three days. Acute pancreatitis was less severe, exhibiting less hemorrhage and less swelling; necrosis and gangrene might follow; rarely, recovery occurred through cyst formation, but usually the condition terminated fatally. Often there was no hemorrhage, but the head of the pancreas was swollen and might be palpable. Abdominal pain, nausea, and vomiting were noted. Often cholecystitis and a history of previous subacute attacks accompanied the condition. In hyperacute and acute pancreatitis the proper treatment was immediate operation. The combined factors of infection and ferment action were to be removed. Adequate drainage could be instituted through the anterior incision. During the operation the pancreas was to be freely incised longitudinally or numerous punctures made in it, and drains leading from it inserted. Shock was the only reason for delay in operating. In the last thirteen operations, among the fatal cases there had been one of hyperacute pancreatitis with death on the operating table before anesthesia had been instituted. In a second case there had been found gallstones and fat necrosis; the stones had been removed, but the pancreas had not been opened and drained. Three weeks later an inflammatory mass had been found in the left loin; an incision had revealed pus and a disorganized pancreas, and death had followed from toxemia. A third patient had died two weeks after operation. Some patients were doomed from the outset. Experiments had shown that a forcible injection of bile or other fluid into the pancreatic duct would cause fatal pancre-

atitis. Correspondingly, five patients had recovered after drainage of the ducts, but in two death had not been prevented. In three cases only a cholecystostomy had been done. Of six cases diagnosed acute pancreatitis but not operated in two patients had died. Operative treatment consequently gave better chances than expectant. In circumscribed pancreatic collections, the abscess cavity could be drained alone, usually in the left groin. Whether a combined pancreas and gallbladder operation was to be done depended on the case and the experience of the operating surgeon. Stones in the common duct were certainly to be removed if the patient's condition warranted.

Doctor LINDER, of Brooklyn, N. Y., laid stress on attacks of so called "biliary dyspepsia" as a precursor of the acute pancreatic syndrome. These were actually attacks of mild pancreatitis, and it was during this early period that surgical intervention was indicated, free drainage being instituted. In such cases excruciating abdominal pain and a distended abdomen were to be noted, but no board like rigidity and no mass in the gallbladder region. Pancreatitis should be borne in mind in every acute abdominal surgical case.

**Physiological Colectomy.**—Dr. CHARLES A. L. REED, of Cincinnati, pointed out that the mortality of primary extirpation of the colon for nonconvulsive enterogenous toxemia was twelve per cent., while in convulsive toxemia it jumped to twenty-five per cent. Rightsided colectomy and end to side anastomosis was usually promptly followed by general recovery, but in a few months the symptoms, as a rule, returned. There always resulted a cicatricial contraction at the site of anastomosis, with stasis in the transverse colon, a secondary ileosigmoidostomy then sometimes becoming necessary. Actual colectomy must thus be abandoned as impracticable. A simple ileosigmoidostomy was preferable, yielding prompt relief from symptoms. Even then, however, pronounced anastalsis supervened, aggravating the toxemia and necessitating a secondary colectomy. The devising of some means to prevent anastalsis was thus essential. In the speaker's operation, after an ileosigmoidostomy with side to side anastomosis had been established, the sigmoid was divided in its upper arch as near as practicable to the lower end of the distal sigmoid. The open end of the distal segment—about eight inches—was then fixed in the lower angle of the wound and the open end of the proximal colon in the upper angle. Finally, a catheter—afferent—was inserted into the open terminal ileum, the tip being carried into the cecum, and a large tube—efferent—into the open end of the colon. Thus isolated, the colon was irrigated to unload its toxic fecal content and then left to atrophy from disuse. This operation was less dangerous than a primary colectomy, facilitated detoxication, and restored the surgical resistance of the patient. Where a secondary actual extirpation became necessary, the technical difficulties were diminished owing to the atrophied state of the colon and conditions were more favorable for recovery. As yet, the speaker had not had to do a secondary actual colectomy. A drainage tube had been left in for from two to ten days. The primary mortality from physiolog-

ical colectomy should be practically nil, though as yet the percentage of ultimate recoveries had not been entirely satisfactory.

Dr. WILLARD BARTLETT, of St. Louis, raised the question whether such surgical work as Doctor Reed's was admissible at all. As a visitor to Mr. Lane he had seen ten or twelve of the latter's patients, and while some good results had been obtained, he had not quite been able to perceive the reasons for Mr. Lane's enthusiasm over such procedures. When such men as Reed and Lane persisted with these operations, however, it would not do to dismiss them without due consideration. Mr. Lane had stated his mortality in all colectomies for intestinal conditions, which were now known to be anatomical in character, as fifteen per cent. Both Doctor Reed and Mr. Lane admitted that the mortality was too high to justify colectomy unless life was threatened. The sole conclusion possible was that such operations, with their present mortality, were not warranted. The newer operation of Doctor Reed might, however, be justifiably performed.

Dr. JOHN G. CLARK, of Philadelphia, stated that in about fifteen colectomies which he had performed the primary results had been splendid but the secondary had not been so satisfactory because the ileum tended to dilate. There had, however, been no fatalities. Probably, in the case of Doctor Reed's operation, the results in two or three years might again be found discouraging. Yet, occasionally a very good result followed one of these procedures. Thus in a case of extreme obstruction he had seen that colectomy had been of great service, though the epileptiform attacks present had not been relieved.

Dr. FENTON B. TURCK, of New York, maintained that the chief difficulty in the chronic toxic cases was an insufficiency of expert knowledge of the functions of the colon. Atony of the intestine was a condition only remediable by physiological measures. Instead of an operation, the proper procedure was the injection of water in colon by the use of a Politzer bag, antiperistalsis being relied on for due cleansing of the colon. This measure was to be repeated for half an hour with water of a high temperature. Bacteria derived from the colon were often found in the urine. Vaccines should be prepared for these cases with organisms obtained from the colon and urine, and the symptoms would be relieved by their use.

Doctor REED, in closing the discussion, agreed that these operations should never be done except for anatomical conditions, and maintained that he had himself never operated except under such circumstances. A displaced colon could not be reduced by physiological methods. The constant relationship of coexisting pathological conditions must now be recognized, and such recognition now justified Mr. Lane's and his own procedures.

**Diverticulitis of the Large Intestine.**—Dr. WILLIAM J. MAYO, of Rochester, Minn., stated in brief as follows: Since the recognition of the condition, portions of the large intestine have been resected for diverticulosis in forty-two cases. In thirty-six the sigmoid was involved; in one the transverse colon; in one the ascend-



ing colon; in one the hepatic flexure and cecum; in one the rectosigmoid juncture, and in two the rectum. The diverticula were all of the acquired variety; the mucous coat pouched through small openings in the musculature in contradistinction to congenital diverticula in which all the intestinal coats cover the sac. The diverticula were multiple and occurred at weak points in the circumference of the colonic wall, such as vessel holes, muscle defects, etc. From one to eight inches of the intestine were seriously involved, although much longer stretches often showed a diverticulosis tendency. Hardened masses of feces were found in the distal extremity of many narrow necked diverticula. As a rule only one or two of the diverticula were directly responsible for the existing diverticulitis and peridiverticulitis. The signs and symptoms resembled those of appendicular inflammation, with the marked difference that in the great majority of instances the disorder was on the left side of the abdomen. Sixty-six and six tenths per cent. were males and 33.4 per cent. females.

*Group 1.—Selflimiting diverticulitis and peridiverticulitis in the left iliac fossa* in fleshy, middle aged persons with an acute sensitive tumefaction. The mass gradually disappeared in the course of some days with restoration to health. The disturbance was due to irritation of infected contents in the thin walled, narrow necked sacs. That diverticulosis did not always produce trouble was shown by the relative frequency with which this condition was found post mortem, by the frequency with which diverticula of the sigmoid were a chance finding in the course of abdominal operations for other purposes, and by the frequency with which routine x ray examination of the colon showed symptomless diverticula. It should not be assumed, therefore, that the presence of these diverticula, or even a single mild attack of diverticulitis which quickly subsided without obstruction or other serious symptoms, necessitated operation.

*Group 2.—Diverticulitis and peridiverticulitis with formation of abscess resulting in enterovesical, enterocutaneous, and other fistulas; spreading peritonitis with abscess formation or the results of infectious processes which connected the diseased colon by fistulous tracts with the cutaneous surface or neighboring intestines and especially with the bladder.* If an abscess formed it should be opened and drained, but a serious attempt should not be made at the primary operation to remove either the infected diverticula or the section of colon which contained them. The frequent obesity of the patient and the enormous amount of scar tissue which surrounded the fistulous tracts added greatly to the operative difficulties. Enterovesical fistulas were most common. In this variety the peritoneal cavity was opened, the fistulous tracts dissected out and the openings in the bladder and colon closed with chronic gut sutures.

*Group 3.—Obstruction.* In acute diverticulitis the obstruction was the result of infection, edema, and adhesions. Chronic obstruction was usually of the hyperplastic stenosing type. In this group a tumor was usually found. Obstruction might not be complete but might require a colostomy for re-

lief made as close as possible to the tumefaction so that it might be resected with the growth; or it might be preferable to open the ileum at the cecum and completely divert the intestinal contents until after the resection of the diseased sigmoid.

*Group 4.—Carcinoma developing on a diverticulum.* This group was of great interest. Among the forty-two cases of resection for diverticulitis, there were thirteen in which carcinoma coexisted—thirty-one per cent. The carcinoma had such definite relationship to the diverticulitis as to make it reasonable to assume that infection and irritation by hardened fecal masses in diverticula were the cause of chronic irritation and precancerous change.

Some of the patients with carcinoma associated with diverticula gave a long history of having had at various times inflammatory attacks with development of tumefaction which disappeared. Some of these patients had lived for years with a colostomy made for supposed cancer. After the carcinoma developed, the symptoms became more or less continuous. It was of great value to be able to differentiate between diverticulitis and carcinoma, as in diverticulitis the removal of the mass of tissue which would be essential in carcinoma was not necessary.

Doctor ROBERTS, of Brooklyn, N. Y., laid stress on the mild symptoms of diverticulitis, such as mild pain in the lower abdomen with occasional colicky attacks. He thought the acute cases occurred more frequently in the relatively young. As for the incidence in the sexes, he had noted a ratio of eighteen males to six females. Barium or bismuth meals seemed to relieve the pain, inflammation, and spasm in these cases. The diverticula were filled by these substances. An ounce of bismuth once a week would prove beneficial, care being taken, however, not to bring on obstruction. These patients did better without laxatives which increased spasm and irritation.

(To be concluded.)

#### SECTION IN NERVOUS AND MENTAL DISEASES.

June 8, 1917.

*Joint Meeting with the Section in Diseases of Children and the Section in Orthopedic Surgery.*

#### *Symposium on Infantile Paralysis.*

**Early Diagnosis and Specific Treatment of Poliomyelitis.**—Dr. GEORGE DRAPER, of New York, said that early diagnosis, which was particularly important during an epidemic, was very difficult, but it was made easier by repeated lumbar punctures of suspected cases, the fluid findings being helpful in conjunction with the clinical symptoms. Susceptible types were usually strong, healthy, and well nourished children, but the adults were of the opposite type. The mothers of children who had acquired poliomyelitis frequently showed symptoms of hyperthyroidism; this was particularly true in families where three or four children showed high susceptibility. Paralysis was the only known undesirable result of recovered cases and in at least fifty per cent. even muscular weakness never developed. Prognosis of paralysis could not be made, however,

in the acute stage, for those in whom paralysis did not develop showed the same symptoms as those in whom it did; i. e., respiratory or gastrointestinal disturbance. In many cases after a short acute attack there was a period of comparative wellbeing followed by definite involvement of the spinal tract. Thus there were two phases: the systemic phase and the cerebrospinal. One physical sign of great importance was the spine sign. It depended on the fact that in acute poliomyelitis any manipulation which brought about anterior bending of the spine caused pain and was therefore resisted. In the cerebrospinal phase there was high increase in the cell count, cases with cell count of over 1,000 usually being rapidly fatal. However, after thirty-six hours the cell count in the spinal fluid was of little or no prognostic significance. Regarding specific treatment of poliomyelitis, a personal and individual quarantine was absolutely necessary. Convalescent human serum possessed definite and often striking power to prevent paralysis and it was of especial benefit in those cases in which it was given within thirty hours of the time of the appearance of signs of meningeal involvement. The injection was given by ordinary gravity very slowly, as pressure on the choroid plexus was dangerous. As much serum as possible should be given.

**Age, Seasonal Incidence and Communicability of Acute Poliomyelitis.**—Dr. CHARLES HERRMAN, of New York, stated that the epidemic of acute poliomyelitis which occurred in New York city in 1916 was the largest recorded. The statistics of the Department of Health were the most complete and accurate that we had. The number of deaths from poliomyelitis during the last five years in New York city was much less than that from pneumonia and pulmonary tuberculosis, less even than that from tuberculous meningitis, a distinctly preventable disease, which had received very little attention. The crippling from poliomyelitis was less than that from the exanthemata or heart disease. Poliomyelitis was distinctly a disease of infancy and early childhood. Young infants were less frequently attacked because less exposed to infection. The youngest child in the family was usually affected. This susceptibility of the central nervous system in young children was also seen in the age incidence of tuberculous meningitis. Meteorological conditions might play a part, but certainly not the most important part in the spread of poliomyelitis, for at the time when the number of cases was diminishing in Brooklyn, it was increasing in Manhattan. It was possible that children were more susceptible at a certain season by reason of periodical changes in the activity of the endocrine system. The curve showing the incidence of the disease presented a rapid rise and a rapid fall. This could only occur with a disease which was very communicable, as measles, or a disease in which carriers played a most important part, as in epidemic catarrh. In poliomyelitis also infected persons and carriers played the most important part. There was no conclusive evidence that food or insects were responsible for the spread of this disease. Diseases which were spread through the agency of insects did not show a special predilection for young children. In the epidemic of

1916, about two per cent. of the children under thirteen years of age who were exposed to the infection contracted the disease. Comparing this with some of the other communicable diseases of childhood, measles infected ninety-six per cent., whooping cough seventy-five per cent., scarlet fever twenty-five per cent., and diphtheria twenty per cent. Adults probably enjoyed an immunity by reason of their age, and also by virtue of an immunity derived from exposure during a previous epidemic. A future epidemic of poliomyelitis would not be controlled by the use of a more potent serum in the treatment of the disease. The numerous carriers could not be isolated, even if we had some simple method of detecting them. It could be controlled if we had a method of detecting the two per cent. of susceptible children, and could immunize these against the disease.

**Recent Additions to Our Knowledge of Poliomyelitis.**—Dr. FREDERICK TILNEY, of New York, said that advance in knowledge of the disease had been considerable in the last six years. Flexner and Noguchi had discovered the globoid bodies which had been shown to bear a definite relation to epidemic poliomyelitis. Rosenow had worked along the lines of the polymorphous organisms which he believed to be experimentally capable of producing poliomyelitis, and other evidence seemed to sustain this contention; on the other hand, there were certain experimental facts which seemed to argue against it. Enlightenment had come in the direction of immunity. From the fact that the blood serum of recovered human beings was protective and probably curative in poliomyelitis, it was assumed that the reason many more people did not contract the disease was because they were protected by immune bodies. There were comparatively few people susceptible to the disease, or else it would seem that it was not very contagious, for there were comparatively few group or family cases during the epidemic, and its occurrence in hospitals and institutions for children was negligible. Contagiousness had not been proved to be the cause of the epidemic of last summer; infection by carriers would seem to be the most likely cause. Though the opportunities in the city were better for contact, the incidence of poliomyelitis in rural districts was higher; hence, some element other than contact should be considered. As to the question of who should take care of these cases, the combined efforts of the pediatricist, orthopedist, the general practitioner, and the neurologist were needed to get the best results.

**The Hematogenous Invasion of the Cerebrospinal Axis in Poliomyelitis.**—Dr. LA SALLE ARCHAMBAULT, of Albany, gave a summary of the lesions found in five cases of rapidly fatal poliomyelitis. The changes involved both the leptomeninges and the deeper portions of the central nervous organs and were observed at practically all levels of the cerebrospinal axis, i. e., not only in the cord but also in the bulb, pons, cerebellum, and cerebrum. Nevertheless the maximum involvement affected the bulbospinal segments. The meningeal reaction was characterized essentially by tremendous engorgement of the bloodvessels and by lymphocytic

infiltrations of varying intensity. A well marked circumferential pial infiltration was found only in the lumbosacral region; at higher levels of the cord the pial involvement was practically limited to the anterior median fissure. In many places the implication of the pia was wanting, whereas marked intramedullary and intracerebral lesions were to be seen. The latter consisted of intense adventitious infiltration of the bloodvessels, many of which were enormously distended; minute hemorrhagic extravasations; diffuse and focal interstitial cellular infiltrations; advanced degenerative changes in the ganglion cells, more particularly of the anterior horns; and in some places more or less extensive cavity transformation. Corresponding to the cord levels least involved, the lesions were almost confined to the central or intermediate gray matter, and in all cases foci of disease in the cord and brain stem coincided, in point of topography, almost absolutely with the area of distribution of the vertebral arteries. It certainly seemed evident that the intramedullary parenchymatous and interstitial lesions were far more intimately related to the vascular than to the meningeal infiltration. The findings in this series of cases suggested that the virus was carried directly into the bulbomedullary parenchyma through the bloodstream and that the first irritation was registered by the central sympathetic cell complexes. This irritation would at once be transmitted to the gangliated cord and give rise to more or less widespread reactive vascular spasm of the vertebral arterial system with consequent venous reflex, transudative edema, and migration of cellular elements. This view seemed to be borne out by the generalized congestion of the meninges, the distention of the intramedullary veins and capillaries, the occurrences of hemorrhages in the central gray matter, the widespread interstitial and subpial edema, and the fulminating rapidity with which cellular disintegration took place. The infiltrating cells of the gray matter were mainly lymphocytes and larger cell forms with less deeply staining nuclei and more abundant cytoplasm which had been called polyblasts by Maximow and Wickmann. It was believed that both cell types were derived from the circulating blood, inasmuch as in one case they were likewise found in large numbers within the bloodvessels of the subcortex, the medulla, the cervical cord, and the spinal pia. The conclusion seemed warranted that the lesions in the cord and brain stem were not secondary to a ventral meningeal infiltration and that this appearance was simply due to the severe vascular disorders which followed the initial deposition of the virus within the central gray matter, the migrating cells either leaving the bloodvessels before the latter had penetrated into the parenchyma or being secondarily crowded out into the subarachnoid space as the result of the circulatory stasis and extreme venous engorgement.

#### Results of the Last Epidemic of Poliomyelitis.

—Dr. HENRY L. K. SHAW, of Albany, said that statistical studies had helped to clear up puzzling points in the epidemiology of the disease. It was found that in the State figures, fifty per cent. of the patients were under five years of age while in the city of New York, eighty per cent. were under

five years of age. Thus there was a striking difference between urban and rural incidence. In the cities, no doubt, adults had developed certain immunity from frequent exposure. The rural population had not been exposed and had therefore no such immunity. The term "infantile paralysis" did not fit the disease, as a large proportion of patients were not paralyzed, and in the country were not infantile cases. As regards the period of infection, the average length of time of actual contagion was computed to be eight days. Ninety-eight per cent. of patients acquired the disease within ten days of contact; sixty per cent. within three days. These figures might explain the immunity in hospitalization. The children came in an advanced stage of the disease, and were therefore not infectious. Three weeks' quarantine, therefore, was an ample protection. While transmission was probably by contact, it was hard to prove the exact means of infection. The discussion as to the terms "infectious" and "contagious" had no practical bearing, as the disease was proved to be communicable, as was shown by maps showing disease centres—first New York City and then, following the railway lines to various other points in the State, other disease centres appeared shortly afterwards. The incidence of the disease always followed transmission along the most frequented routes of travel.

Dr. HERMAN SCHWARZ said that to those who had been in the field last summer, the disease had seemed to be very contagious. On pursuing the subject more than cursorily in families the information was often elicited that one child had had "tonsillitis," another gastrointestinal upset with fever, and the baby had paralysis. There had probably been many cases last summer that had never been diagnosed. In regard to Doctor Emerson's comment that children with bad tonsils were susceptible, this might be the case among the poor, but most of those patients seen in private practice had had the tonsils removed.

Dr. E. C. ROSENOW, of Rochester, Minn., said that there was no doubt but that the serum of recovered patients conferred protection against poliomyelitis. The study along immunological lines had appealed to him and he had succeeded in isolating from tonsils and throats a peculiar pleomorphic streptococcus which, when injected into small animals, had a very different effect from the usual organisms. Injected into young animals, it produced paralysis. The studies were being continued as the subject warranted the fullest investigation.

Dr. REGINALD H. SAYRE, of New York, said the greatest discovery in regard to this disease would be the means of preventing it and he hoped Doctor Rosenow would soon be able to demonstrate that. What Doctor Lovett had said regarding the results of bearing the weight on weakened leg and foot muscles was a wise caution. Strain on other weakened muscles of the body should also be guarded against. Selected suitable exercise for these patients would accomplish what nothing else would do, particularly if combined with support, and although some neurologists believed that braces had a bad mental effect on the child, he thought this was less harmful than the bad physical effect that came from letting them go without the brace.



Doctor AGAR, of Brooklyn, said the three principal points of interest concerning poliomyelitis were transmission, correct and early diagnosis, and treatment. There could not be any doubt but that the disease was communicable from one sick individual to another, however else it might be transmitted. As regarded diagnosis, every suspicious case in an epidemic, from the point of view of acute infection at least, should be examined with poliomyelitis in mind and a spinal puncture, or repeated diagnostic punctures, done. It was to be hoped that means of establishing active immunity would soon be available.

Dr. HENRY KELLER, of New York, said that, although it was difficult to keep the child quiet when only a few muscles were involved, the need of keeping him so was essential, as Doctor Lovett had emphasized, for if the muscles had complete rest the nerves might regenerate. Support was advisable and in applying it, it should be remembered that the stronger muscles tended to pull over the weaker ones and deformity resulted.

Dr. GEORGE DRAPER said he wished to add his support to those who believed in the communicability of the disease by contact. Final confirmation of the work of both Doctor Rosenow and Doctor Archambault was needed before it could be discussed to much advantage. The route of infection might prove to be hematological, though it was hard to connect the cellular outpourings of the meninges with the hematological route; if the virus were borne by the bloodstream it must break down the choroidal defenses. This disease being a serious contagious one and a serious menace to the community, the patient should be quarantined and all contacts controlled.

Doctor HERRMAN, of New York, said that as a pediatricist he had seen many of these cases. He had been informed that there had been 252 secondary cases occurring in families in New York City, which showed that the disease must be communicable. There had probably been some confusion between the terms "infectious" and "contagious." As Doctor Schwarz had observed, a large percentage of the children in families had symptoms of some kind, which might on examination have been shown to be those of poliomyelitis, and undoubtedly a large percentage were highly immune. It was very unlikely that another epidemic would occur very shortly, as a large number of children had been immunized.

Doctor ARCHAMBAULT said that he had found in the bloodvessels of the pons, cord, medulla, and pia a large number of lymphocytes. As regarded treatment, he believed that serum should be given, but intravenously instead of intraspinally to avoid the introduction of an irritant into the subarachnoid space.

**Epidemic Treatment of Poliomyelitis.**—Dr. HAVEN EMERSON, health commissioner of New York City, said that a year ago the first reports on the epidemic began to come in to the Department of Health from the Infant Welfare stations. Other reports followed, but equally as many cases existed that were not reported. When it was realized that the disease was epidemic, it was also realized that the first point in its effective control lay in early

diagnosis. Until physicians were in position to make early diagnosis, it was not likely that any preventive measures would be effective. The wisest measure seemed to be wide publicity to the fact that there was an infectious disease in the community. In this way the complete cooperation of the lay public was secured in reporting the disease. Everything pointed to poliomyelitis being a personal disease, rather than one of premises or location. The next question was what could be done with group isolation and it was decided to exclude visitors where there were large groups of children. As a result out of 28,000 children in institutions, only twelve had the disease. The result of the cooperation aroused by publicity was shown in the fact that while there were many more cases than those reported early in the epidemic, toward the end many cases were reported that were not poliomyelitis. Parents were educated to demand help from physicians and physicians sought expert diagnosis in doubtful cases. If this attitude had been in evidence last May there would not have been so many cases during the summer.

The examination should be chemical, physical, and biological. It was found that children with normal throats were less susceptible than those with adenoids, diseased tonsils, or neglected oral conditions. The patient should be quarantined for three weeks or while there were continued nasal mucoid discharges, and contacts under sixteen years of age for two weeks after exposure. The children were the suspects. This year, so far, there was no unusual incidence of the disease, but as yet no predictions could be safely made.

**A Dynamic Study of Poliomyelitis.**—Dr. CHARLES L. DANA, of New York, presented a report of the findings of a study of the material gathered from a number of joint meetings of a committee from the Public Health Committee of the Academy of Medicine and a committee from the New York Neurological Society. These meetings were attended by specialists in all the forms of activity related to poliomyelitis. An effort had been made to gather together all valuable data that had accumulated during and since the epidemic of last summer. It had been found that much had been learned as to immunity and relative infectivity. It had been reestablished that immunity was natural or acquired and that there was a great deal of it. Communicability was direct from person to person. Hospitalization was important. There was a strong feeling in favor of convalescent human serum administered as early as possible in the acute attack. Frequent spinal punctures in suspected cases aided diagnosis.

**Treatment of Infantile Paralysis, with Special Reference to Study of New York State Cases.**—Dr. ROBERT W. LOVETT, of Boston, reviewed the results of a special study of the distribution of the paralysis in 1,323 cases. The weight bearing function of the muscles of the legs was often impaired, due more to weakness than paralysis. Sixty per cent. of those paralyzed showed involvement of both sides of the cord; 13.5 per cent. paralysis of the back, scoliosis being an old complication result-

ing from contraction of the abdominal muscles, and eleven per cent. had neck paralysis. In the foot there was great increase of total paralysis. It was found that in many of the old cases, now totally paralyzed, the paralysis was only partial in the beginning; this was probably due to the overuse of the weight bearing muscles which lost almost a third of their power when weakened by this disease so that walking to any extent should be forbidden until the muscles had been strengthened by non-weight bearing exercises.

#### SECTION IN LARYNGOLOGY.

June 7, 1917.

**The Science of Musical Sounds.**—Professor DAYTON C. MILLER, of the Case School of Applied Science, Cleveland, described the physical nature of tone quality of sounds. A demonstration was made of the phonodeik, a new instrument devised by the speaker for the photographic registration of sounds of all kinds. Photographs were shown of the wave forms of the sounds from many sources, from musical instruments, voices, bells, explosions, etc. These waves, many of which were very complex in form, represented all the peculiarities which distinguish one instrument from another, or one word from another. He had developed instruments and methods for the mathematical analysis of these waves, and had studied the sounds from various sources. The results were of great interest, and were useful to the musician and the designer of musical instruments. Perhaps the most important application was in the investigation of the nature of speech and hearing.

Thousands of photographs of sounds had been analyzed, which led to definite results regarding the nature of vowel tone quality, and suggested a synthetic method for word formation. By means of the phonodeik, groups of organ pipes had been so adjusted that they reproduced the peculiarities not only of the various vowels, but also of the individual voices speaking the vowels. Several groups of pipes were exhibited which reproduced the same vowel as intoned by four different voices, that of a child, a boy, a woman, and a man. The analysis of vowels showed that the highest pitch, articulate sound of the human voice is *ah* as in *father*; if while intoning this vowel, the lips are closed and opened alternately, the result is the word *ma-ma*; if the nasal passage is also closed the word is *pa-pa*. Perhaps the automatic production of these sounds by the infant explained the origin of these names for the parents. The organ pipe talking apparatus, which was, indeed, but a mere infant, could also say these words. It was certainly possible by further experimentation to produce various other sounds, explosive effects, hisses, etc., which when combined with the vowel tones already produced would form any desired word.

The investigation substantiated Helmholtz's theory of the vowels, that for each vowel the greater part of the energy, or the loudness, of the voice was in those overtones which fell within certain limits of pitch, no matter at what pitch the vowel was uttered, nor by what quality of voice; that is, a vowel is characterized by a fixed region or regions of resonance or reinforcement. A definitive classification of vowels had been developed. Whispered vowels

had also been analyzed. The results of the study of vowels led to interesting suggestions regarding the formation of words, it gave scientific reasons for the limitations of the singing voice, and it led to definite conclusions regarding the question whether grand opera originally written in a foreign language should be sung in English.

By means of a special demonstration phonodeik the "living" sound waves were projected upon the screen as they came from the voices of different individuals and from various musical instruments which were played in front of the instrument. As seen upon the screen, the waves of light were constantly in motion, and passed from one form to another with every slightest change in the frequency, loudness, or tone quality of the sound. The wonderfully changing waves flowed with perfect smoothness and reproduced visually the harmoniously blending movements of the air, which the ear interpreted as intelligible speech or as beautiful music. This ability to see words and music as well as to hear them was not only a fascinating and instructive demonstration, but it was also a valuable aid in the analytical study of sound.

**Aural Vertigo Occurring in Suppurative Disease of the Middle Ear.**—Dr. PHILIP D. KERRISON, of New York, in introducing the subject, stated the general proposition that suppurative lesions absolutely confined to the middle ear did not as a rule give rise to pronounced vertigo. He then outlined briefly the pathological conditions resulting from tympanic suppuration which may and do cause disturbances of equilibrium. Among these were: 1, necrotic processes involving the region of the oval window; 2, defects in the bony capsule of the labyrinth, the membranous labyrinth remaining intact; 3, inflammatory changes in the bony capsule without destructive changes in the membranous labyrinth; 4, serous and suppurative labyrinthitis. The two principal types of vertigo resulting from actual invasion of the labyrinth, i. e., occurring in the active and latent stages respectively were briefly sketched. The speaker discussed briefly the surgical significance of the vertigo typifying pathological results of the disease, with logical deductions as to indications and treatment which might be based thereon.

**Treatment of Acute Pulmonary Abscess.**—Dr. CHARLES W. RICHARDSON, of Washington, D. C., considered the frequency of the abscess of the lung sufficiently evident to those who operated on the upper air tract to pay due attention and look for it in their operative work. It was surprising how many cases held *sub judice* have been reported since the recent articles on abscess of the lung. The treatment of abscess of the lung was divided into the medical, surgical, and the artificial pneumothorax. The death rate in the medical or expectant was sixty per cent.; in the surgical treatment it was thirty per cent., and so far in the artificial pneumothorax treatment it was ten per cent. Of course the artificial pneumothorax was yet in its early stages and had not been sufficiently tried to warrant such a high percentage of mortality. Reports of six cases treated with artificial pneumothorax were given. The application of artificial pneumothorax when applied early seemed to be the most certain, most immediate in good effects, and attended with the highest

percentage of recoveries. Dr. William K. Tewksbury, of Washington, was credited with instituting this method of treatment.

SECTION IN ORTHOPEDIC SURGERY.

June 7, 1917.

**Juxtaarticular Bone Lesions of the Hip.**—Dr. HENRY LING TAYLOR and Dr. GEORGE BARRIE, of New York, said that with more intensive study of hip lesions and the use of the Röntgen ray, many cases which had previously been classed as hip tuberculosis had been shown to be due to a focal infection or pathological process in the neck, head, or trochanter. These are mainly areas of hemorrhagic osteomyelitis (Barrie), isolated foci of some form of pus infection, or residual foci from an old osteomyelitis. The areas of hemorrhagic osteomyelitis were often associated with a persistent limp and mild hip symptoms, but should be sharply distinguished from hip joint tuberculosis and syphilis on one hand and osteochondritis of the hip (quiet hip disease, Taylor) on the other. Some of these "bone spots" healed spontaneously, other cases required fixation or curettage with or without the introduction of bone chips. In general the course of the affection was much shorter and more favorable than in hip tuberculosis. In the cases of bone abscess, the symptoms were more severe. The small cavity containing pus should be located, freely opened, curetted and sterilized. The results of such management were usually excellent.

**Operative Orthopedics.**—Dr. ROYAL WHITMAN, of New York, said that the distinctive feature of an orthopedic operation was that from the functional standpoint it was conducted in view of the final, rather than of the immediate result. In many instances its purpose was not to restore perfect function but to relieve unsightly deformity or to enable the patient to dispense with mechanical support or lessen its burden. Success in operative orthopedics depended upon an understanding of human mechanics and of the natural history of the particular disease that had disabled the mechanism. Many operations failed because they were defective in conception, or ill adapted to the age or environment of the patient, or because aftercare had been neglected. This branch of orthopedics was in the developmental stage, and as a contribution to what might be called a standardization of the subject he presented a report of the routine operations performed under his supervision at the Hospital for Ruptured and Crippled during a period of twelve months.

The entire number of operations was 1,258. Three hundred and seventy-five were examples of so called bloodless surgery and the remainder ascended the scale from tenotomies and osteotomies to operations of the major type. The largest group was one of over 500 operations for paralytic disabilities of the lower extremity. Of these 163 were astragalectomies and backward displacements of the foot (Whitman operation). There were 129 muscle and tendon transplantations, thirty-nine of which were of the hamstring muscles and forty-seven tendon implantations. These procedures were analyzed, and operations for club foot, congenital dislocations of hip, fractures, ankyloses, and the like were enumerated and commented on.

## Book Reviews

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

*Proceedings of the Pathological Society of Philadelphia.* New Series. Vol. xix. Philadelphia, 1917.

Under this title the Society has published in pamphlet form abstracts of ninety-three papers presented before the organization. Among the papers of special interest are the following: Taylor and Miller in their studies in Bence-Jones proteinuria conclude that this substance is clearly a higher protein, a human product closely related to normal blood proteins. Schnabel, in speaking of its clinical significance, mentions that in only one case reported in the literature has the patient lived over two years, and reiterates the statement that Bence-Jones protein in urine is almost pathognomonic of multiple myeloma.

Sweet and Peet report an interesting observation of the fate of blood introduced into the peritoneal cavity. By placing a cannula in the thoracic duct and then injecting fifty to 100 c.c. of defibrinated blood into the peritoneal cavity they were able to demonstrate blood macroscopically in the lymph in twelve to thirty minutes. One hundred c.c. may be absorbed within twenty-four hours. The blood is also taken into the lymphatic apparatus of the diaphragm to the extent that the subpleural surface assumes the appearance of extensive hemorrhage.

Lucke has concluded, after a series of experiments with tubercle wax exhausted with alcohol, ether, benzol, chloroform, etc., that tubercle wax antigen causes complement deviation with a large percentage of serums possessing lipotropic properties, i. e., luetic serums; that they also cause a similar reaction with a moderate percentage of normal and tuberculous serums; that they appear to possess neither diagnostic nor prognostic value in the serum diagnosis of tuberculosis.

Rubinstein reported a case of amebic abscess in the right buttock. The parasite conformed in nearly all points to the *Ameba histolytica*, and the author believes the distribution must have been hematogenous.

## After Office Hours

The *Illustrated World* for June publishes pictures showing the "pangs of hunger" in such a realistic way that one is fain to put the book aside and forage for a ham sandwich.

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The best thing, in fact, we might say the good thing, in the *New Era* is the dramatic criticism. The rest of the magazine seems to be run on the principle of "opposed to everything."

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The *New York Times* in its Sunday magazine section for June 17th devotes nearly a whole page to the utterances of an eminent clinician praising alcohol, and the scanty balance of the page to an article on the training of medical artists. This disposition of space could well be reversed. How many "new" textbooks in medicine copy religiously the old, occasionally inaccurate, often misleading, and frequently incomplete illustrations that are bandied about from one book to another and handed down from one generation to another!

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We note a new periodical, *Uncle Sam Review*. The cover is gaudy and strange, but when we turn to the inside pages we are struck by a feeling of familiarity. It is made up exactly like our old friend, the *Literary Digest*, same kind of paper, type, size page, way of handling material, cartoons, etc. Even the Topics in Brief reappear under the head of Scrapnel. The chief difference is that the new magazine has not so many departments and carries as yet practically no advertising. It seems to us that a new magazine is justified only when there is a new field to be covered or an ideal is to be expressed. A cheap imitation of a standard magazine can hardly be con-



solved a crying need, overhanging as the magazine field is already.

\* \* \*

The reason back of the American Ambulance in France, back of the American Legion, the American aviators, in fact, all of the forerunners of the American Army which will soon be at the front in Flanders, is not the friendship for the country which sent us Lafayette; it is not an abstract sense of justice, of liberty. It is something that there is in France. Perhaps some thirtieth century Poe will write "The grandeur that was England and the glory that was France." Somewhere G. K. Chesterton has written of sitting in Paris and watching the French soldiers ride by and thinking of the glory of Napoleon and the First Empire and how these little men had ridden as conquerors through every capital in France. In *Vanity Fair* for June Allen Tucker has put something of this feeling in words in "Why France?"

## Official News

### United States Public Health Service:

*Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending June 29, 1917:*

- ALLEN, R. L., Assistant Surgeon. Relieved at Reedy Island Quarantine Station, Del., and ordered to proceed to Norfolk, Va., for duty.
- CLARK, T., Surgeon. Directed to stop enroute to Spartanburg, S. C., at Chapel Hill, N. C., for conference with State health and educational authorities.
- COFFR, L. E., Surgeon. Granted leave of absence without pay for a period of one year from June 28, 1917.
- CUMMING, H. S., Surgeon. Directed to report to the Surgeon General of the Navy for special duty.
- DESAUSSURE, R. L., Assistant Surgeon. Ordered to proceed to Washington, D. C., for duty in preparation of report on rural sanitation; granted ten days' leave of absence enroute.
- FOARD, FRED T., Field Investigator. Directed to proceed to Maysville, Ky., for duty in studies of rural sanitation in Mason County.
- FOX, CARROLL, Surgeon. Directed to report to the Surgeon General of the Navy for special duty.
- FREEMAN, A. W., Epidemiologist. Ordered to proceed to Charleston, W. Va., on special temporary duty.
- FROST, W. H., Surgeon. Reassigned to duty in the investigation of navigable streams at Cincinnati, Ohio, effective June 24, 1917; directed to proceed to Little Rock, Ark., on special temporary duty.
- HURLEY, J. R., Passed Assistant Surgeon. Relieved from duty at the Bureau, Washington, D. C.; directed to proceed to Reedy Island, Del., and assume charge of the quarantine station.
- LAKE, G. C., Assistant Surgeon. Directed to proceed to Chicago, Ill., on special temporary duty.
- MCCOY, G. W., Surgeon. Ordered to proceed to Chicago, Ill., on special temporary duty.
- MCKAY, S. R., Field Investigator. Directed to proceed to Maysville, Ky., for duty in studies of rural sanitation in Mason County.
- MANNING, H. M., Surgeon. Granted seven days' leave of absence from June 13, 1917.
- SAFFORD, M. V., Assistant Surgeon. Reassigned to duty at the Immigration Station, Boston, Mass., effective May 12, 1917.
- SCHERESCHESKY, J. W., Surgeon. Ordered to proceed to Chicago, Ill., to supervise investigations relating to the gas industry.
- THOMPSON, L. R., Passed Assistant Surgeon. Relieved at Cincinnati, Ohio; directed to proceed to Manila, P. I., for duty.
- TRASK, J. W., Assistant Surgeon General. Reassigned to duty as Chief of Division in Bureau of Medicine and Surgery, Washington, D. C. effective June 24, 1917.
- TREADWAY, W. L., Assistant Surgeon. Relieved at Ellis Island, N. Y., and directed to proceed to Washington, D. C., for duty in studies of mental hygiene.

- WHIPPLE, GEORGE C., Scientific Assistant. Directed to proceed to Charleston, W. Va., on special temporary duty.
- WILDMAN, H. V., JR., Assistant Surgeon. Relieved at Spartanburg, S. C.; directed to rejoin station at Ellis Island.
- WYNNE, R. E., Assistant Surgeon. Granted seven days' leave of absence from June 20, 1917.
- ZIEGLER, M. V., Field Investigator. Directed to proceed to Maysville, Ky., for duty in studies of rural sanitation in Mason County.

## Births, Marriages, and Deaths

### Born.

- HISSEM.—In Wichita, Kan., on Wednesday, June 13th, to Dr. Ralph W. Hissem and Mrs. Hissem, a son.

### Married.

- AARONSON-STILLMAN.—In New Haven, Conn., on Sunday, June 24th, Dr. Michael S. Aaronson and Miss Mollie Baker Stillman.

- BOOZAN-COOGAN.—In New York, N. Y., on Saturday, June 9th, Dr. William Edwin Boozan, of Elizabeth, N. J., and Miss Theresa Madeline Coogan.

- EARL-SMYTKE.—In Sioux City, Iowa, on Tuesday, June 12th, Dr. Warren Z. Earl and Miss Florence Louise Smytke.

- LAWLER-WRIGHT.—In Baltimore, Md., on Saturday, June 16th, Dr. Daniel H. Lawler, of Bridgeport, Conn., and Miss Eva Wright.

- MENNE-MESSIGNER.—In Portland, Ore., on Wednesday, May 30th, Dr. Frank R. Menne, of Portland, Ore., and Miss Aletha Eleanor Messigner.

- SYLVESTER-YOUNG.—In Haverhill, Mass., on Saturday, June 2, Dr. Phillip H. Sylvester, of Newton Centre, and Miss Dorothy Young.

- THOMAS-DOOLITTLE.—In New York, N. Y., on Saturday, June 9th, Dr. Clarence P. Thomas and Miss Irene Doolittle, of Toronto, Ont.

- WILSON-MUGGAH.—In Salem, Mass., on Tuesday, June 12th, Dr. Charles M. Wilson, of Salem, and Miss Margaret Muggah, of Glace Bay, N. S.

### Died.

- BALDRIDGE.—In Huntsville, Ala., on Thursday, June 7th, Dr. Felix E. Baldridge, aged fifty-one years.

- BLAIR.—In Sheffield, Ala., on Tuesday, June 12th, Dr. Hugh W. Blair, aged fifty-five years.

- BOURKE.—In Washington, D. C., on Sunday, June 17th, Dr. James Bourke, aged forty-eight years.

- BOYD.—In Knoxville, Tenn., on Wednesday, June 13th, Dr. Samuel B. Boyd, aged sixty-four years.

- FITZSIMMONS.—In Washington, D. C., on Monday, June 11th, Dr. Paul Fitzsimmons, aged sixty-eight years.

- FRASER.—In La Salle, Ill., Monday, June 11th, Dr. William H. Fraser, aged seventy-eight years.

- FREEMAN.—In Pulaski, Tenn., on Saturday, June 9th, Dr. Eunice C. Freeman, aged forty years.

- GILBERT.—New York, N. Y., on Monday, June 18th, Dr. Charles E. Gilbert, aged sixty-nine years.

- HILL.—In Washington, D. C., on Tuesday, June 12th, Dr. Richard S. Hill, of Upper Marlborough, Md., aged fifty-two years.

- HILTON.—In Brooklyn, N. Y., on Thursday, June 14th, Dr. Elizabeth Louise d'Artois-Tarver Francis-Hilton, aged seventy-seven years.

- HUTCHISON.—In Hazelton, Pa., on Monday, June 11th, Dr. Wilbur L. Hutchison, aged fifty-one years.

- KING.—In Loomis, N. Y., on Sunday, June 24th, Dr. Herbert Maxon King, aged fifty-three years.

- LONES.—In Knoxville, Tenn., on Tuesday, June 12th, Dr. Charles E. Lones, aged forty-two years.

- MCLURG.—In Washington, D. C., on Friday, June 15th, Dr. Walter Audubon McLurg, aged sixty-two years.

- MCKEE.—In Hudson Falls, N. Y., on Monday, June 11th, Dr. Alexander McKee, of Glens Falls, N. Y., aged forty-three years.

- SAWYERS.—In Greenfield, Tenn., on Thursday, June 7th, Dr. Thomas E. Sawyers, of Martin, Tenn., aged forty-four years.

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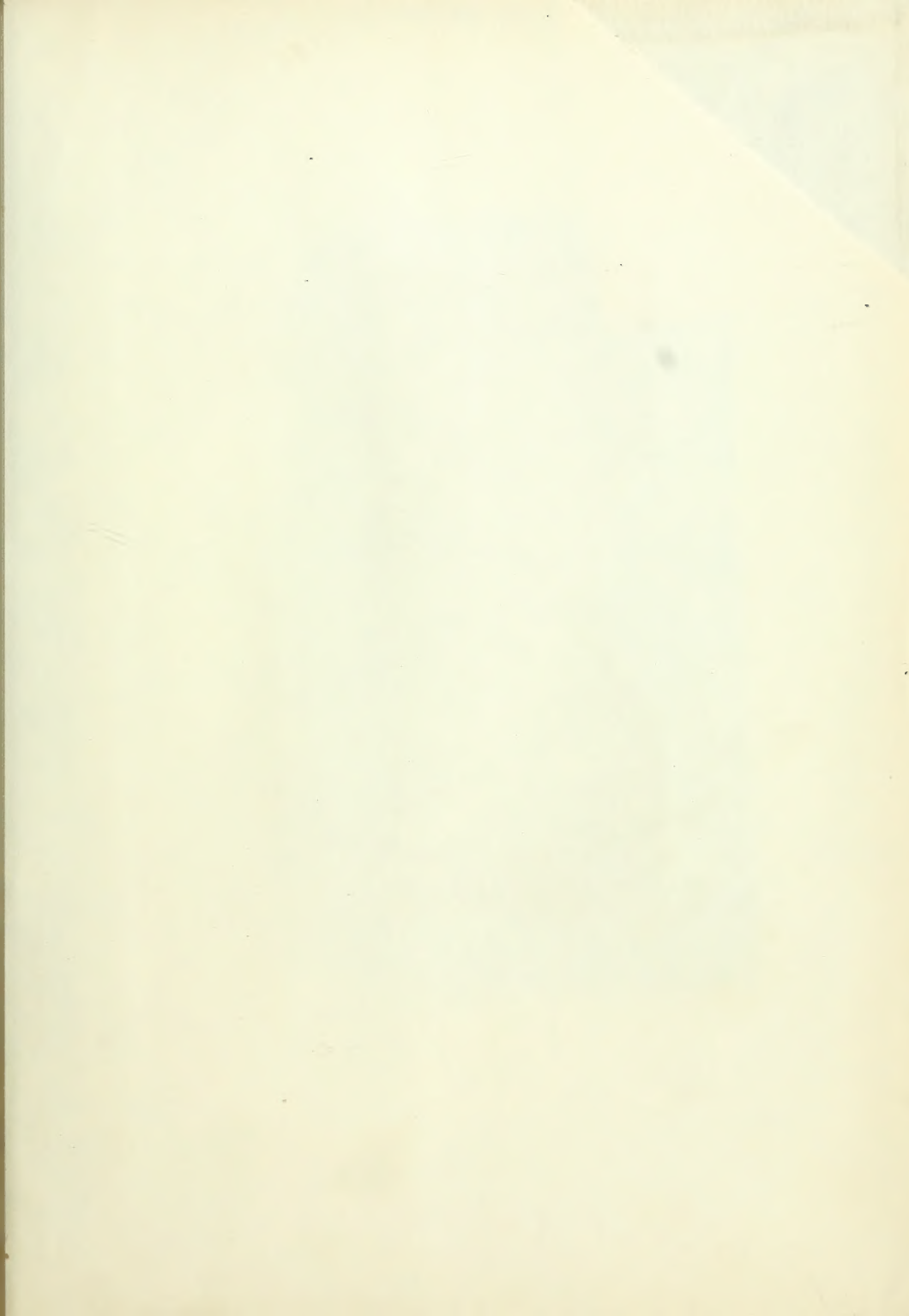
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